

Comparison of Science High School, Fine Art School and General High School Students' Environmental Consciousness and Their Attitudes Towards Environment

Abuzer AKGÜN¹ and Kamile GULUM

Adiyaman University, Educational Faculty, ALTINŞEHİR-ADİYAMAN, TURKEY

Abstract

In this study, the purpose is to compare 10th grade science high school, fine art school and general high school students' attitudes towards environment in Adiyaman. These three high schools are different in terms of their educational and foundational missions. 212 students from science high school, fine art school and general high school have participated in this study. In this study, scale named attitudes towards environment, which was developed by Gökce for determining the elementary school students' attitudes towards environment, was used after modification of the items. Likert type survey was used in this study with the 0.67 Cronbach alpha value. Research data were presented by number, percent distribution, arithmetic mean, t-test, and one-way ANOVA to compare attitudes towards environment points. Attitudes towards environment were considered with reflect to school, department, and gender. According to the findings of the research, students in general high school had greater attitude scores and have more positive attitudes towards environment comparing to students in fine art high school and science high school. It was also observed that students in social science departments and girls had more positive attitudes comparing to students in science and Turkish-Mathematics (TM) and boys respectively.

Keywords

Attitudes towards environment, High school students, Environmental education

Introduction

According to Sungertekin's (2001) definition, environment is sum of the physical, chemical, biological and social factors which may have direct or indirect effects, occurring either immediately or in some duration of time, on people activities and live creatures. With the most general meaning, environment, which is defined as place in which live and unlive objects affecting each other, has effects on human life. Any changes in the environment will affect the human life directly. Since human life is a product of the place where it exists, natural or manipulated changes in the environment will affect whole live actions in that place (United Nations Environment Program:1987)

Air pollution has been increasing paralleling to rapid rate of increase in the world population, unplanned industrialization, unhealthy urbanization, nuclear trials, and local wars, pesticides to increase agricultural fertility, unnatural fertilizers, and chemicals like detergent. As a result of this, pollution in the air, water, and soil reached at the dangerous levels for all live creatures.

¹Tlf:+90 416 223 2210/1025-1119; Fax:+90 416 2231987; E-mail: aakgun@adiyaman.edu.tr

Specifically nowadays, as a result of development in the science and technology while human being are taking the environment under control, they cause many environmental problems such as unhealthy urbanization, unplanned industrialization, pollution in the air, water, and soil, erosion and desertion, noise and even visual pollution.

In order to draw attention to and find an international solution for environment problems, a conference named "human environment" was organized by United Nations in Stockholm 1972 (DPT:1994). In order to solve problems, after United Nations environment declaration in 1975 with Tiflis declaration, expansion of United Nations Environmental Education Program (UNESCO-UNEP) as including all nations was accepted (DPT:1994).

As a matter of fact, reasons for environmental problems consisted of life style of human being, fast consuming habits, luxury and comfortable living desires and values and attitudes towards environment. Therefore, education which changes perspectives of people about environment and shapes values and attitudes towards environment plays an important role (Nazlı et all. :2007). Growing individuals who are sensitive about environmental issues became very essential in order for the new generations to live in a healthy and secure environment. Forming positive attitudes and values is possible with environmental education (Erten:2000). Making people, who are effective in existence of environmental problems, be conscious about responsibilities they have can only be possible with an effective environmental education (Altın, Bacanlı and Yıldız:2002).

Steps of environmental education were listed by Association of North America Environmental Education as:

- 1- Developing an interest and sense towards environment,
- 2- Teaching the process of natural system,
- 3- Forming positive attitudes towards and values about environment,
- 4- Making people gain active participation skills,
- 5- Making people gain experiences in solving environmental problems (Naaee: 1994).

While providing environmental education

When environmental education is given two important matters should be considered. First one is environmental consciousness and the second one is environmental applications and the things that can be accepted as common (Chawa, L:1992). According to Yucel and Morgil (1999) environmental education not only is to provide information about environment but also making people to gain attitudes and behaviors for securing and developing the environment. Environmental education should aim to grow motivated people who know biophysical and socio-cultural environment, their problems and aware of their capabilities to solve the problems. According to The North American Association For Environmental Education, environmental education and its purpose is an interdisciplinary study area which aims to develop knowledgeable citizenship about environment which are natural or formed by human being. In addition, environmental education should aim to develop questioning, problem solving and determination skills. In this way, it should provide high quality life standards by preparing high quality environmental formation.

According to Sungertekin (2001) the most important purpose of the environmental education is to make child to be aware of her environment and its problems and to make child to adapt environment and develop security instinct. In the report of DPT special environment commission, the purpose of the environmental education was stated as making people to gain permanent, sensitive and positive attitude changes, securing natural, historical and esthetic values and making people to participate in these applications actively (DPT:1994).

In the foundation of environmental education positive attitudes towards environment play important roles. Although there are many studies investigating the students' behaviors and attitudes towards environment, studies in high school level are limited.

Gezer et. all (2007), in their study to investigate general high school, Anatolian high school and Vocational high school students' attitudes towards environment, found that general high school students' attitudes scores were greater than others. They also found that girls had more positive attitudes than boys.

Gokce et all. (2007) investigated the elementary school students' attitudes towards environment regarding to some independent variables such as gender, level of academic success, parents' level of education, and economic level of the family. They found that while students attitudes differentiated regarding to gender and level of academic success, they did not differentiate regarding parents' level of education, and economic level of the family.

Aslan (2008) investigated attitudes of 525 students who were in grade 7 and 8 and coming from different socio-economic status. Although they did not find any statistically significant difference, they stated that they found some differences in sub-dimensions.

Uzun and Saglam (2007) have investigated the effect of the course "environment and human" and the voluntary environmental organizations on students' attitudes towards environment. According to research results, there was a statistically significant difference on attitudes between students who took the course and who did not take the course in favor of students who took the course. They also found that there was no statistically significant difference on attitudes between students who actively participated in the voluntary environmental organizations and students who did not participated.

Yılmaz et all. (2004) investigated the elementary school students' attitudes towards environment regarding to gender, level of education, and socio-economic level. They found that girls had more positive attitudes than boys.

Ekici (2005) in his study found that high school students' attitudes towards environment differed with regard to gender, grade, and lower and upper socio-economic status of the school where students attended. They also found that the students' attitudes did not differ regarding to the type of high school they were attending.

Atasoy (2005) in his dissertation study, investigated the 6th, 7th and 8th grade students' attitudes towards environment and their knowledge about environment. He found that there was a statistically significant difference between attitudes of 6th and 8th grade students.

Cabuk and Karacoglu (2003), in their study, found that there were some differences between university students' environmental sensitivity regarding some personal features.

Sama (2003) investigated the preservice teachers' attitudes towards environment regarding to gender, grade level, program they attend, type of residence area where they lived longest, fathers' level of education and occupation, economic level of family. He found that girls had more positive attitudes towards environment than boys.

Tosunoglu (1993) in his dissertation found that education level of family has great effect on attitudes towards environment and he also found that girls have more positive attitudes than boys.

Akis (2000) in his investigation in North Cyprus found that there are statistically significant relationships between the environment consciousness and some independent variables such as age, level of education, residence of area being native or immigrant.

Görümlü (2003) investigated the high school students' sensitivity about environment and environmental problems. Sensitivity of high school students was found to be moderate degree. Results of the research indicated that only few students participated to activities of a voluntary environment organization with the purpose of saving the environment.

Aim of this study is to investigate 10th grade science high school, fine art school and general high school students' attitudes towards environment in Adiyaman. Around the mentioned main purpose, answer to the question whether there is any relationship between students' attitudes and variables such as gender, school, department.

Purpose

In this study, the purpose is to compare 10th grade science high school, fine art school and general high school students' attitudes towards environment in Adiyaman. These three high schools are different in terms of their educational and foundational missions.

Materials and Method

Sample

Sample of this study consists of 212 grade 10 students from a science high school, a fine art high school, and a general high school in the city of Adiyaman.

Data Gathering

This study was conducted by using descriptive scanning model. A survey was given in order to determine students' attitudes towards environment.

While forming the attitude statements in the survey, 9th and 10th grade geography, chemistry, physics and biology curriculums were investigated, aims about environment were determined and necessary student acquisitions were considered. Survey consisted of 17 items, which were determined by literature review and modified, with 4 negative statements. For the content validity, expert opinions were taken. Each item in the survey has 3 categories (Agree, Neutral, and Disagree). Positive statements were scored as 3-2-1 and negative statements were scored as 1-2-3. The points obtained from the survey are between 19 and 95 theoretically. Cronbach-alpha value was found as 0.67. Survey was applied in 2008-2009 academic year.

Analysis of Data

SPSS-11.0 (Statistical Package for the Social Science) package program was used in the analysis of the data. In the analysis of the obtained data, t-test and one-way ANOVA techniques used for comparison between group means besides some descriptive statistics such as percentages, frequencies, arithmetic mean. Independent t-test was used to determine differences regarding gender and one-way ANOVA was used to determine differences regarding types of high schools. Scheffe and LSD (Least Significant Difference) tests were used to determine between which groups the pre-determined differences exists after variance analysis. Whether participants' attitudes differ or not regarding to gender, type of school and department they were attending was investigated and findings were presented in tables. Significance level of the measure found to be 0.05 in statistical analysis.

Findings

Attitude survey was filled out by 212 students. The survey forms were reviewed carefully and no forms having discrepancies found. Therefore all the forms were used in the analysis. Of the students participated in this study 109 (45.2%) were female and 103 (42.1%)

were male. Whether participants' attitudes differ or not regarding to gender, type of school and department they were attending was investigated. Points of students' attitudes towards environment were given in table 1.

Table 1. Points of Students' attitudes towards environment.

N	Minimum	Maximum	\bar{X}	S
212	17,00	51,00	43,62	4,84

As seen in the table 1, arithmetic mean of the points that participants took from the survey measuring their attitudes towards environment is 43.62. It can be said that students' attitudes points towards environment was good. Standard deviation of the obtained points was found to be 4.84. The minimum point obtained was 17 and maximum point was 51.

Gender

Arithmetic mean and standard deviation of participated high school students attitude points regarding to gender were computed, and difference between arithmetic means controlled with the use of t-test.

Table 2. Result table according to t-test for High school students attitude points regarding to gender.

GENDER	N	\bar{X}	S	t	Sd	P
Female	109	45.2661	4.55754	4.347	210	0.008*
Male	103	42.1650	5.78724			

$P < 0.05$

As seen in the table there is 4.3 point difference between points of girls and boys in favor of girls considering the students attitude points regarding to gender. As a result of t-test which was done to test whether this difference is statistically significant or not, t value was found to be statistically significant ($t_{210} = 4.347; p < .05$). According to this result, it can be said that girls attitudes towards environment were higher than boys.

In order to find out whether there is a difference between schools regarding to gender, t-test was done. According to t-test result, it can be said that girls had more positive attitudes towards environment.

Table 3. Results of t-test for Science High School students attitudes towards environment regarding to gender.

GENDER	N	\bar{X}	S	t	Sd	P
Female	33	43.6364	2.83745	2.095	84	0.006*
Male	53	41.7170	4.75709			

$P < 0.05$

As seen in the table there is 2.095 point difference between points of girls and boys in favor of girls considering the science high school students attitude points regarding to gender.

This difference was found to be statistically significant ($t_{84} = 2.095; p < .05$). According to this result, it can be said that girls attitudes towards environment were higher than boys.

Table 4. Results of t-test for Fine Art High School students attitudes towards environment regarding to gender.

GENDER	N	\bar{X}	S	t	Sd	P
Female	27	45.3333	3.66900	1.714	41	0.041*
Male	16	42.3750	7.64962			

P<0.05

As seen in the table there is 1.714 point difference between points of girls and boys in favor of girls considering the fine art high school students attitude points regarding to gender. This difference was found to be statistically significant ($t_{41} = 1.714; p < .05$). According to this result, it can be said that girls attitudes towards environment were higher than boys.

Table 5. Results of t-test for General High School students attitudes towards environment regarding to gender.

GENDER	N	\bar{X}	S	t	Sd	P
Female	49	45.7143	2.93684	2.841	81	0.015*
Male	34	42.7647	6.36781			

P<0.05

As seen in the table there is 2.841 point difference between points of girls and boys in favor of girls considering the fine art high school students attitude points regarding to gender. Since this difference was also found to be statistically significant, it can be said that attitudes of girls in all high schools towards environment were higher than boys. This result is an agreement with the results of other studies mentioned above.

Table 6. Results of ANOVA test of students attitudes towards environment regarding to school type.

Source of Variance	Squares of Total	Sd	Average of Squares	F	P
Between Groups	198.317	2	99.158	4.361	0.014*
Within Groups	4751.735	209	22.736		
TOTAL	4950.052	211			

P<.05

Table 7. Results of Scheffe test about students attitudes towards environment regarding to school type.

Groups	The average of difference	SS	P
Science High School- General High School	-2.0525	0.73368	0.021*
Science High School -Fine Arts High School	-1.7791	0.89056	0.139*
Fine Arts High School- General High School	0.2735	0.89591	0.954*

P< 0.05

As seen in the table there is a statistically significant difference ($p < .05$) between students attitudes towards environment regarding to school type. In order to find out between which schools this difference exists, Scheffe test was done. Results of Scheffe test were given in table 7.

As seen in table, difference between general high school students and science high school students is significant in favor of general high school students. The difference between fine art high school students and science high school students is significant in favor of fine art high school students. Difference between schools, according to results Scheffe test, shows that general high school students have more positive attitudes than students in other high schools.

Table 8. Results of ANOVA test of students attitudes towards environment regarding to departments in schools.

Source of Variance	Squares of Total	Sd	Average of Squares	F	P
Between Groups	307.099	4	76.775	4.243	0.010*
Within Groups	4642.953	207	22.430		
Total	4950.052	211			

$P < 0.05$

As seen in the table there is a statistically significant difference ($p < .05$) between students attitudes towards environment regarding to departments in schools. In order to find out between which schools this difference exists, LSD test was done. Results of LSD test were given in table 9.

Table 9. Results of LSD test about students attitudes towards environment regarding to departments in schools.

Gruplar	Avarage difference	SS	P
Music Department- Science Department	2.9361*	1.17506	0.013*
Social Department - Science Department	2.6238*	0.97361	0.008*
TM Department- Science Department	2.2090*	1.01538	0.31

$P < 0.05$

As seen in table, difference between students in music department and science department is significant in favor of students in music department. The difference between students in social science department and students in science department is significant in favor of in social science department. The difference between students in TM (Turkish-Mathematics) department and students in science department is significant in favor of in students in TM (Turkish-Mathematics). Difference between schools, according to results Scheffe test, shows that general high school students have more positive attitudes than students in other high schools. No significant difference between students in visual art department and other departments was found. However it was found that students in social science department have more positive attitudes towards environment comparing to students in other (TM and science) departments.

Results and Discussion

With this study, in the city of Adiyaman, attitudes of 10 grade students from three different high schools towards environment were tried to be determined. It was investigated whether students attitudes towards environment differed regarding to gender, school type, departments in school. The minimum point students obtained from attitude survey was 17 and maximum point was 51. Arithmetic mean of the points that participants took from the survey measuring their attitudes towards environment is 43.62. Considering this value, students attitudes towards environment can be said to be high and positive (table 1). This result is in agreement with the results of other studies conducted in this field. Gezer et. all (2007), in the study investigating high school students' attitudes towards the environment, found that although high school students had positive attitudes towards environment, there were some differences between schools. Aslan et. all (2008), Cabuk and Karacaoglu (2003), Ekici (2005). Having positive attitudes towards environment is an important feature to take preclusions for future environmental problems from now.

According to results, arithmetic mean of girls attitude points was found to be 45.2661 and boys attitude points was found to be 42.1650. therefore it was observed that gender is an important variable determining the attitudes towards environment. This result was supported by many researchers. Similar results were obtained in research conducted by Gezer et. all (2007), Tosunoglu (1993), Sama (2003), Gokce et all. (2007), Yılmaz et. all. (2004), Köse and Erol (2006). Considering the status of women in society and the roles they will play, girls higher attitudes towards environment can be said very important.

When arithmetic means of students' attitude points were investigated regarding to school type variable, it was observed that general high school students had more positive attitudes comparing the science high school students and fine art high school students. According to educational system in Turkey, students were placed in science high schools according to their academic success on mathematics and sciences. Students were placed in fine art high school according to their skills in drawing and music. Students can attend general high schools without any examination or skill. In this study it was impossible to explain why students in science high school and in fine art high school had lower attitude points comparing to students in general high school with the obtained data. Similar study was conducted by Gezer (2007) and similarly it was found that students in general high school had higher attitude points comparing to students in Anatolian high school and vocational high school. Cabuk and Karacaoglu (2003) stated that there were some differences between students' sensitivity about environment regarding to some personal features. When high school students attitudes towards environment were investigated regarding the department they attended in their schools, it was observed that attitude points of students in social science department of general high school were higher than attitudes points of students in other departments (science, TM, Music). However, no significant difference between students in visual art department and other departments was found. Difference between departments was seen as important variable. It is thought that this may be because of students taking various courses.

Implications

A healthy, clean and livable environment is everybody's common right. Being able to leave a livable world to new generations is directly related to people's positive attitudes and behaviors towards environment now. Developing positive attitudes and behaviors towards environment and gaining efficient knowledge about environment are only be possible by an

effective environmental education. In this study, attitudes of students in three different high school towards environment were determined and the variables that have effects on these attitudes were investigated. As a result of this study following implications were made.

Making individuals to develop positive attitudes and behaviors towards environment and to gain efficient knowledge about environment, environmental education should be considered as lifelong educational program starting from preschool education.

Individuals' attitudes towards environment should be identified and environmental education should be given considering these attitudes in order to grow individuals who have positive attitudes towards environment and the environmental issues.

Courses about environmental education in current educational programs should be reorganized comprehensively and effectively in order for students develop positive attitudes.

When designing the curriculum, subjects about environmental issues in the courses should be planned as applied lessons. For this purpose trips should be organized to the places in close range. With these trips, students can transform their theoretic knowledge into behavior easily (Eschenhagen, Kattmann and Rodi:1998).

In-service teachers who did not take any environmental education training should be given in-service training as soon as possible on this matter in order for them to be able to develop environmental consciousness. Passing the unknown information on somebody else is impossible.

While teaching the subjects about environmental issues, teachers should make their students perceive the importance of environment for human being.

Environmental problems are not only threatening the existence of human being but also are transforming the world into an unlivable place. Therefore, saving the environment is not only environment educators' job. In all of the courses, teachers should try to make connections between subject matter of the course and the environment.

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