

## Interaction Effects Between Age and Level of Education on Environmental Awareness and Attitude. Case Study: Iranian Students in Malaysian Universities

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**Abstract:** Student environmental awareness and attitudes as one of the components of the environmental education have been investigated for many respects. The present study reports to interaction effect of age and educational level on student's environmental awareness and attitude in Malaysian universities. 541 students were selected through the stratified random sampling technique out of 2200 students in 14 private and governments' university. Age groups were divided in three categories (17-25, 26-40, 40>) and educational groups were included (Bs, Ms and PhD). They were assessed using the Likret scale for environmental attitude and multi-choice with an option for environmental awareness. Results revealed that there is statistical significance the effect of age on overall environmental awareness for all the three levels of education groups (Bs, Ms and PhD). Result showed that increasing in age and levels of education have effect on increasing of environmental awareness and attitude.

**Key words:** Environmental attitude • Environmental awareness • Age • Educational level • Iranian Student

### INTRODUCTION

It is observed that degradation of environment mostly occurs due to destruction of natural environments. Now there is a cry all over for protection and preservation of such natural resources. This can only be possible if we have a right type of attitude towards such issues and if we have proper awareness in the related matters. This observation was previously reported [1] where even primary school teachers perform no to misconception about environmental topics. Today there is so many tools for increasing of awareness, knowledge and attitude about environment among schools, such as computer [2]. It is widely accepted that the development of such awareness and attitude can be possible through environmental education. Education is an important social instrument and means, which act as a catalyst in improvement of different aspects of life. Knowledge, awareness, skills, values and attitudes obtained through education help one to lead a desired quality of life [3]. The *Intergovernmental Conference on Environmental*

*Education* [4] 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 [5-9], not all authors agree upon the degree of importance of one objective over the other. However, there are reoccurring concepts that are mentioned frequently in the literature, specifically *awareness* and *attitudes* [9]. Environmental awareness, knowledge, attitude and commitment, are necessary to achieve environmental protection and restoration. The public must have a basic grasp of environmental problems [10]. 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. Age and education are two of the most explanatory variables related to environmental attitudes and awareness [11-20].

**Environmental Awareness and Attitude:** Regarding awareness, [9] 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.

These two components, attitude and awareness, play an important role on the impact students will have throughout their lives inside and outside the classrooms. The levels of attitude are important throughout the entire educational career [21]. Reflected upon the concept of forming attitudes in order to build on ecological literacy. This ecological literacy should not be interpreted as the knowledge of facts and concepts only, but the knowledge necessary to comprehend interrelatedness and an attitude of care or stewardship. Therefore “knowledge, the attitude of caring and a practical competence are the basis of an ecological literacy [22]. Some researcher emphasized the concept that awareness is the ultimate driving force that stimulates knowledge. The acknowledgement that an environmental problem exist entails being more cognizant of the facts about the state of the environment. This degree of environmental awareness involves a personal commitment to work to solve environmental problems. He emphasized the power behind the awareness factor by categorizing three levels of awareness as: basic belief of an environmental problem, factual and scientific knowledge and a commitment to solve environmental problems [10]. Awareness and knowledge of environmental processes and systems play an important role in EE [5]. Awareness was studied along with environmental knowledge and concern by [23]. In their study, the authors concluded that awareness and concern scores were significantly higher than knowledge levels in high school students. They linked this result with the fact that a primary source of environmental information is electronic media [24], where as awareness and concern can be picked up with little substantive knowledge. The studies showed that some demographic variables like age, education and gender have effect on environmental awareness and attitude. Some researcher compared young students (ages 11 and 12 years) with different levels of outdoor experience. They found a strong and clearly definable positive relationship to nature in those students with outdoor experiences, along with better social behavior and higher moral judgment.

They also developed self-confidence and a feeling of safety in outdoor activities [25]. Awareness, attitude, action skill and responsible environmental behavior were limited in this study due to the age factor. The effects of educational background and awareness as a component of environmental literacy have been studied recently [26]. A significance difference in attitude towards the environment was noted across groups of students representing various college majors. Literature review on gender difference in environmental attitudes and behavior. They concluded that women present stronger environmental attitudes and behavior than men; in addition to higher levels of socialization and social responsibility [27]. Four out of six studies that used *New Environmental Paradigm* from 1988 to 1998 found that females expressed higher NEP 1978 concerns than males and two studies showed no significant difference. The 1998 *National Report Card on Environmental Knowledge, Attitudes and Behavior* [24] reported that 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. In general, according to the tripartite classification presented by [20], women expressed greater concerns for the biosphere, other humans and their own well being. Also one of an important factors that has effects on Environmental awareness and attitude are educational levels, the effects of educational background and knowledge as a component of environmental literacy have been studied recently. A significance difference in attitude towards the environment was noted across groups of students representing various college majors. Some researcher believed that children’s concern for the natural world is lay in the background of surveys of adult environmental knowledge and concern [28].

A review of the literature suggests that awareness and attitude is paramount in the development of an environmental protection that fosters a social responsibility to the environment. In this study have found that other factors, such as age, gender and educational level, may play a role influencing the outcomes regarding EE.

**Methodology:** The questionnaire has three sections, that including demographic variable, environmental awareness and attitude. The questionnaire of awareness, which 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 [29] instrument, asking questions regarding the environmental issues. These instruments were evaluated among Iranian students in Malaysian universities. The instrument is including 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 [30]. The total score was computed by 15 questions that each question has 1 score so the total score were 15. If student had selected correct answer they were given 1 score on the otherwise will take 0 score (correct answer=1 and wrong answer=0). The environmental awareness questions were categorized according to the composite score including high, moderate and low. 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. 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) [31]. Environmental attitude was also categorized in three categories, low, moderate and high. 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. For data analyses, the frequencies were used to present the distribution of each variable value. For comparing the effects of two factor variables on one dependent variable, Univariate Analysis of Variance (Two Way ANOVA) was applied.

## RESULT

Analysis of the results is presented under the following question: What is the effect of age on environmental attitude and awareness for all the three levels of education groups (Bs, Ms and PhD). Research data were analyzed using Statistical Package for the Social Sciences (version 13.0).

**Age:** The groups of age in this study including (17-25, 26-40, >40) of students are shown in Table 1 Amongst 536 students, 60.7% (n=204) males and 39.3%, (n=132) females, that was shown the most of student are at 26-40 range of age; The mean age of respondents was 29.92 years and ranged from 17 years to 65 years. The mean age of male and female respondents was 30.09±SD 7.558 years and 29.63±SD 6.239 years, respectively.

**Educational Level:** Educational levels of students in this study including (Bachelor, Master and PhD levels) are shown in Table 10 Amongst 541 students, 61.3% (152) males and 38.7% (96) females were studying at bachelor levels 248 (45.8%). There was a higher percentage of males students 58.4% (n=97) in master degree and a higher percentage of male students 30.7% (n=84) in PhD degree.

### Interaction Effect Between Age Group and Educational Level on Environmental Awareness and Attitude

**Environmental Awareness:** A two way ANOVA between groups analysis of variance was conducted to explore the impact of age and level of education on environmental awareness. There was a statistically significant main effect for age groups (df=2, F= 4.538, p=0.011) and the effect size was small (eta squared=.018). Post-hoc comparisons using the Tukey HSD test indicate the mean score for the 17-25 (M= 9.60, ±SD= 2.831) was significantly different from the 26-40 (M= 10.58, ±SD= 2.610) and >40 years (M= 10.73, p= 1.981). Also there was a statistically significant main effect for levels educational level groups (df=2, F= 4.305, p=0.014) and the effect size was small (eta squared=0.017). Post-hoc comparisons using the Tukey HSD test indicated that Bs group was significantly different from PhD group. Ms group did not differ significantly from either of the other groups and the interaction effect (df=4, F= 2.820, p= .025 >α=0.05) was a statistical significance the effect of age on overall environmental awareness for all the three levels of education groups (Bs, Ms and PhD).

**Environmental Attitude:** Statistical test showed that, there was no a statistically significant main effect for age groups (df=2, F=1.0882, p= .338) and also there was no a statistically significant main effect for level of education groups (df=2, F=.256, sig=.774). The interaction effect (df=4, F=.881, p= .774 >α=0.05) did not reach statistical significance the effect of age on environmental attitude for all the three levels of education groups (Bs, Ms and PhD).

Table 1: Age Group of Students by Sex

Age Group	Sex					
	Male		Female		Total	
	No.	%	No.	%	No.	%
17-25	96	61.1	61	38.9	157	29.3
26-40	204	60.7	132	39.3	336	62.7
>40	30	69.8	13	30.2	43	8.0
Total	330	61.6	206	38.4	536	100

Table 2. Education Levels of Students by Sex

Educational levels	Sex					
	Male		Female		Total	
	No.	%	No.	%	No.	%
BS	152	61.3	96	38.7	248	45.8
MS	97	58.4	69	41.6	166	30.7
PhD	84	30.7	43	33.9	127	23.5
Total	333	61.6	208	38.4	541	100

Table 3: Two Way ANOVA Interaction Effect between Age and Educational Level on Environmental Awareness

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Age	59.548	2	29.774	4.538	.011	.018
Level of Study	56.480	2	28.240	4.305	.014	.017
ager * Level of Study	74.014	4	18.504	2.820	.025	.023

P<0 Level of significance (.05)

Table 4: Two Way ANOVA Interaction Effect between Age and Educational Level on Environmental Attitude

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Age	34.729	2	17.364	1.088	.338	.004
Level of Study	8.176	2	4.088	.256	.774	.001
ager * Level of Study	18.810	4	4.703	.295	.881	.002

P<0 Level of significance (.05)

**Discussion and Conclusions:** The purpose of this study was to evaluate of the interaction effects on environmental awareness and attitudes for the student’s profile.

**Interaction Effect Between Age and Levels of Education on Environmental Awareness and Attitude:** In this research, the number of BS group students is higher than MS and PhD groups. The bigger numbers of students were BS, compared with MS and PhD students. The possible reason for this observation is that in recent years, Malaysia has become more attractive for Iranian people especially youth to pursue their education aims where the

fees are cheaper, living costs are more reasonable and educational qualifications are acceptable worldwide. This increasing demand and interest made Malaysia almost the main and major target of applicants to study in Malaysia. Thus, there are bigger numbers of students in recent years. While university students are interested to study in Malaysian universities, normal pyramid of students indicates the bigger number of Bachelors. Entering into the university in Malaysia is not comparable to Iran where huge demand and very low enrolment room and capacity are available in Iran; therefore they prefer to study in Malaysian universities and they are in bigger numbers. This survey showed that there was interaction effect in

the age groups on environmental awareness for educational groups ( $F=2.820$ ,  $\text{sig}=0.025 < \alpha 0.05$ ). The result showed that higher ages and higher educational level achieved more scores on overall environmental awareness. Therefore older age and higher study level of students demonstrate higher awareness about environment. These findings are similar with another study [32].

The Table 4 indicates that in the overall comparison there is no significant difference the effect of age on environmental attitude for all the three levels of education groups (Bs, Ms and PhD). ( $df=4$ ,  $F=.259$ ,  $p=.881 > \alpha=0.05$ ). Therefore it could be concluded that the age and level of education is not significantly related to student's environmental attitude [31]. One of the major factors influencing environmental awareness and attitude in research projects is getting experienced against the time that is spent. Hence, the impact of this learning in higher study levels and high ages might have significant difference effects compared to lower study levels and ages. The older age may receive this information from the media in validating the above findings, [33-36]. Younger ages groups due to less experience and less study levels may be less receive information about above subject than older ages. The results also show that there is no significant difference between the groups with regard to attitude. The students have a high attitude about environmental issues. It is indicative of 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 [37] 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 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 below 10 to above 1000 (Annual Report of Department of the Environmental Protection of Iran, 2004). So maybe these students grew up during the period of 1997. However some other studies are in contrast with our findings, [38-39] in their studies achieved there is significant difference between students' environmental attitude as conclusion they stated that this difference possibly due to different societies, age and educational

levels. There is no enough subjects about environmental issues in school books, hence as conclusion the media affected positively the level of environmental awareness and attitude among respondents. Hence, it is needed for decision makers to take immediate action to improve the curriculum of the school, where necessary lessons of environmental issued can be added to the current curriculum [40].

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