

Relationship Between Awareness, Knowledge and Attitudes Towards Environmental Education Among Secondary School Students in Malaysia

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Abstract: The importance of environmental education (EE) is well known globally among societies. Environmental education is gradually promoted as a sustainable tool in protection of the environment. Environmental education is found across school curriculums in Malaysia. The objectives of the curriculum are environmental attitude, knowledge and awareness (AKA) where has been investigated in the current study. The study was conducted to identify the relationship between environmental awareness, knowledge and attitude among secondary school students. The survey was conducted on 470 respondents who were in Form Four (16 years old) in Kajang city, Selangor, Malaysia. An instrument which included (48 questions) was employed to investigate the relationship between awareness, knowledge and attitude. The results of Person Correlation showed a significant but weak relationship between awareness and knowledge on environmental issues while there was high relationship observed between awareness and attitudes among respondents. Moreover, the statistical test showed a negligible relationship between knowledge and attitude among students about environment. The study concluded that a high level of awareness and knowledge plus positive attitude of students may come have been achieved from the families of respondents, teachers, media, private reading and school curriculums regarding the environment that increases the environmental view among students as well as overall in the society. The study recommended that environmental education subject necessarily might be considered as an independent syllabus in Malaysian education system.

Key words: Environmental Knowledge • Attitude • Awareness • Teenager • Formal Education • Malaysia

INTRODUCTION

Beside the increase of environmental concern, the ecological crisis dramatically continues to highlight influential factors on environmental protection such as environmental behaviour, awareness, knowledge and attitude [1, 2, 3, 4]. Social scientists have been measuring these components using several instruments. Many of these researchers believed that the knowledge and attitude are linked to each other where attitude is further connected to the behaviour [5]. The assumption believes on “if people become more knowledgeable about the environment and its associated issues, they will, in turn,

become more aware of the environment and its problems and, thus, be more motivated to act toward the environment in more responsible ways” [6]. National Advisory Council on Environmental Education had declared the valuable goals of Environmental Education. These values included to eliminate or minimize the destruction of environment and highlight the necessity of help to save the environment. This goes logically through teaching of public to actively participate in environmental programs where finally the environmental education promote the wise use of natural resources for sustainability. Other researches showed the modern and specific characteristics of environmental education.

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The increase of the quality of the environment in order to achieve the sustainability, environmental education should not be only limited to schools where the topic is beyond the school approaches to show the environmental problems [7]. He believed that environmental education can increase the attitude and knowledge about environment that is necessary to understand and solve problems.[7] in his research referred that EE should prepare and arm a nation with essential human resources somehow to present suitable action whenever is needed. Moreover, some researchers [8] believed that, environmental education as a tool helps people to understand and solve the environmental issues. Based on Tbilisi's declaration environmental education should prepare opportunity for people to participant processes to solve environmental problems and create a sense and commitment among them than to their living environment [9]. Furthermore, they recommended the environmental education as a goal to develop the curriculum. Hence, environmental education is necessary to rebuild the current educational system [10].

Environmental education helps to achieve awareness, knowledge, attitude and responsible behavior about environment. It has been defined and reviewed over the past twenty-five years. "It is generally agreed that environmental education is a process that creates awareness and understanding of the relationship between humans and their many environments – natural, man-made, cultural and technological. Environmental education is concerned with knowledge, values and attitudes where has its responsibility on environmental behaviour" [11]. As mentioned earlier there are some effective factors on environmental education components (awareness, knowledge and attitude) such as gender, age, political issues, parent's income and their educational level [12]. Family income and levels of education's parents are known as a predictor factors on students AKA of the environment. The relationship between income and environmental behaviour was slightly lower than education and environmental behaviour [13]. The students with higher income families were more resistant to abandon energy- or resource related items than were students from lower income families [14]. Furthermore, it is reported [15] that income positively dependent to pro-environmental behaviour among public, which high income family has more participate in pro-environmental behaviour. It is recommended [16] that "concern for environmental quality is something luxury which can be indulged only after fulfilment of more basic needs (adequate food, shelter and economic security) are met".

A report has concerned [17] that resulted the concern over the environment are according to students' socioeconomic and demographic characteristics. It is found [18] that Green purchase intention correlates positively with every age and income except for education. The enormous changes in the 21st century is exposing the nature with a new set of economic and social factors which finally seize the changes in fundamental transformation, technological advance and competition in the job market [19]. These changes have influenced on the skills of people to play effectively in today's global economy. Although environmental awareness is being constructed in Malaysia, in past decade due to rapid economic growth and industrialization the country is facing with serious environmental challenges. There are especial issues which known as urgent task and basic threat which is including "air pollution from industrial emissions, solid waste management, ensuring long-term sustainability of the water supply and sewerage services industry and overall improvements of energy efficiency to re-establish a clean Malaysia". Some researchers believed that not only the government polities but also the public concern about environment has main role to reach a sustainability development [20]. Due to the lack of specific subject about environmental education in the curriculums, students do not able to achieve the skill to understand their environment. There is also a lack of survey on awareness, knowledge and attitude about environment [21]. Therefore in this study I have aim to measure the level of awareness, knowledge and attitude as objectives and components of environmental education among secondary school students who were enrolled in a secondary grade so called "Form Four". This desired way of education was criticized by public where sophisticated environmental issues are concerned.

MATERIALS AND METHODS

Study Location: Kajang is district of Hulu Langat and located in the eastern part of Selangor State. She is the capital city of Hulu Langat. The city is expanded towards Sungai (River) Chua. Based on statistic from the department of census, the population is rapidly grow. The study area (Kajang city) is selected since is among old cities of Malaysia. Moreover the city is well known as a city for labours due to huge industrial development. There are several and various industries in this area that provide goods for local, regional and international markets. Due to this, people from various ethnic and racial groups as well as economic perspective configure

the inhabitants of the city [22]. Kajang hosts other activities such as agriculture, businesses and education. The National University of Malaysia (UKM) is located close to the downtown. The municipalities accommodate thousands of academicians and students. In fact, the city represents a small scale Malaysia. Kajang has 14 public secondary schools that accommodate students from year 7 to year 11 meaning age groups from 12 to 16.

Participants: The study has focused on the students of 9 secondary schools at the age of 16 who attend "Form Four" classes in Kajangtown, Selangor, Malaysia. The participants of this study consisted of secondary school students involved in education programs on the environment in Kajang. The secondary students consisted of students from the teachers' classes.

Sampling: A total of 9 (out of 14) schools agreed to collaborate in this research in Kajang Town, Selangor, Malaysia. A total of 600 questionnaires were distributed among the students. The respondents' return rate was calculated as 78.33 percent, where 470 questionnaires were received from the students.

Instrument: The research carried out using a questionnaire as data collection instrument. It was included 48 closed-ended questions covering various aspects of the current environmental issues at global and local levels. It is believed that closed-ended questions probably limit the responses to the topics [23]. The instrument developed in this study consisted of a questionnaire using a four point Likert - type response scale and agree/disagree response section. The instrument has a set of question designed to fulfill the local authority concerns over environmental problems. The questionnaire consisted of 3 sections: "Awareness", "Attitude" and "Knowledge". The "Awareness" section includes 20 questions that measure perception, influence and concern for the environment. The "Attitude" section has 19 questions to evaluate respondents and classify them from pro-environmentalist to anthropocentric points of view and their social responsibilities towards the environment. The scale of awareness and attitude questions consist of 4 options to evaluate the respondents. The "Knowledge" section includes 9 questions that directly measured the respondents' knowledge of the environment.

Scoring/Coding of Responses: The instrument consisted of 3 parts of "awareness", "attitude" and "knowledge". The first part included 20 questions that address 3 sub

topics of awareness including influence, perception and concern. The first section of awareness included 5 questions (1-5) that measure "influence" where scored by "1=Never", "2=Seldom", "3=Often" and "4=Very often". The questions from 6 to 14 measure the second part of awareness called "perception" where scored "1=Much Worse", "2=Worse", "3=Better" and "4=Much better". The last 6 questions of awareness evaluate "Concern" on environmental issues (questions 15-20) scored by "1=Not Concerned at all", "2=Somewhat concerned", "3=Concerned" and "4=Very Concerned". The next part of questionnaire that included 19 questions focused on "attitude" where employed Likert scale of four rates of "1=Strongly Disagree", "2=Disagree", "3=Agree" and "4=Strongly Agree". The last batch of questions (9 questions) targeted the item of "knowledge" that scored by "True/False" choices. Answers to the knowledge questions were evaluated based on correctness of each choice where either true or false choices may possibly be correct or incorrect. The correct answer was valued as "4" while incorrect answer scored "1".

Statistical Analysis: The Statistical Package for the Social Sciences (SPSS version 19.0) was the computer software used to analyse the collected data. The statistical analysis which was applied for this survey is including descriptive, frequency and Correlation. The bar graph was conducted to show the level of awareness, knowledge and attitude about environment and correlation to survey the relationship between main variables (AKA).

RESULT

Awareness: Awareness was included 3 sections: "Influence", "Perception" and "Concern". From the analysis result indicates the level of knowledge about education and environmental issues is "never" (level 1), "seldom" (level 2), "often" (level 3) and "very often" (level 4). The majority of the respondents regarding to influence item, presented around 72.1% of students were often influenced about environmental issues while just 20% of respondents were seldom influenced towards environmental subjects (Figure 1).

Items 6 to 14 included the perception of local environment subscale. A high percentage of students located in better level of perception (67.7%) related to the environment. Almost 20% of respondents had worse perception about environmental subjects. Moreover, only 2.1% of students had much better perception about the environmental issues (Figure 2).

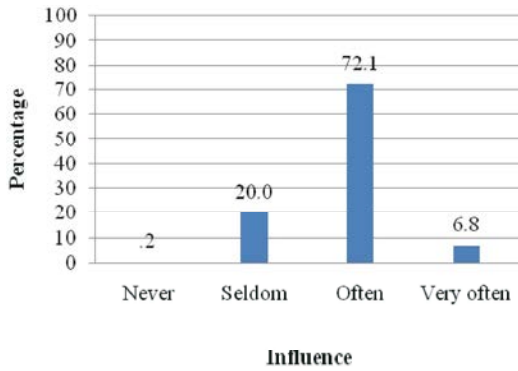


Fig. 1: Environmental Awareness according to the Influence Items among Students

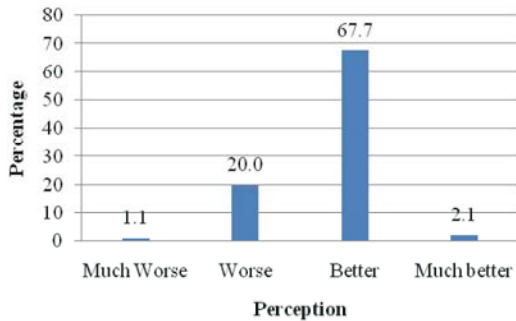


Fig. 2: Environmental Awareness according to perception items among Students

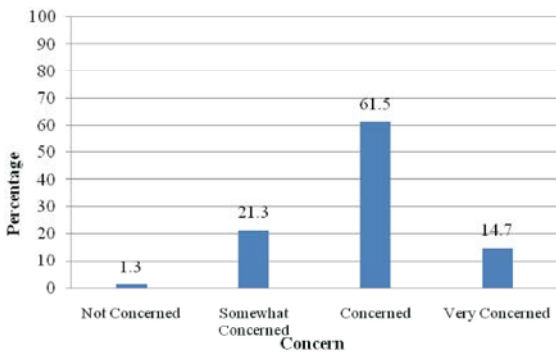


Fig. 3: Environmental Awareness according to Concern items among Students

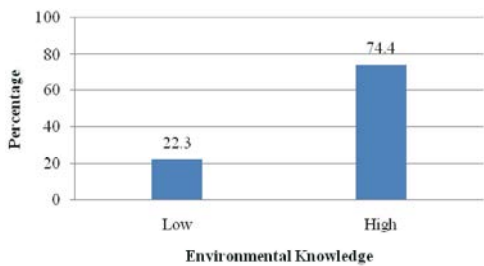


Fig. 4: Frequency of Response among Students for each Category of Knowledge

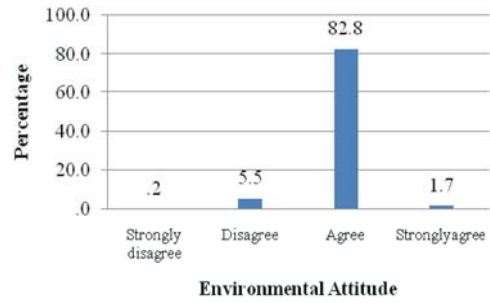


Fig. 5: Frequency of Response among Students for each Category of Environmental Attitude

As for the concern subscale, respondents replied to items 15 to 20. Almost more than half of respondents indicated that they are concerned about environment (61.5%) while 21.3% of students had somewhat concerned about the environmental issues. The statistical analysis showed that 14.7% of participants were very concern about environment.

The result showed that, awareness about environment among students was almost in a good level because the most of the respondents were influenced about the environmental issues. They had better perception and concerned towards environmental subjects.

Knowledge: Knowledge was investigated among respondents with 9 questions in two categorizes (low and high). Table 1 describes the result of the analysis of composite scores that computed from individual scores' averages that shows majority of respondents 74.4 % (n=351) had scores of high level of knowledge while 22.3% (n=105) had replied to the low level.

Attitude: In this study, attitude among respondents were investigated by the responses to 19 questions on the attitude towards environmental subjects. The result showed that the majority of students were agreed about environmental subjects. This means, in overall, most of the students had positive attitude about environmental issues.

The Relationship Between Level of Awareness, Knowledge and Attitude among Secondary School Students: The Spearman's Rho test was used to observe the relationship between two variables. This test is only explaining the strength of the relationship and also whether there is a significant relationship or not between

Table 1: The relationship between level of Awareness, knowledge and attitude among Secondary school

No	Result Relationship	Correlation "r"	p-value
1	Awareness and Knowledge	0.165	0.001** (p>0.05)
2	Awareness and Attitude	0.990	0.000** (p>0.05)
3	Knowledge and Attitude	0.174	0.000** (p>0.05)

Level of significance (p <0.05)

level of awareness, knowledge and attitude of the secondary school students. Significant level used is the confidence level of $P \leq 0.05$. The relationships were investigated among awareness and knowledge, awareness and attitude, knowledge and attitude. The result showed that there was significant relationship between awareness and knowledge but it was not strong. Based on the table of Guildford Rule of Thumb, the strength of relationship was weak and negligible about environmental topics [$r = 0.165$, $\text{sig} = 0.001$]. Inference correlation analysis showed that the value of correlation coefficient "r" is high for the relationship between awareness and attitudes among respondents [$r = 0.990$, $\text{sig} = 0.000$]. This value indicates there is a positive relationship between awareness and attitudes which is at the high level of correlation. Moreover, the statistical test also showed a negligible relationship between knowledge and attitude among students about environmental subjects [$r = 0.174$, $\text{sig} = 0.000$] (Table 1).

DISCUSSION

Awareness: The results presented that the most of students were often influenced by environmental issues (72.1%) where 67.7% of respondents had better perception about environmental subjects. Moreover, the students were concerned (61.1%) about their local environmental issues. The results showed that in overall, the environmental awareness was high towards environmental subjects. This result was confirmed elsewhere [24]. Also the result is agreed by earlier results [25]. The study has investigated the environmental concern among students in America. The result also is consistent with other studies [26] where stated that Malaysians in basic scientific idea generally have a moderately good understanding. Furthermore, these findings were consistent with other studies [27] where reported environmental awareness, attitude and behaviour of students in Singapore.

Knowledge: The statistical analysis demonstrated that the students in this study had a high level of environmental knowledge. This high level of knowledge may be due to

media and influenced by their education for these later years when include more environmental subjects. The result is confirmed earlier [35]. He stated that the study on measuring environmental literacy among students of Faculty of Science in Universiti Putra Malaysia showed that more than 80% of all students had the high level of attitude and knowledge. This might be due to the difference of their personality, influenced by their lifestyle and family and further because of emphasizing on environmental attitude and knowledge by the government and the media in these later years. Also the high level of knowledge might be depending on teacher's knowledge about the environment [28]. To increase the environmental knowledge of people there should be ways such as the promotion of posters, lectures related to environmental issues or mass and electronic media [29, 30]. Hence some of researchers stated that the increasing of environmental knowledge, positive attitude and after that change in behaviour happen to protect the environment [31, 32, 33].

Attitude: The overall results represented that 82.8% of respondents were agreed towards environmental subjects. This means that the majority of student's attitude was positive about environmental issues. In current study the attitude item was divided to three subsections which were included: pro-environment, anthropocentric and social responsibility. Among the attitude items the mean of pro-environment (3.06) was higher than the anthropocentric (2.53) and social responsibility (2.18). This is described that the majority of respondents were agreed the pro-environmental questions (Figure 6). This showed that most of respondents have more attention to the environment where compared to their personal demands [34].

In general, students' attitude was positive about environmental subjects but in some subjects they showed negative attitude when they had some personal believes which the sacrifice might be needed [35]. Many of social psychologists referred that, the positive attitude is under influenced by primitive believes which was included a wide range of belief and attitude concerning more specific environmental issues [36]. On the other hand the positive attitude might come from the environmental entertainments such as outdoor or indoor activities [32].

Relationship Between Awareness, Knowledge and Attitude: The statistical analysis showed that there was a high relationship between awareness and attitude about environmental issues while the relationship between

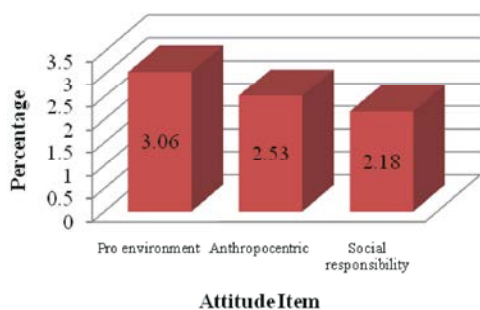


Fig. 6: The mean of Environmental Attitude Items among Students

awareness and knowledge was weak. Moreover there was a weak relationship between knowledge and attitude. It is presented that the students with high awareness showed that their attitude might be increasing about the environment however the knowledge item is not dependent to the awareness. The students might get their knowledge from other resources such as parents, teachers or media [35] however the result might show inconsistency elsewhere [10]. He believed that the environmental education can increase the attitude and knowledge about the environment where is necessary to understand problems and solve the environmental issues. The result also was in disagreement with others [15] where stated relationships between knowledge and attitude when related to the environment. He has shown the increase of knowledge raises the attitude. Moreover, one of the researches has shown that there are relationship between knowledge and positive attitude. When knowledge increased, positive attitude increases about subjects [36]. The high relationship between awareness and attitude may appear due to some demographic variable such as age, education and so on [37]. They have reported relationship between the concern and the age. They believed that the younger generations tend to be more concern about the environmental quality than older generations. Moreover other researchers explained the association between age and environmental subjects [38, 39].

CONCLUSIONS

This report provides information about public environmental perception of environmental subjects in Kajang City, Selangor, Malaysia. The samples were chosen from secondary school students which are 16 years of age and study in form four. These students enroll in universities, if successful, for 1-year matriculation

program. The study concluded that the high level of awareness and knowledge plus positive attitude of the students may come from the family situation, teachers, media, private reading and school curriculums regarding to the environment which increases the environmental perspective among students and in overall in the society. The study has recommended other important factors to be studied in which effect on environmental AKA such as age, education, income, gender, urban/rural among others. Above all, the schools should provide the access over facilities and information relating to the environment in order to enhance the environmental references and subjects in school libraries. Such as these materials attract the interest of students and teachers to learn and consequently to teach efficiently the environmental topics like global warming, waste management, ozone, acid rain, greenhouse gases effect and impact resulting from environmental problems. The study also implicates that the environmental education subject are considered as an independent syllabus in Malaysian education system.

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