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The investigation of the level of environmental awareness of students (Isfahan, Iran)

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Abstract

Since in many cases, knowledge and attitude of people affect their behavior, it's necessary to investigate the attitude and the knowledge of people in the society towards environmental issues. In a word, when the level of awareness and the attitude of people to the environment are known, it's possible to affect their behavior and functionality. To achieve this knowledge and to determine the level of sensitivity to environmental issues and to investigate the possibility of increasing the role of people in contributing to environmental planning, the present research which is descriptive- analytic and correlation in design, was conducted. The population of the present study consisted of students of secondary school in 5 districts of the city Esfahan. The data was gathered by a questionnaire with a sample size of 381 through Cochran formula using classified sampling method. In this population, along with the investigation of the level awareness of the students, the effects of other factors such as age and sex of the students, age and the level of education of their parents and also the relationship between the awareness of the students with the awareness of teachers and parents were investigated. The result showed that the students, teachers and parents have appropriate level of environmental information and this information is influenced by their sex and the educational level of their parents. There is a significant, positive correlation between the awareness of the students and the awareness of teachers and parents considering environmental issues.

Introduction

In today's world, environmental crises that human beings face such as global warming, the destruction of natural habitats, the decrease of natural sources, the increase of different sorts of pollution, the growth of population and some other cases which influence human life are not deniable (Joukar and Mirdamady, 2010; Omran and Aghamohamady, 2011). Regardless of their kind, these crises are limitless and worldwide and generally the existence of one causes the augmentation or existence of the other (Yildiz *et al*., 2011). It's known to everyone that environmental problems have negative consequence for human health in first step and in the next steps affects economical, social and cultural growth and development. Therefore, worries about environmental threats are increasing day by day. Actually, human activity and environmental changes are directly related, many human activities have negative consequences especially for human health and most importantly for children (Yildiz *et al*., 2011; Zsuzsanna, 2009). Therefore, all countries and nationalities should try to eradicate or at least decrease these consequences and reduce their destructivity (Yildiz *et al*., 2011). In other words, human being is doomed to accept the consequences of his negligence to nature and should try to reduce them. Considering the fact that the destruction of environment endangers the life of humans as well as all other living creature, many efforts have been taken nationally and internationally to solve this problem (Alp *et al*., 2006). However, many people, groups and governments in different social levels are still continuing their environmentally-distractive behavior in spite of being aware of the consequences of these crises (Haidarmakki *et al*., 2003).

Since these problems are just made by humans, the most effective solution for removing them is teaching in national levels and enhancing public culture and awareness as well as setting proper laws (Alp *et al*., 2006). In other words, we need to make environmental awareness a part of society knowledge. In this way environmental problems become public worries. The aim of environmental instruction is training a citizen who, both theoretically and practically, has supportive behavior toward the environment and avoids the destruction of it (Alp, 2008; Akomolafe, 2011). It seems enhancing knowledge and information in this field leads to a change in people's attitude, a change in individuals' functionality and behavior and finally a change in environmental policies (Arcury, 2008).

Since in many cases the knowledge and attitude of people influences their behavior, it seems necessary to investigate the attitude and public awareness of individuals in the society towards environmental issues (Frick *et al*., 2004). Knowing the level of awareness of people and their attitude to environment gives us the chance to influence their behavior, to achieve this knowledge and to determine the level of sensitivity of people to environmental issues and the possibility of increasing the role of people in contributing to environmental planning, the best and most appropriate way is using questionnaire (Yildiz *et al*., 2011). This instrument is used widely and in varying forms by many researchers (Frick *et al*., 2004; Yeldiz *et al*., 2011; Flamm, 2009; Arcury, 2008; Nath, 2007a; 2007b; Omran and Aghamohamady, 2011; Gillian, 2006) all around the world.

Here, the awareness and attitude of young generations has considerable importance; because they are those suffering from the consequences of environment destruction caused by us and they should find a proper solution for this problem. As future leaders of society and as supporters of the health of the environment as the only source which can satisfy human needs, it is necessary for all children and teenagers to know about the environment and how human activities lead to its destruction and the decrease of its quality. Children and teenagers should learn about their responsibilities to the environment that they can decrease or eradicate the problems (Nath, 2007a). In other words, restoration of

natural resources and environment should start with basic instruction of children to cause public contributing in this field. This is the most serious and most effective way of battling against the destruction of nature (Joukar and Mirdamady, 2010).

Today environmental issues are of considerable importance in our country and environmental instruction can have a great effect on enriching environmental culture and achieving the goal of sustainable development (Joukar and Mirdamady, 2010). Therefore, investigation of the level of awareness of the youth and their attitude is of considerable importance because of two reasons: first in order to improve their behavior and second to get a basic level to start the instruction from. Studies of this sort which use questionnaire as an instrument to investigate children's and teachers' attitude to environment have been numerously conducted (Zsuzsanna, 2009; Alp *et al.*, 2006; 2008; Joukar and Mirdamady, 2010; Haidarmakki *et al.*, 2003; Akomolafe, 2011; Negev *et al.*, 2008; Astalin, 2011).

In this research a questionnaire was distributed among students of secondary school in Esfahan to learn about the level of their information and to investigate the effect of factors such as sex, the educational level and age of their parents. Moreover, the relationship between students' information and the information of their teachers and parents was investigated. The aim of the research is to find out about the following questions:

- How much information about environment do students of secondary school in Esfahan, their parents and their teachers have.
- Do factors such as the sex of the students and the level of parents' education have any effects on the level of the awareness and information of the students toward the environment.
- Is there a correlation between the environmental awareness of students with the environmental awareness of their teacher and parents.
- Is there any difference between students' knowledge about different parts of environment.

Materials and methods

Study Area

The location under the present study is the city Esfahan which is a historical-touristy city in the center of Iranian plateau with the characteristics of northern 32° and 39 min and eastern 51° and 40 min.

Methods

The method used in the present study is descriptive-analytic and the data was gathered by a questionnaire having 34 items in Likert scale. The questionnaire consists of four parts: 1-The recognition of the parts of environment 2-The recognition of environmental pollution 3-environmental attitudes 4-The attitude toward protecting the environment. The questionnaire was prepared for two groups of students and teachers and parents in two different wordings.

The population of this study consist of all secondary school students, both boys and girls, in five academic districts of city Esfahan consisting of 30084 boy students and 31250 girl students. Through using Cochran formula and considering the population, sample size was estimated 381. In the present research, finally 390 students (186 girls and 204 boys) were chosen through classified sampling. Also 570 parents (235 mothers and 235 fathers) and 120 teachers (62 female and 58 male teachers) were tested to investigate the level of their awareness with the students' level of awareness. To make sure of the validity of the questionnaire, after preparation of the final form, it was given to some expert in the field and some ordinary individuals and the mean of their ideas were applied in the questionnaire to make it acceptable in terms of its validity. The reliability of the questionnaire was measured 0.91 through a pilot test on 30 students using Cronbach's alpha.

Analysis of data

To analysis the data of present research, Mann-withney, Kruskal-wallis, Wilcoxon tests, correlation and regression were used.

Results

The results show the level of the awareness of groups to environment (the means of students' answers and teachers/parents answers to 34 items) is appropriate and this level is the highest for teachers ($p<0.0001$). Moreover by analyzing the answers of the groups, it was found out that totally 87% of girls, 90.8% of boys, 88.3% of mothers, 90.2% of fathers, 99.6% of female teachers and 98.3% of male teachers answered over 3.4 which indicates that the level of their environmental awareness is higher than average (Table 1). In Fig. 1 the mean of the answers of different groups to 34 items of the questionnaire is shown.

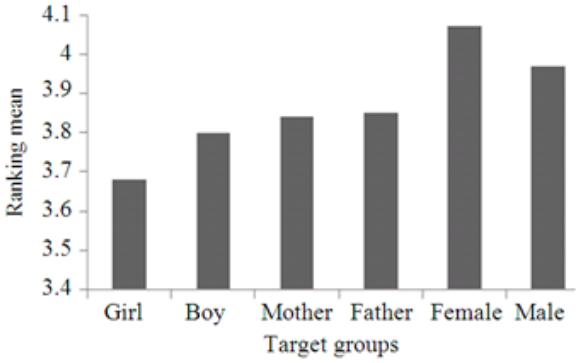

Fig. 1. Average ranking level of awareness toward environment in different groups.

Table 1. The mean of the ranking of the awareness of the groups under study to environment.

	Students		Parents		Teachers	
Target group	Girl	Boy	Mother	Father	Female	Male
Number	198.00	204.00	235.00	235.00	62.00	58.00
Answers average	3.68	3.80	3.84	3.85	4.07	3.97
Total average	3.74		3.8		4.02	

1-1.8 very little, 1.8- 2.6 little, 2.6-3.4 average, 3.4-4.2 much, 4.2-5 very much

To investigate the difference between the awareness of girl students and boy students to environmental issues Mann-withney test was used. The results show there is a significant difference between the awareness levels of these two groups in 1% level ($p<0.01$). Also it was found out that boys are more aware of girls in this regard (Table 2 and Fig. 2).

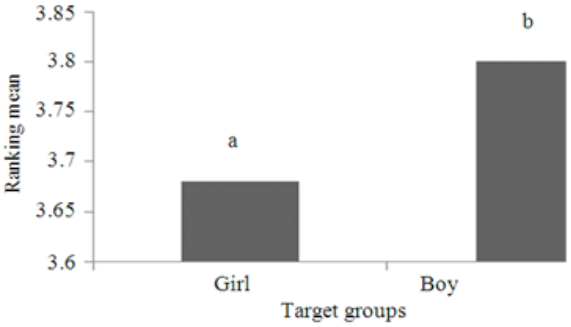

Fig. 2. The comparison between environmental awareness of girl and boy students.

Table 2. The results of Mann-withney test, the investigation of the difference between the awareness of girl and boy students.

Target group	Mean rank	Number	P-value
Girls	172.24	186	0.000**
Boys	216.25	204	

The results of Kruskal-Wallis test for investigating the existence or lack of existence of a significant difference between the students in five academic districts of the city showed there is no meaningful relationship between the level of students' awareness to environment and the district they study in ($p>0.05$) (Table 3).

To investigate the effects of parents' educational level on students' awareness Kruskal-wallis test was used. To this end, four educational groups of 1-under diploma 2-diploma and associated degree 3-bachelor degree and 4-the post graduated degree were formed. The results of the test indicate that students are

affected by the educational level of their parents considering environmental awareness ($p<0.01$) (Table 4 and 5). The results of the test for fathers' education is in Fig. 3 and for mothers' education in Fig. 4.

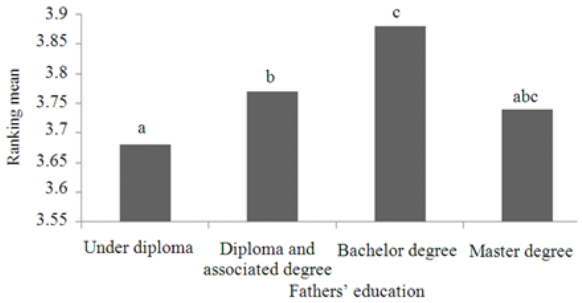

Fig. 3. The investigation of the difference between the awareness of students based on the educational level of their fathers.

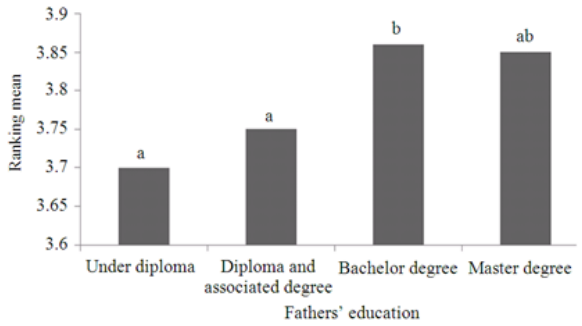

Fig. 4. The investigation of the difference between the awareness of students based on the educational level of their mothers.

Table 3. The results of Kruskal-Wallis, the investigation of the difference between student's answers to 34 questions in five academic districts of the city.

Groups	Mean rank	Number	X^2	P-value
District one	194.02	45	7.037	0.134
District two	220.98	51		
District three	204.23	84		
District four	196.11	126		
District five	171.17	84		

Figure 3 shows as the educational level of fathers increase to bachelor degrees, the awareness of students' toward environment increase as well, however there is no meaningful difference between the answers of students whose fathers have high educational degrees and the others ($p>0.05$).

Table 4. The results of Kruskal-wallis, the investigation of the difference between students' answers to 34 questions based on the level of their fathers' education, df = 3.

Group	Mean rank	Number	X^2	P-Value
Under diploma	66.15	143	21.396	0.005**
Diploma and associated degree	192.75	166		
Bachelor degree	230.07	49		
Master degree	184.11	19		

Table 5. The results of Kruskal- wallis, the investigation of the difference between students' answers to 34 questions based on the level of their mothers' education, df = 3.

Group	Mean rank	Number	X^2	P-Value
Under diploma	167.52	136	10.379	0.05*
Diploma and associated degree	182.58	176		
Bachelor degree	214.89	41		
Master degree	219.56	9		

Figure 4 shows environmental awareness of students whose mothers have bachelor degree is higher than other groups and there is no meaningful difference between the answers of the students whose mothers have post- graduate degrees and the rest of the students ($p>0.05$).

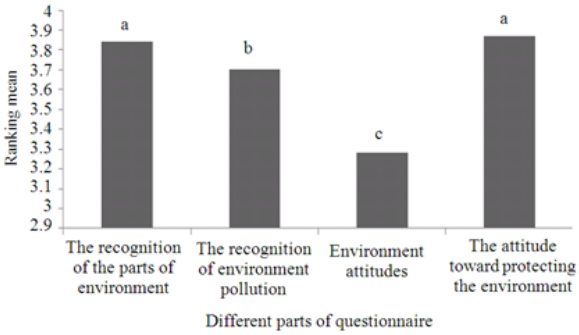

Fig. 5. Difference between students' answers to four different parts of questionnaire.

In order to investigate the difference between the answers of 235% with 390 students, Mann-withney test was taken use of. The results of the test are in Table 6, there is a meaningful difference between students' and parents' awareness in 1% level.

To investigate the relationship between the level of parents' awareness and students' awareness and to find out if students' awareness is influenced by their parents, a correlation test was used for 235 students' and parents (the means of father's and mother's answers was calculated and stated under the name parents). The results show there is a 22% positive correlation between students' answers and their parents' answers (Table 7).

Table 6. The results of Mann-withney test, the investigation of the difference between the awareness of students and parents.

Group	Mean rank	Number	P-Value
Parents	348.77	235	
	0.000**		
Students	291.44	390	

Table 7. The results of spearman correlation tests, the investigation of the relationship between students' and parents' awareness.

Group	Number	P-value	Correlation coefficient
Students and their teachers	235	0.000**	0.22

In order to investigate the difference between the answers of 62 female teachers with 186 girl students and 58 male teachers with 204 boy students, Mann-withney test was taken use of. The results of the test are in Table 8 and 9 and show there is a meaningful difference between students' and teachers' awareness in 1% level.

The means of the answers of all students and the means of the answers of all teachers in the same school were calculated and a correlation test was run for 10 schools of girls and 9 schools for boys and all together in 19 schools (since a teachers in one school for boys were not willing to collaborate), to investigate the relationship between environmental awareness of the students and environmental awareness of their teachers. The results of the correlation test which can be seen in Table 10 show the correlation between students' and teachers' awareness is meaningful and students answers and teachers' answers are up to 69% dependent.

Table 8. The results of Mann-withney test, the investigation of the difference between the awareness of girl students and female teachers.

Group	Mean rank	Number	P-Value
Female teachers	182.19	62	
	0.000**		
Girls	105.27	186	

Table 9. The results of Mann-withney test, the investigation of the difference between the awareness of boy students and male teachers.

Group	Mean rank	Number	P-Value
Male teachers	158.91	58	
	0.002**		
Boys	123.71	204	

To investigate the difference between students' answers to four different parts of questionnaire, a Kruskal- Wallis test was used. The results show that there is a significant difference between students' awareness about different issues of environment (Table 11). Figure 5 depicts that the level of awareness about recognition of the parts of environment and the attitude of children toward protecting the environment are higher than other parts. The second highest part is the recognition of environmental pollution and third one is environmental attitude.

Discussion

The results obtained by comparing the means of the answers show the level of environmental awareness of students, teachers and parents in all the five districts

of the city Esfahan is rather high (Table 1). Hadipour and shakouri (2004) conducted a similar research study in the city of Arak and found out the level of the information of the people of that city about environmental issued was low which is contradictory to the findings of the present research. This difference can be justified by considering geographical locations of the two cities and the times when the studies were conducted; because since 2004 there have been more and more environmental instructions in media and schools and also Esfahan, as a metropolis, has more facilities for environmental instructions.

Table 10. The results of spearman correlation test, the investigation of the relationship between students' and teachers' answers to all 34 questions.

Group	Number	P-value	Correlation coefficient
Students and their teachers	19	0.025*	0.697

Table 11. The results of Kruskal-wallis, the investigation of the difference between students' answers to four different parts of questionnaire, df = 3.

Different parts of questionnaire	Mean rank	Number	X^2	P-Value
The recognition of the parts of environment	908.09	390	240.911	0.000**
The recognition of environmental pollution	786.12	390		
environmental attitudes	490.40	390		
the attitude toward protecting the environment	937.39	390		

Zsuzsanna (2009) conducted a research on the awareness of Hungary children about their environmental and concluded that about 70% of children have good environmental information. However the level of students' awareness was low in a research by Alp *et al.*, (2008) but these students had a positive attitude to environment.

The results also showed the level of environmental awareness of teachers is higher than the others two groups of students and parents. The same result was obtained through research studies by Hadipour and Shakouri (2004) on the level of awareness of different groups. Omran Aghamohamady (2011) conducted a research on the teachers in Mazandaran province and evaluated their level of environmental awareness appropriate. Since teachers have higher educational levels and are instructor of children must have more information about all issues. Therefore they have higher information about environment too.

By investigating the level of students' awareness toward environment in different educational district, it was found that the level of awareness is the same in all five districts and there is no significant difference between them which can be considered a positive point and indicates the equality of facilities and academic opportunities as well as the similarity of instructions and instructors in all districts of the city.

The results showed boys have higher environmental awareness in different district of the city than girls. In a study on the investigation of the factors contributing to children's environmental awareness, Azadani *et al.*, (2011) reported boys' higher environmental awareness compared to girls. Also, Astalin (2011) in a study of environmental awareness among high school students in India has found out a similar conclusion. In a similar study by Alp *et al.*, (2008) under the title "A survey on Turkish elementary school students' environmental friendly behaviors and associated variable" the effect of sex on students' attitude was proved. However, in another study by Alp *et al.*, (2006), sex was proved to have no role. Yildiz *et al.*, (2011) mentioned that sex is not an important factor in environmental awareness. In a study on the importance on biodiversity, Lindemann and Bose (2007) state that for women biodiversity is more important than men. Still, in another study with Junge (2009), the same researcher concludes sex doesn't have any effects on the tendency to biodiversity. Again the same researcher in another

study on familiarity with the word Lindemann and Bose (2008) states there is no difference between girls and boys in their familiarity with this word. As it can be seen from the findings of these research studies, there is no pattern for considering a difference between environmental awareness of boys and girls in the present research can be justified by the fact that boys generally benefit from a higher level of confidence and are better at fitting their information in the questions they are asked. The cultural difference between boys and girls in the society cannot be ignored too; as boys have more freedom to go out and face different natural phenomena which leads to their higher environmental information. This difference cannot be found in other countries.

The results indicate that students' environmental awareness is influenced by their fathers' level of education. When the level of education of fathers increases, especially up to bachelor degree, the level of awareness of the students also increases. The same results can be seen in a study by Varkaneh (2003) on the awareness and attitude of students of high school in Tehran. Alp *et al.*, (2008) also found out the awareness of students is influenced by their fathers' educational level.

According to the results of this research, the level of students' awareness is also influenced by the level of their mothers' education. Here again by increasing the level of education, especially up to bachelor degree, an increase in awareness level occurred. Varkaneh (2003) reports a relationship between the levels of awareness of high school students in Tehran with the education level of their mother. Parents who have higher education have higher levels of information to transfer; as in research studies by Yildiz *et al.*, (2011), and Omran *et al.*, (2009) it has been approved that as educational level of individuals increase their awareness to environmental issues also increase. To justify the lack of significant difference among the students whose parents have post-graduate degrees, it can be said that higher education probably leads to more activities and therefore such parents don't spend enough time for their children. Similar to the findings of this research, Haidarmakki *et al.*, (2003) reports a relationship between parents' education and attitude of students toward environment. However, in a study by Akomolafe (2011), parents' education is reported non-effective in children's attitude.

Correlation test for the relationship between students' awareness and parents' awareness showed only 22% of students' awareness depends on their parents' awareness. Iranian children spend most of their time at home and with their parents; they learn most of the things from their parents and are under direct influence of them. Therefore, it can be concluded that family can be a good start for increasing the awareness of children to environment. Haidarmakki *et al.*, (2003) also found a relationship between students' attitude to environment and parents' role.

In addition, the correlation test showed there is a meaningful relationship between teachers' awareness and students' awareness and 69% of changes in students' answers are justifiable by changes in teachers' answers. This shows that children learn many things including environmental issues from their teachers. So it can be concluded that by increasing teachers' information about environment, the level of information and awareness of students can be increased. In other words, if schools benefit it from more knowledgeable teachers about environment, the level of awareness of students is expected to rise.

Finally it was shown that the students' awareness about recognition of the parts of environment and students' attitude toward protecting the environment are higher than other parts. Similar to this research Joukar and Mirdamady (2010) and Varkaneh (2003) found out that the attitude of high school students in Shiraz toward protecting the environment is positive. Regarding to recognition of the parts of environment, we can conclude that this result is caused by high levels of education about environmental components

in the curriculum or television programs and animations. Also, Increasing publicity and public education in the media and in the city can be a factor in increasing students' sensitivity towards environmental protection.

Conclusion

As it was mentioned, instruction about environment is of vital importance. So these instructions should be on top of educational plans. According to the results of studies which have been done in this field, there is a significant difference between environmental awareness and behavior of the individuals. Moreover, many research show depict that only practical information lead to proper behavior in the field of environment, it's suggested that student's practical information be increased through special tours of nature exploration as well as their theoretical information.

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