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Environmental Awareness and Attitude among Iranian Students in Malaysian Universities

Z. Aminrad [a], M. Azizi [a], M. Wahab [b], R. Huron [a] and M. Nawawi [c]

[a] *Department of the Environmental Science, Faculty of Environmental Studies, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia*
[b] *Faculty of Science, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia*
[c] *Faculty of Educational Studies, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia*

Abstract

This study focuses on environmental awareness and attitude among Iranian students in Malaysian universities. It evaluates the awareness and attitude of a group of 541 from 14 universities. The figure to 541 is considered the representative of these students and the selection was based on Stratified Random sampling method and G-power soft ware. A set of questionnaire which comprised of 25 questions was applied as instrument for data collection. The results revealed that environmental awareness was overall moderate while environmental attitude was high. The study also found that there was no significant difference observed between sex groups while environmental awareness results indicated that there were significant difference among different levels of education. This trend was in contrast with observation for environmental attitude status. The age groups analysis results revealed significant difference in environmental awareness and attitude. It was also found that the media positively affected the level of environmental awareness and attitude among students. The study concluded that increase on age and level of education would improve the level of awareness and attitude regarding to environmental issues.

Keywords: environmental swareness; environmental attitude; environmental education; Iranian student.

1. Introduction

Over the last 30 years, environmental education has been one of the main interests of school organizations, local communities, the private sector, and local governments. Most programs, according to the North American Association of Environmental Educators Ballard and Pandya (1990), rely on a series of environ- mental activities that can be incorporated into any course within an existing curriculum. Such approaches are called "an interdisciplinary infusion of environ- mental topics" and as add-ins or add-ons crowd an already full curriculum (Disinger, 1997). The Intergo- vernmental Conference on Environmental Education (UNESCO, 1978) recommended the primary categories of environmental education curriculum goals and objectives of: (a) awareness, (b) knowledge, (c) attitudes, (d) skills, and (e) participation. While these components have been cited in many documents, articles, and books in the last decade (Athman and Monroe, 2000; Callicott and Rocha, 1996; Day and Monroe, 2000; Gough, 1997; Palmer, 1998), not all authors agree upon the degree of importance of one objective over the other. In order to accomplish this, how should the importance of awareness, attitude be emphasized is still controversial. Madsen (1996) explained that environmental awareness, is necessary to achieve environmental protection and restoration. Madsen emphasized that the public must have a basic grasp of environmental problems. Leaders in the field of environmental education must not only have extensive knowledge and understanding of environmental problems, but must have environmental awareness to solve these problems. They must be committed "to initiate action, based upon knowledge and understanding" (Madsen, 1996). In the end of the 20th century, the environmental concerns grew much greater, not only among the developed countries, but also in some developing and underdeveloped nations. The common reason was that the consequences of environmental damages to some vital resources became so apparent and horrifying that governments became worried and mass media were found of great value for their headlines, stating that this is due to the public concern (Karimi, 2003). Student's environmental awareness is one of the most important indicators for displaying national civilization. It reflects many aspects of environmental status, such as personal consideration and behavior, public capacity, and the local citizens' attitude towards sustainable society as a whole, etc (Kaiser, 2003). Environmental awareness is defined as an understanding of natural systems combined with

how they interact with human social systems (Mancl, 2003). Athman and Monroe (2000) stated that environmental awareness of processes and systems play an important role in EE. However, this is not the only factors affecting the behavior outcome. Behavior is what people do, whether it is environmentally appropriate or inappropriate (Hernandez and Monroe, 2000). Behavior in general is supported by knowledge and attitude but there is not a direct cause-and-effect progression from knowledge to attitude to behavior (Monroe *et al*., 2000). Regarding awareness, Palmer (1998) emphasized that students should acquire appropriate range of awareness, understanding, and concepts about the environment so that critical judgment can be achieved. Further, experiences and reflection in the environment should be allowed to refine "environmentally focused skills, further relevant knowledge, and development of appropriate attitudes and environmental awareness. Attitudes toward students have been defined as the beliefs and feelings that individuals have toward the environment while students' attitudes toward the environment in this research are conceptually defined as their verbal commitment, actual commitment, motivation and affect concerning nature and environmental issues (Kogan, 1961). Also to help social groups and individuals acquire a set of values and feelings of concern for environment, and the motivation for actively participating in environmental improvement and protection. Following Cluck *et al*. (1997), environmental attitudes have been conceptualized as a three dimensional concept. The dimensions of environmental attitudes include environmental worldview, environmental concern, and environmental commitment. The meanings of these three dimensions are conceptualized as follows. Environmental worldview represents a basic and general form of environmentalism (environmental values) of the respondents. This form of environmentalism indicates respondents' general perceptions about the environment, relationships between the environment, economic growth, and industrialization, and effects of science and technology on the environment. Environmental attitudes are perceptions or values about given environmental issues. Environmental issues include the relationship between environment and society, effects of economic growth and technology on the environment, environmental degradation, air and water pollution, green house effect, global warming and numerous other environmental problems. Dimensionality environmental attitude studies measured environmental attitudes as a uni-dimensional phenomenon. Article 50, of Iran's National Constitution, the importance of environmental protection is highlighted. It is also noted that environmental education is one of the key issues of environmental protection, sustainability and better achievements of productivity. Environmental education is recently promoted and initiated in Iran's educational system as the side curriculum in schools and university textbooks and developed materials (Yaghoobi, 2003). Thus, there is a gap for further studies on Iranian students when they are in a foreign country.

2. Methodology

The survey was conducted on Iranian students in malaysian universities. Iranian students from fourteen private and governmental universities were surveyed. The source of student's population data was obtained from the registrar offices of malaysian universities. According to this table there are 2200 Iranian students in these 14 listed universities.

2.1. Sampling Method

The sample size was chosen based on G Power Soft ware (Confidence=0.95). The chosen 541 respondents represent the population of Iranian students (24.59% of total population). 600 questionnaires were distributed among Iranian students. Stratified randomized sampling method was applied (Shobeiri, 2005) to evaluate the strata (subpopulations) in this research the subpopulation including level of education, gender and age.

2.2. Instrumentation

Two questionnaires are used to collect the required data for the study. The first questionnaire is used to measure awareness that is defined as concern for what is happening in the environment. The concept was examined with a series of questions inquiring about the global environment. The second questionnaire is used to measure attitude that is defined as the acquisition of values, feelings, and motivations towards the environment. This was examined using the amended USEPA 2000 instrument, asking questions regarding the environmental issues. These instruments were evaluated among Iranian students in Malaysian universities. The instrument is divided into two sections, environmental awareness and attitude. The Awareness of Environment Scale (15 items) is used to measure actual awareness of students about global environment. The multiple›choice items are used because they are considered the most versatile methods among all objective test items (Aiken, 1994).

The total score was computed whereby out of the 15 questions that were given, each question represents to has 1 score so the total score is 15 marks out of 15 questions. If the student had selected the correct answer they were given 1 score and the otherwise they will set 0 score (correct answer=1 and wrong answer=0). Respondent's awareness on environmental awareness was categorized according to the composite score of responses of fifteen questions. Respondents who score 0 to 5 have a low awareness, 6 to 10 moderate awareness, and 11 to 15 have a high awareness on environment based on Jussoh and Harun (2005). The Likert scale measurement was used for every statement for environmental attitude on a 5 point scale. Each alternative item is assigned from 5 (strongly agree) to 1 (strong disagree) for favourable items (questions 1, 3, 4, 5, 6, 7, 9, 10). In case of unfavourable items (questions 2, 8) the scoring is reversed, i.e. from 1 (strongly agree) to 5 (strongly disagree) Shobeiri (2005). Environmental attitude was also categorized in three categories, low, moderate and high, according to the composite score of responses of 10 questions. Every statement has 10 scores and as there are 5 statements in each question, the totall score is 50. Respondents who score 0 to 16.66 have low attitude, from 16.67 to 33.66 have a moderate attitude and 33.67 to 50 are interpreted as having a high attitude.

2.3. Data Collection

Approval is obtained from the Faculty of Environmental Studies to carry out this study. The data collection process is divided into two phases. The first phase was to determine the universities that Iranian students are studying in Malaysia. Official requests were issued by UPM to Malaysian universities and the Iranian embassy in Kuala Lumpur in September 2007. The instrument distribution started on 10th of August and ended on 30th of October 2007. In the second phase 600 questionnaires were distributed among Iranian students based on the method (stratified random sampling) mentioned previously and 541 responses were received from the 14 private and public universities. The respondents had about 10 to 15 minutes to answer the questionnaire.

2.4. Data Analysis

The collected data was entered into a research database utilizing the Statistical Package for the Social Sciences: SPSS (Version13.0) under the windows computer operation system for the purpose of analysis. Each case was entered into a database assigning a code to identify each participant. The data was sorted to analyze the characteristics of participants with respect to the research questions. Significance for all statistical measures was determined at alpha level of 0.05. The analyzing processes included editing, coding, summarizing from the findings. Descriptive statistical technique was used to analyze data from the questionnaire. These descriptive statistical techniques described the entire variable according to tabulation and percentage of total responses received. Finally, the frequencies were used to present the distribution of each variable value. Independent samples t-test was used as a test of statistical significance. The procedure was applied to compare means of the two independent groups of variables (male and female). If the observed t-test value exceeded the critical values from the results of the table, the null hypothesis (H_0) was rejected and this infers that there is a significant difference between the two variables. The significance level () is 0.05. For more than two groups (three groups of age including 17-25, 26-40, >40 and three groups of level of education including Bs, master, PhD) One Way ANOVA was applied.

3. Results

3.1. Environmental Awareness

Environmental awareness among respondents was assessed based on the responses to 15 questions on environmental subjects. Fig. 1 depicts an analysis of composite scores that computed from individual scores' averages that shows majority of respondents (59.89 %) had scores indicating a moderate level (6-10) of environmental awareness. Overall, the mean environmental awareness score of the respondents was 10.31 (SD 2.671).

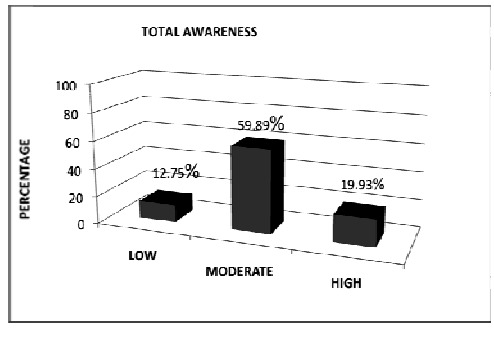

Figure 1. Survey of respondents for each level of overall environmental awareness

An independent sample t-test was conducted to evaluate whether there are any difference between genders groups (male and female respondent) regarding to the environmental awareness level. The statistical t- test in this survey between the male and female groups shows the mean for male is slightly more than female, 10.35, 10.26 and with ±SD 2.744 and ±SD 2.550 respectively, which fail to reject Ho and conclude no significant difference in environmental awareness between the two groups [t=0.385 (497), *p= 0.700*]. This is indicates that male and female respondents have similar environmental awareness. Refer to Table 1.

A One Way ANOVA was conducted to investigate whether there are any differences in environmental awareness scores between different educational groups. Table 2 shows the mean for Bs (Bachelor) 9.87 (n=121); Ms (Master) 10.10 (n=156) and PhD (Doctorate) 10.71 (n=222).Table 2 shows there are significant differences on the responding to environmental awareness' score among the three level of Educational groups [$F_{(2, 494)}$, 4.740 *p= 0.009*], this is indicates that PhD respondents have more awareness towards environment than the other two other groups.

Also results showed that there was a significant difference at the *p< 0.05* level in environmental awareness scores for the three age level [$F_{(2,491)}$=7.158, *p = 0.001*]. Despite reaching statistical significance, the actual difference in mean scores between the groups was quite small. The effect size, calculated using eta squared, was 0.02. Post-hoc comparisons using the Tukey's HSD test indicate that the mean of total environmental awareness score for Group 1 (M=9.603, ±SD 2.831) was significantly different from Group 2 (M=10.567, ±SD 2.610). Group 3 (>40) did not differ significantly from the two other groups. This is indicates that older age groupsû respondents have more awareness towards the environment than the two other groups. Refer to Table 3.

Table 1. T-test for Comparing Environmental Awareness between Gender Groups

	Gender	N	Mean	Std. Deviation	t	df	p
Total awareness score	male	311	10.35	2.74	0.385	0. 497	0.700
	female	188	10.26	2.55			

Level of significance (*p < 0.05*)

Table 2. One Way ANOVA for Comparing Awareness between Educational Groups

Educational level	N	Mean	SD	df	F	sig
BS	121	9.87	2.869	2, 518	4.740	.009
MS	156	10.10	2.673			
PhD	222	10.71	2.156			

Level of significance (*p < 0.05*)

Table 3. One Way ANOVA for Comparing Environmental Awareness between Age Group

	Age	N	Mean	Std. Deviation	df	F	sig
Total Environmental Awareness	17-25	141	9.603	2.831	2, 491	7.158	.001
	26-40	316	10.576	2.610			
	>40	37	10.730	1.981			

Level of significance (*p < 0.05*)

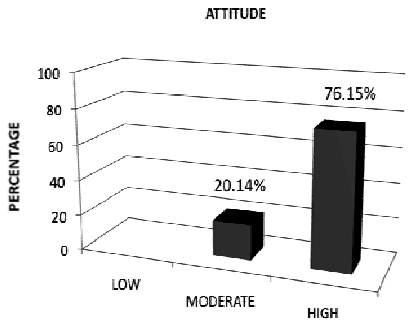

Figure 2. Survey of Respondents for each category of Attitude towards the Environmental

3.2. Environmental Attitude

In this study, environmental attitude among respondents was studied by analyzing the responses to 10 questions on the environmental attitude. Figure 2 shows the analysis of composite score, where a majority of students have achieved high level (76.15%) of environmental attitude. Others had a score that indicates a moderate level (20.14%) while there was not low level score. An analysis of composite score showed that the majority of respondents had a score that indicated a high level of environmental attitude. Others had a score that indicated a moderate level while none had a low level. This showed that students have a positive attitude towards environment. Also based on Likert scale students attitude was between agree to strongly agree.

The statistical t-test in this survey between male and female groups shows the mean of 36.66, 36.68 and with ±SD 4.117 and ±SD 3.814 respectively, which indicates no significant difference of mean between two groups in environmental attitude [t=-0.07 (519.00), $p=0.944$]. This is indicates that male and female respondents have similar attitudes towards the environment. Refer to Table 4.

A One Way ANOVA between groups analysis of variance, to compare difference of environmental attitude between different educational level groups was used. Subjects were divided into three groups according to their level of study (Bachelor, Master and PhD). There was no statistically significant difference in attitude scores for the three educational groups [$F_{(2, 518)}$=1.393, $p=0.249$] this indicates that the three educational groups respondents have similar attitude about the environment. The mean of total attitude score for BS was (36.73, ±SD 3.887); MS (36.28, ±SD 4.109) and PhD were (37.06, ±SD 4.060). Refer to Table 5.

Also there was a statistically significant difference at the $p<0.05$ level in environmental attitude scores for the three age level [$F_{(2, 513)}$=3.158, $p=0.043$]. Despite reaching statistical significance, the actual difference in mean scores between the groups was quite small. The effect size, calculated using eta squared, was 0.01. The Post-hoc comparisons using the Tukey's HSD test indicate that the mean of total environmental attitude score for Group 1 (M=36.02, ±SD 3.926) was significantly different from Group 2 (M=36.80, ±SD 4.002). Group 3 (M=37.54, ±SD 4.044) did not differ significantly from two other groups. This indicates that older age groups (26-40) respondents have positive attitudes towards environment than the first group (17-25). Refer to Table 6.

Table 4. T-test for Comparing Environmental Attitude between Gender groups

	Gender	N	Mean	Std. Deviation	t	df	p
Total attitude score	male	323	36.66	4.12	-0.070	519.000	0.944
	female	198	36.68	3.81			

Level of significance ($p<0.05$)

Table 5. One Way ANOVA for Comparing Attitude between Educational Groups

Educational level	N	Mean	SD	df	F	sig
BS	236	36.73	3.887	2, 518	1.393	0.249
MS	163	36.28	4.109			
PhD	122	37.06	4.060			

Level of significance ($p<0.05$)

Table 6. One Way ANOVA for Comparing Environmental Attitude between Age Group

	Age	N	Mean	Std. Deviation	df	F	sig
Total Environmental Attitude	17-25	152	36.020	3.926	2, 513	3.158	0.043
	26-40	323	36.805	4.002			
	>40	41	37.537	4.044			

Level of significance ($p < 0.05$)

4. Discussion

4.1. Environmental Awareness

The total environmental awareness score in this study showed that the overall mean for awareness score among the respondents was 10.31 out of maximum score of 15. Overall, results demonstrated that the majority of students in this study had a moderate level of environmental awareness (Table 1). This finding is consistent with results from Loon (2004) in a study conducted for UPM on students from the science faculty. However, results are in contrast with reports by Hsu and Roth, (1996) in Dominican Republic where environmental awareness was surveyed. The results revealed that students are mostly highly concerned, sensitive and perceptive of the most topics of environment as previous studies indicate limited subjects related to environmental subjects in their school curriculum in Iran (Yaghobi, 2003). Although the effects of public media in Iran were not surveyed, but public media may provide easier access to environment information for public. As reported in literature review by (Geok, 1998), high level of environmental awareness may come from the mass media or information obtained by students through their private readings. Regarding gender, the present study revealed no significant difference between both gender on environmental awareness and attitude, which contrasts with conclusions found by three previous studies. The conclusions in these studies were: that women have stronger environmental awareness and attitudes than men (Zelezny *et al*., 2000), women are more likely than men to state that current laws and regulations do not go far enough towards the protection of the natural environment (NEETF, 1998), and that women expressed greater concerns for the biosphere (Stern and Dietz, 1994). Environmental awareness among gender groups showed that there was no significant difference between male and female students. In fact, compulsory education for any children to attend school in Iran is required by the national constitution; hence their opportunity to obtain information is equal in any case. Furthermore, education is provided for all levels of the communities for free and even poor families have the chance to send children to school. Based on the obtained results, the above mentioned study shows that men and women have almost equal responses. This shows that there is no gender discrimination in Iran in pursuing studies and research and also the same scientific information is provided to both genders. In addition socially, both genders receive the same rights. Some researchers have achieved similar results; for example (Hyun, 2001; kumari, 2003) believes that despite the discriminations instructors regard male and female students have no different outcomes can be seen from the students. Having no significant difference between males and females due to the results of the mentioned researches proves that the level of learning and interest in environmental issues has no relation with gender. However, different genders can have identical reactions. Sex groups in this study revealed no significant difference which is indices of genders equal situation in scientific issues in Iran, as it has been discussed so far. Also the results, with regard to educational groups showed statistically significant difference with respect to total environmental awareness questions. The possible explanation is that the students who are studying in high level of education (PhD), due to their level of education and their age, are their chance to learn more is greater. In this study, overall environmental awareness showed that there was a significant difference in responding to the questions on environmental awareness among age groups. One of the major factors influencing environmental awareness in research projects is getting experience for the time that is spent. Hence, the impact of this learning in higher study levels and older group might have significant different effects compared to lower study levels and ages. The older age may receive this information from the media in validating the above findings, (Arduni, 2000; Strong *et al*., 1998; Yun, 2002; Chung *et al*., 2003; Sehat, 2000). Younger ages groups due to less experience and lower study levels may be receiving less information about the above subject than older age groups.

4.2. Environmental Attitude

The total environmental attitude score in this study showed that the overall mean for attitude score among respondents was 36.67 out of 50. This mean that, overall, results demonstrated that the university students in this study had a high level of environmental attitude among Iranian students. This high level of attitude may be due to media and influenced by their lifestyle, family. (Loon, 2004) in his study on measuring environmental literacy among students of Faculty of Science in Universiti Putra Malaysia indicated that more than 80% of all students had the high level of attitude, this may be due to the difference in their personality, influenced by their lifestyle and family and also may be due to the emphasis on in environmental attitude by the government and the media in this later years. Regarding to high of attitude among students, a possible answer can be seen based on report of DOE, 2004 in Iran, where it is likely influenced by the huge activity by NGOs as they have developed tremendously in the last decade in Iran. This finding is investigated by Geok (1998), Perkes (1973), Bogan *et al.* (1996). They indicated that in his study, environmental NGO's would have a bigger role to play in the building of environmental attitude. The increasing importance of NGO's like the Natural Society and the Council on the Environment is highlighted in Makani and Stengel (1995). As mentioned, the level of attitude in this study was high. It was observed that the students' attitudes tended to be strongly positive on environmental concerns. On the other hand, the respondents were more favourable when the environmental concerns were more specifically related to their lives. The reason for the above matter (highly agree attitude) may be the result of activities of newspaper, television, radio and magazine coverage of environmental issues in Iran and also the attention to these subjects by government and non-government organizations Geok (1998). Also the result among level of study groups showed that, there is no significant difference between the groups with regard to issue of attitude. The students have a high attitude about environmental issues. The high attitude among level of educations likely resulted from mass media and possibly NGO's function where they are very active in this issue. Furthermore, students may be active members of one of these NGOs and their attitude is reasonable as a result of their previous career. Richmond (1976) stated that 48.1% of the students chose private reading, the radio and television as their main source of environmental knowledge, awareness and attitude. The peak of attention to the environment coincides with a modern political era in Iran's history which happened through the elections in 1997 and a new government with good environmental attitudes came into power; hence more focus turned towards increasing environmental awareness and attitude. During this period the number of environmental NGOs (Non-Governmental Organizations) had a rapid growth from less than below 10 to more than above 1000 (Annual Report of Department of the Environmental Protection of Iran, 2004). Therefore, maybe these students grew up during the period of 1997. However some other studies are in contrast with our findings, ManZanal *et al*. (2007) and Sebasto *et al.* (2006) in their studies found that there are significant differences between studentsû environmental attitudes. Concluding their research, they stated that these differences possibly are due to different societies, age and educational levels. However, the same result was obtained about environmental attitude. The age groups showed significant differences in environmental attitude questions among the three groups. The older group (>40) has a higher attitude than the other two groups about environmental attitude. Based on an interpretation of Strong, (1998) older age group has more chances for learning due to their long life span.

5. Conclusions and Recommendation

The overall environmental awareness and attitude about environmental issues is moderate and high, respectively. In addition, the majority of the students had adequate awareness and attitude about environmental issues. In conclusion, with increasing students' environmental awareness and attitude, they increase their environmental views. Some of the findings in the present study gave a good indication of environmental awareness and attitude among students which may come from the media or private interest in environmental issues. Media should, therefore be used more intensively to facilitate the transmission of environmental information and promote more positive environmental attitudes. Lim (1995) provides a good description of roles played by the media in disseminating environmental news in Singapore. The environmental awareness and attitude of the students in this study showed that the increase of age and level of study regardless of gender differences have shown significant differences. The lack of difference in gender expresses the gender equality of Iranian students residing in Malaysia and the increase in the level of study and age show that the power of learning and experience helping them towards a better understanding and awareness of their environment. With regard to environmental attitude, without any significant difference, their environmental awareness is at a good level, since the

Iranian students under this research have not conducted any academic studies on environmental issues during their past and present education. Based on statistical results on stay period of students in Malaysia, there was no significant difference on above subjects. This variable (students' stay period in Malaysia) is not included in the objective of the current research, but it is measured as additional data for confirmation that, this information of students on environmental awareness and attitude may come from public media. Due to the quite short periods of residence of respondents in Malaysia, it is clear that the origin of their environmental awareness and attitude is the place where they had grown up. Since the beginning of the second half of the twentieth century and since establishing environmental organization, Iran is placed as a pioneer among the developing countries in protecting the environment. Environment protection had been fairly progressing until the start of war between Iran and Iraq in 1980 when attention to the environment decreased. This was due to devastation of the majority of ponds near the border but after the war development resumed and attention was drawn again to environment protection. The peak of attention to the environment coincides with a modern political era in Iran's history which happened through the elections in 1997 when a new government with good environmental attitudes came into power. Hence, the intensifying focuses towards increasing environmental awareness. During this period the number of environmental NGOs (Non-Governmental Organizations) experienced a rapid growth from less than 10 to more than 1000 (Annual Report of Department of the Environmental Protection of Iran, 2004). It seems that high environmental attitude together with the good awareness of Iranian students who grew up during the period of 1997 was possibly due to the media and the development of environmental NGOs. Although the attitude of the recent government (that came in power in 2005) towards environment has changed, the government seems to remain loyal to international commitments and environmental substructures of the country as the environmental has become a global issue. During the recent years, the number of Iranian students in Malaysia has significantly increased. Taking into consideration the good study conditions of Malaysia, this phenomenon is expected to continue and more students are expected in coming years. Hence, more research needs to be conducted to evaluate the environmental attitudes and awareness of these students.

In this study, we have found few research gaps that can be suggested for future research. Although this research came up with interesting findings but it is needed for monitoring research implementations. This research can be duplicated among other nationals who are pursuing their studies in Malaysia. We still need to know the media types which are effective in environmental awareness and attitude improvements. Media types vary widely and the decision makers need to decide and invest on the most powerful ones for social purposes and strengthen the weak point for improvement. Environmental issues are very sensitive and vital to the society as well as governors and decision makers as more knowledge is needed to help the earth to become more sustainable for future generations.

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Correspondence to
Dr. Azizi Muda
Department of Environmental Management
Faculty of Environmental Studies
Universiti Putra Malaysia
43400 UPM Serdang, Selangor
Malaysia
Tel: (603)8946 6735
Fax: (603)8943 8109
E-mail: azizi@env.upm.edu.my