The Effect of Gender, Field of Study and Parent's Literacy Level on Awareness Level in Environmental Issues in High Schools Students of Tehran

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Abstract: This paper was a survey on effect of gender, study field and parent literacy level factors of Tehran high school students on their awareness of environmental issues. The population of research consists of all the students of Tehran's high schools during 2009-2010 educational years. As there are 19 educational zones in Tehran, 3 zones were selected by stratified-random sampling. Then in each zone, one boy's and one girl's school were selected randomly. So 6 schools selected by total sample size of 382 students. A questionary designed on base of research goals. The questionary includes 38 questions which consists some necessary questions about student's family and some questions in student's awareness in environmental issues. Reliability of the questionary examined by Cronbache's alpha and the result was 0.78 which indicates that a reliable questionary is designed.

Key words: Awareness · Environment · Environment pollution · Permanent development

INTRODUCTION

Environment is one of the main pillars of sustainable development. In this regard, it is tried to lead development process in a way that whilst maximizing the value-added of economic activities, the nature order does not lose its equilibrium dynamism. The realities around us demonstrate that the Earth is undergoing environmental crisis. Diminish of forests, water and weather pollution, global warming and climate change, sea upheaval, dense urban and industrial waste, depletion of resources, rangeland degradation, biodiversity decline, ozone layer destruction and etc are instances of environmental crises which are currently witnessed in Iran now and later. Enjoying a healthy and clean environment is of particular significance for every person. Thus we can say that having a healthy and proper environment is the absolute right of all people in a society [1]. In this respect, having the following rights are imperative:

- The right to have information and knowledge.
- The right to participation.
- The right to express opinion.

To achieve sustainability in development and environment protection, we need environmental ethics; the ethics that identifies complex and changing relationships between human and nature and responds it sensitively [2].

In order for the emergence of such an ethics, the revision of educational methods and disciplines is essential. The governments and policy makers can undertake creating such new changes and methods in development and this issue may lead to improvement of world situation. However, these methods are only short term solutions, unless new trainings are given to youngsters throughout the world and this issue requires establishment of relationship between students and teachers, schools and society, educational system and the entire community. Deliberation to environmental educations for sustainable development is the topic that is being emphasized at all forums and declarations [3].

By considering the above mentioned facts, this research studied the effect of gender, fields of study and parental education variables on environmental knowledge level of high school students and accordingly it seeks to find out that:

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- Is gender affecting on the environmental awareness level of high school students?
- Is field of study affecting on the environmental awareness level of high school students?
- Is father's education affecting on the environmental knowledge level of high school students?
- Is mother's education affecting on the environmental awareness of high school students?

All the variables that are thought to have impact on increase or decrease of environmental awareness, including gender, field of study, parental education should be considered. Environmental education should be run in such a way that individual shall engage himself/herself in resolving the issues and heart of the matter and accordingly encourage creativity, sense of responsibility and commitment to make a better future. If environmental education is properly understood it would include a comprehensive training throughout the lifelong.

MATERIALS AND METHODS

This research was a basic study in terms of objectives and in terms of data collection method is among descriptive/field researches. In the present study, library and field methods were used to gather information. In field method, the researcher-made questionnaire was used and to access required information in research a questionnaire containing 38 questions was prepared using theoretical research bases and supervisor's comments. In order to assess the range of responses to surveys in questionnaire Likert scale was used in which five options; very low, low, moderate, much and very much have been taken into consideration. In this range rating points from 1 to 5 have been used for options. The reliability evaluation of the questionnaire was obtained by Cronbach's alpha coefficient $\alpha = 0.78$, which indicated appropriate reliability for this questionnaire.

Statistical Population: The examined statistical population in this study is all high school students in Tehran that are enrolled in (2009-2010) curriculum year.

Sampling Method: In this study, among the existing statistical population the method of classified random sampling was used. In Tehran Education discipline, 19 educational districts are divided into three categories based on cultural and economic levels.

Northern Districts:
□ Districts 1, 2, 3, 4, 5 and 6

Centric Districts:
□ Districts 7, 8, 9, 10, 11, 12 and 13

Southern Districts:
□ Districts 14, 15, 16, 17, 18 and 19

In this study, three districts were selected by draw and accordingly in these districts (3, 8 and 15) some schools were used randomly in this area to carry out the research. It is tried to use both girl students and boy students in every district.

Determination of Sample Size: In this research, the approach to determine sample size was calculated based on Morgan formula and the statistical sample size obtained is 382 students.

$$s = X^2NP(1-P) \div d^2 (N-1) + X^2P(1-P)$$

S = Number of required samples
X^2 = Table value of Chi-square with a degree of choice and desired reliability level (3.841)
N = Population size
P = Proportion of population (with the value of 0.50 the highest number of samples will be obtained)
d = Reliability level (0.05)

Statistical Method: The data of this study were analyzed generally in two descriptive and inferential levels using SPSS software. The analysis that have been carried out to describe above data, comprise indicators such as percentage, median, frequency, etc. and in inferential level chi-square test and independent t test and ANOVA were used.

RESULTS AND DISCUSSION

Descriptive Review of Demographic Data: According to Table 1 we observe that out of 382 students who responded to the questionnaire, 201 students are boys (52.6 percent of total) and 181 students are girls (47.4 percent of total). Mode (i.e. the common frequency) of gender variable is belonging to boys' category with 201.

Table 1: Gender variable

Group	Frequency	Percentage
Girls	181	47.4
Boys	201	52.6
Total	382	100

Table 2: Classroom variable of sample group

Class	Frequency	Percentage
1st year of high school	119	31.2
2nd year of high school	44	168.0
3rd year of high school	93	24.3
Not responded	2	0.5
Total	382	100.0

Table 3: Field of study variable of sample group

Field of study	Frequency	Percentage
Mathematics	101	26.4
Experimental Sciences	104	27.2
Humanities	67	17.5
General (without field of study)	110	28.8
Total	382	100.0

Table 4: Father's education variable

Degree	Frequency	Percent
Elementary	52	13.6
Secondary education	51	13.4
Diploma	78	20.4
Associate Degree	55	14.4
BA	79	20.7
MA	42	11.0
PhD	25	6.5
Total	382	100.0

Table 5: Mother's education variable

Degree	Frequency	Percentage
Elementary	59	15.4
Secondary Education	55	14.4
Diploma	82	21.5
Associate Degree	55	14.4
BA	76	19.9
MA	31	8.1
PhD	24	6.3
Total	382	100.0

Table 6: Descriptive statistics of gender and environmental awareness variables

Gender variable	Number	Mean	Standard deviation	Mean error
Boy	201	3.25	0.65	0.04
Girl	181	3.29	0.56	0.04

According to Table 2 which is related to classroom variable of sample group, we find out that among the respondents to questionnaire 119 students (31.2) are studying in 1st year of high school, 168 students (44) are studying in 2nd year of high school and 93 (24.3) are studying in 3rd year of high school. Also 2 students have not responded. Mode and median of this variable is the 2nd year of high school.

Table 3 shows that 101 students (26.5 percent of sample group) are studying in mathematics field, 104 students (27.2 percent of sample group) in experimental sciences and 67 students (17.5 percent of sample group) in Humanities. Also, 110 students (28 percent of sample group) did not offer a response.

Table 4 indicates that 52 persons (13.6 percent of sample) of students' fathers have primary degrees, 51 (13.4 percent of sample) secondary education, 78 diploma (20.4 percent of sample), 55 have Associate Degree (14.4 percent of sample), 79 have BA (20.7 percent of sample), 42 have MA (11 percent of sample) and 25 have (6.5 percent of sample) doctoral degree. Mode and median of sample education level is Bachelor, i.e. the highest degree of students' fathers (79 persons) and 50 percent of people with bachelor's degree.

Table 5 indicates that 59 persons (15.4 percent of sample) of students' mothers have primary degrees, 55 persons (14.4 percent of sample) secondary education, 82 persons Diploma (21.5 percent of sample), 55 Associate Degree (14.4 percent of sample), 76 persons BA (19.9 percent of sample), 31 persons MA (8.1 percent of sample) and 24 persons (6.3 percent of sample) doctoral degree. Mode and median of sample education level is diploma, i.e. the highest degree of students' mothers (82 persons) and 50 percent of people with diploma degree.

Inferential Review of Data

First Research Question: Is Gender Affecting on the Environmental Awareness Level of Tehran High School Students?: Table 6 presents the number of students, mean, standard deviation and error of mean of both boy and girl opinions regarding environmental awareness level of Tehran high school students.

The independent t-test that was performed to compare mean opinion of girls and boys students toward environmental awareness indicates that there is no significant difference between girls and boys opinions in this case. Observed t value (0.54) has (0.58) error rate. According to these results we can say that gender has no effects on environmental awareness level of high school students in Tehran.

Table 7: T test of Independent variable: gender/ Dependent variable: environmental awareness

Environmental awareness of high school students Variable

Variance with 0/95 reliability

Limit	Base limit	Mean error	Difference	Significance level	df	T	Sig	F
0.15	-0.08	0.06	0.03	0.58	380	0.54	0.16	1.90

Table 8: Descriptive statistics dependent variable: environmental awareness

Groups	Number	Mean	Standard Deviation
Math	101	3.27	0.61
Experimental sciences	104	3.27	0.54
Humanites	67	3.23	0.60
Total	272	3.26	0.58

Table 9: Results of one-way ANOVA test/ dependent variable: environmental awareness

Change resources	Total of squares	df	Mean of squares	F ratio	Significance level
Inter-group	0.07	2	0.03	0.11	0.89
Intra-group	269.00	93/33	0.34		
Total	93.40	271			

Table 10: Descriptive statistics of dependent variable: environmental awareness

Groups	Number	Mean	Standard Deviation
Elementary	52	3.38	0.77
Secondary education	51	3.31	0.61
Diploma	78	3.28	0.62
Associate degree	55	3.18	0.51
BA	79	3.22	0.57
MA	42	3.21	0.51
PhD	25	3.40	0.64
Total	382	3.27	0.61

Table 11: One-way ANOVA test results of dependent variable: environmental awareness

Change resources	Total of squares	df	Mean of squares	F ratio	Significance level
Inter-group	1.90	6	0.31	0.84	0.53
Intra-group	140.23	375	0.37		
Total	142.13	381			

Table 12: Descriptive statistics of dependent variable: environmental awareness of students

Groups	Number	Mean	Standard Deviation
Primary education	59	3.47	0.70
Secondary education	55	3.25	0.61
Diploma	82	3.20	0.56
Associate degree	55	3.20	0.52
BA	76	3.22	0.60
MA	31	3.32	0.65
PhD	24	3.33	0.63
Total	382	3.27	0.61

Table 13: One-way ANOVA test results of dependent variable: environmental awareness

Change resources	Total of squares	df	Mean of squares	F ratio	Significance level
Inter-group	3.41	6	0.56	1.53	0/16
Intra-group	138.72	375	0.37		
Total	142.13	381			

Second Research Question: Is Field of Study Affecting on the Environmental Awareness Level of Tehran High School Students?: The above table shows the number of students, mean and standard deviation of environmental awareness variable in Tehran high school students according to different disciplines. It is also marked that the total number of the students who have responded to this question is 272.

The above table shows that in one-way ANOVA, which is applied to compare the variances for environmental awareness level variable of Tehran high school students according to different fields of study, there is no significant difference between environmental awareness of Tehran high school students who have different fields of study. Since the observed F rate (0.11) has (0.89) error, thus field of study variable has no significant effect on environmental awareness of Tehran high school students.

Third Research Question: Is Father's Education Affecting on the Environmental Knowledge Level of High School Students?: Table 10 shows the number of individuals, mean and standard deviation of environmental awareness level variable of high school students in Tehran, according to different educational level of father.

One-way ANOVA test which was applied to compare the variances for environmental awareness variable level of high Tehran school students according to different educational level of father indicates that there is no significant difference between environmental awareness of Tehran high school students whose parents have different education level. In other words, since the observed F rate (0.84) has (0.53) error, father education variable has no significant effect on environmental awareness of Tehran high school students.

Fourth Question: Is Mother's Education Affecting on the Environmental Awareness of High School Students?: Table 12 also shows the number of individuals, mean and standard deviation of environmental awareness level variable of Tehran high school students with regard to mothers' different educational level.

One-way ANOVA test results show that there is no significant difference between environmental awareness levels of Tehran high school students that their mothers are different in terms of educational level. In other words, since the observed F rate (1.53) has (0.16) error, thus mother education level variable has no significant effect on environmental knowledge of Tehran high school students.

Considering the importance of human as the goal of development on the one hand and the environment as the ground of human activity on the other hand, the issue of the right to have healthy environment for current and next generation has become important and in such an atmosphere the role of education is considered as one of the most important key tools in realization of human development through which human, as the axis of development whilst obtaining new capabilities, can play active and influential role in development [4, 5].

Endangering the environment, degrading natural resource and polluting basic resources (water, soil and weather) are kinds of diseases which proper solutions should be found for their treatments. Prevention is regarded as the low-cost treatment. In the field of environment, like other social areas, education is considered as a way of preventing disease. Hence, the World Sustainable Development Summit has taken into consideration the 5 major axis known as WEHAB which stands for Water, Energy, Health, Agriculture and Biological diversity. According to these five issues, Johannesburg summit hopes to resolve problems such as poverty, production and consumption patterns, environmental degradation, threatening international peace and security and public health. From the Johannesburg summit perspective, achievement of these goals is pertaining to the existence of presumptions such as good governance and education [6, 7].

A realistic glance at Johannesburg Summit reflect the fact that taken measures in the field of education and contribution in the environmental arena are not sufficient or have not necessary integrity and sustainability. Hence, according to comprehensiveness of the issue of education for all and the need for adequate information and knowledge related to environment it is required to take coherent steps in this regard. Paying attention to this issue, that over eight years after World Summit in 2002 and despite the development of communications in 2010, still most of the people have little information regarding environmental issues and the authorities are also unaware of people's environmental problems is important and essential and this issue indicates the presence of weakness in system and the need to create measures for transferring such information to public and vice versa [4].

Now we are facing with this question whether having environmental awareness and knowledge can guarantee correct environmental behavior of individuals and principled protection approach of environment?.

On the other hand, another raised issue is that whether science is different from recognition? Whether knowledge necessarily leads to consistence? Science is a set of coherent, organized and systematic data in a particular subject, while consistence, firstly means that the person would believe in his/her knowledge. Secondly, this belief is a sincere issue, i.e. truth; thirdly, it is able to justify it [4]. In fact, the individuals when reach a science can also become the processor of science, know its application in real everyday life, i.e. when science is changed to become consistence, the person is not only familiar with the issue, but he/she is thoroughly dominant over it, he/she believes and uses it in everyday life, thus he/she will acquire insight. It means that when science became consistence, i.e. science is engaged with its habits, or will be leading to his/her in conscientious behavior that is the guideline of behavior [5, 6].

Consequently, knowledge is not only having literacy and science but knowledge is synonymous with understanding, perception, wisdom and reflection. Awareness implicates the consciousness toward environmental events or motives and consciousness to cognitive phenomena, such as memories, thoughts and physical sensations [7]. Therefore in other words, knowledge is a personal or private concept. Knowledge includes "personal information regarding the world, which is directly available to the person who owns it in such a way that is not available for others [8]. Science or formal documents and skills which are informal knowledge and consistence that is the processing ability all are interpreted as Bourdio cites as cultural capitals of individuals. He believes that human has different economic, social and cultural capitals [5]. But between these three sections, the cultural capital consists of all knowledge, internalized values, academic competence (science) which is in the form of academic documents and qualifications and family and social culture that the individual acquires from family and the environment in which lives. This section according to Bourdieu opinion is the main leader and controller of human behaviors that is known as Habitués and has more important role and effect toward the two other capitals in the form of thoughts, the kind of behavior and the form or style of human life.

Bernard Charlotte has evaluated the role of parents' knowledge in student academic achievement [9].

Bourdio and Jean-Claud [10] also identified the educational level of parents, which often is high in upper class families, effective on achievement of their children.

In fact, in Bourdio's explanation the unequal distribution of different capitals leads to uneven academic results of children.

Coleman and Sabouri [11] has conducted some researches on the role of social capital in connection with the students and the educational institution. He believes that different family structure develops different levels of social capital for children. It means that high social capital results in continuing education and academic achievement.

Noghani [12] has conducted a research titled the effect of inequality of cultural capital on academic achievement of students the findings of which are in agreement with Bourdio's opinion claiming the students who acquire greater cultural capital through family are likely more successful and accordingly have more chances to achieve high levels of education compared with the others. In addition, these findings suggest that the cultural capital and economic capital of family have the largest proportion in the success of students in high levels.

With observing Tables (4, 5) we find out that BA education for fathers or mothers has the highest percentage of frequency in research population. Besides, through tables (10-13) and the inferential results of data we find out that unlike all conducted theories and researches, parents' education have no significant effect on the level of environmental awareness of desired population and there is no difference between the amount of environmental awareness of students who have parents with lower literacy and the students who have parents with high level of education.

With observing tables (6 and 7) and the results obtained from data analysis we come to the conclusion that gender variable has no significant effect on the environmental awareness level of Tehran high school students and this issue has much space to be discussed why the environmental awareness level of girls because of placing in a special position of environmental management and their responsibility in education of children according to correct patterns of sustainable development in a near future will be similar to boys, while the cornerstone of this trainings should be taken place during study period before their attainment to other stages of life and these awareness would be extended in future.

The UN summit in 2006 titled women policy and environment also emphasizes the importance of this issue and women's leading role in promotion of environmental ethics, reducing resource wastage, reuse to decrease

disposal and emphasis on avoiding extreme application, also it implies that women have fundamental role in decision making for sustainable utilization. In addition, women's participation in environmental management to protect the environment at the local level, where environmental activities are decentralized, is very necessary and essential. Clean water supply, wind, solar and other renewable energy technology sources on behalf of governments are among the tasks that are governmental responsibility at national and local levels [13].

Zahedi, [14] in an article entitled systematic analysis of the role of women in prevention of environmental degradation and pollution expressed; it has not passed more than two decades from emergence of the new science "ecology" which considered the relationship between humans and the environment. After several millennia that humans have been continued to destroy nature, he finally realized destructive self of his actions and obtained the importance of this issue to some extent. Through this approach, the world witnessed the emergence of new science discipline that has interdisciplinary features and requests the assistance of other sciences such as physics, space, geography and anthropology, social, economic, political and administrative sciences. This article dealt with the relationship of management science and environment and common words among them and emphasized the unique role of women management to prevent degradation and environmental pollution.

With considering Tables (8, 9) and the results obtained from data analysis we come to the conclusion that field of study variable has no significant effect on environmental awareness of Tehran high school students. This result follows by this question that the students studying in experimental sciences field who have the most specific biological and environmental courses in terms of the level of environmental awareness have the same level of knowledge with other students studying in the field of mathematic & physics and humanities and this group of students have no significant difference with two other fields. Thus, these obtained results suggest two causes:

Firstly: Issues and lessons regarding the environmental needs in the formal education are not well developed according to different academic disciplines.

Secondly: Formal education in high school is not accountable toward environmental needs and increased up to date environmental awareness in this group of age.

CONCLUSIONS

This Result Can Demonstrate Three Basic Reasons

First: It indicates the parents do not themselves pay attention to environmental issues and knowledge gained by them (with high education) has not been converted to understanding and is not manifested in their lives and has not been converted to Habitués so that the students by observing accountable behavior of their parents towards environment be encouraged to obtain knowledge or proper environmental behaviors.

Second: This can indicate that the environmental education provided at school period (from elementary to college) of parents have been inadequate or inefficient.

Third: It can indicate this issue that parents (with high education) due to business and social engagements of machinery life are unaware of their children and are not able to transfer necessary knowledge through correct interactions with their children in this area.

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