

## Secondary Education Students' Thoughts and Behaviours Towards Environment (Karabük Sample-Turkey)

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**Abstract:** In this study it is aimed to investigate the secondary education students' attitudes towards the environment in relation with some variables (gender, grade level, learning field). A total of 394 secondary school students in the 2010-2011 academic year participated in the study in the province of Karabük (Turkey). As means of data collection "*Environmental Attitude Scale*" developed by Uzun and Sağlam (2006) was used in this research in the frame of survey model. In the analysis of data, besides descriptive statistics, t-test and one-way variance analysis was used. According to the results of the study, scores related to students' environmental thought were high but environmental behavior scores were low. Environmental thinking of the students showed significant difference in scores by gender whereas environmental behavioral scores did not show significant differences by gender. Students' scores related to both thought and behavior showed significant differences in grade levels and fields of learning variables. Some precautions should be taken to increase the secondary students' attitudes towards the environment.

**Key words:** Environmental education • Environmental attitudes • Secondary education

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### INTRODUCTION

Today, environmental problems have reached significant proportions. It is accepted and proposed by many researchers that the real cause of environmental pollution is the rapid industrialization and the increase of the world's population. Global warming, unplanned urbanization, rapid depletion of natural resources, holes in the ozone layer depletion, acid rains, the greenhouse effect, the increase of solid wastes, nuclear contamination, reduction of green areas, extinction of plant and animal species, nuclear pollution, desertification, loss of productive soil by erosion, extinction of plant and animal species are the major environmental problems in question today.

All of these environmental problems both threaten human existence and make our world uninhabitable. One way of stopping this large disaster is to give up the accustomed thoughts and behavior of people now and in the future. Therefore, people have to find solutions to the present environmental problems without losing any time. Today, environmental problems are not the problems that can be solved only with the technology or the law [1].

"Attitude" defined by [2] as "a dynamic state of emotional and mental preparation that has the influence

over all the objects and situations which are related to the individual's behavior and experiences". The attitude for environment can be defined as "learned trends indicated in the form of consistent positive or negative attitudes towards the environment" [3]. "*Environmental attitude*" can be defined as "all the positive or negative behaviors and thoughts of individuals towards the environmentally beneficial solutions such as fear, anger, unrest, value judgments and readiness to the solutions of environmental problems" [4].

In general, people's attitudes towards the environment begin to develop at a very young age. According to some researchers, to raise a student's environmental knowledge helps him/her in developing a positive attitude towards his/her environment. According to some researchers participation of students to environmental courses increased their responsible behavior for the environment and realised environmental problems around whereas some others think that a lot of life experience is effective in that [5].

Each new problem emerged in relation to environment affect people and communities more. It is known that irresponsible behavior is the basis of many environmental problems. Therefore, the major aim of the environmental education should be raising up responsible people

sensitive to environmental behavior. Therefore, it is required that people should be made aware and educated about the environment and environmental issues. It is an issue that all people need to feel responsible to protect the environment. Educational institutions and educators carry most of the responsibility to undertake the task of raising the conscious and qualified people.

Because education can be considered to be the most effective means of building up individuals' responsibility to the environment. Environmental education is a life-long interdisciplinary approach to environmental education with the aim of developing a world population with a conscious and knowledge that will contribute to the solution of existing environmental problems and related matters and prevent the formation of new ones having the necessary qualifications related to their skills, attitudes, motivation, personal and social duties and responsibilities. The aim of environmental education is not only to inform about the environment but also to protect the environment and develop the attitudes and behaviors through environment. Environmental education aims to educate individuals who are aware of how to solve problems related to bio-physical and socio-cultural environment and motivated to gain the necessary skills with knowledge that may contribute to solve those problems [6-11].

**The Purpose of the Study:** It is a known fact that educational activities are important in permanent approaches through solutions of environmental problems. To educate conscious and sensitive individuals about environment, appears to be the most effective way to solve these problems. It is required to Inform individuals about the environment and give them a positive attitude to make changes in their behavior. In this context, it is emerging how important education is in solving and preventing environmental problems. Success in this issue depends on forming positive attitudes and behavior, in the members of the society. It is beyond doubt that Individuals with negative attitudes towards the environment would be insensitive to environmental issues and will continue to cause problems for the environment. training of school-age students is of great importance in the process of raising individuals who are sensitive to the environment. When it is thought that not all the students will have university degrees, the importance of secondary education is indisputable in terms of raising equipped students on environmental issues before university. Therefore it is possible to say that the quality of "environmental education programs" taken as basis in the

secondary education is equivalent to the quality of the proposed education [12,13].

With the increasing environmental problems, the importance of environmental education is of vital importance everyday and it is so significant to detect the students'attitudes towards the environment and the necessity of finding solutions to the emerging problems. When the importance of human role in solving environmental problems to be taken into account, the necessity of being conscious of individuals about the environment and related issues is clearly arisen. In this respect, the role of education and environmental attitudes can not be ignored. Studies to determine people's attitudes and education through environment and related issues are insufficient. The original research in these areas will be beneficial to solve the problems.

In spite of the multitude of environmental problems in Turkey, related studies are very limited. This study about the students'attitudes towards the environment according to some variables is significant in terms of illuminating a less studied topic in our country. In addition, this research is important for contributing in improving the secondary school students' sensitivity and knowledge to the environment and being a sample for similar studies. The overall objective of the study is to determine, the secondary school students' attitudes towards environmental issues. Within the framework of the general purpose of this research, the problem statement and sub-problems were formed as:

**Problem Statement:** What are the secondary education students' attitude and thought levels towards environment?

**Sub Problems:**

- What are the secondary education students' environmental thought levels?
- Do the secondary education students' environmental thought levels have significance according to "gender" variable?
- Do the secondary education students' environmental thought levels have significance according to "grade level" variable?
- Do the secondary education students' environmental thought levels have significance according to their "field of study" variable?
- What are the environmental behavior levels of secondary education students?
- Do the secondary education students' environmental behaviour levels have significance according to "gender" variable?

- Do the secondary education students’ environmental thought levels have significance according to “grade level” variable?
- Do the secondary education students’ environmental thought levels have significance according to their “field of study” variable?

**Method:** This research is a general survey model. Survey models are the approaches describing the interaction between attitudes by taking current events relations and conditions at an earlier event into account. General survey models are the arrangements of the scan carried out on all of the universe or a group of sample taken from it or carried on samples in a universe composed of many elements [14].

**Study Group:** Secondary education students participated in the research from Karabük city (Turkey) in the first term of 2010-2011 academic year. The study sampling was formed randomly. Personal information of the research students was shown in Table 1.

As seen in Table 1, the participants of the research are 394 students. 222 of these students are boys and 172 of them are girls. Among the research participants; 127 students are 9th grade students, 84 students are 10th grade, 129 students are grade 11 and 54 students are 12th grade students.

**Data Collection Tool:** The survey used to determine secondary school students’ environmental attitudes was developed by [12]. The scale with 27 expressions was prepared according to five measures as “I definitely agree”, “I agree”, “I have no idea”, “I disagree” and “I definitely disagree”. Environmental attitude scale was handled and evaluated as two sub measures (*Environmental Behaviour Sub Scale* and *Environmental Thought Sub Scale*).

Environmental Behaviour Sub Scale was consisted of factors such as “*Environmental Interest*”, “*Environmental Sensitivity*” and “*Environmental Conscious*” whereas Environmental Thought Sub Scale was consisted of “*Environmental views*”, “*Environmental Pollution*” and “*Environmental Problems*” factors.

The researchers that developed the scale found the Cronbach Alpha Reliability Coefficient of Environmental Thought Sub Scale as  $\alpha= .80$  and Environmental Behaviour Sub Scale Coefficient as  $\alpha= .88$ . The reliability and validity studies of this measuring tool were determined before and it was decided to be used in this study in accordance with the views of two expert academicians on geography education field.

**The Analysis of The Data:** The data gathered through the research process was evaluated through “*SPSS 15.0 for Windows*” programme. Secondary education students’ views related to environmental attitude scale arithmetic average and Standard deviation values were used. In order to determine whether there is a significant difference or not according to “gender” variable “*independent samples t-test*” was used. In order to determine whether there is a significant difference or not according to “grade level” and “students’ fields of study” variables “*one way variance analysis (ANOVA)*” was used. At the end of the analysis, when there is significant difference “*Tukey test*” was used to determine which group or groups indicated the difference.

**Findings**

**Secondary Education Students’ Environmental Thought Levels:** The arithmetic mean and standard deviation values of secondary education students’ views towards environmental thought scale were given in Table 2 below.

Table 1: Personal information of the research students

		<i>f (n=394)</i>	<i>% (100.0)</i>
<i>Gender</i>	Boys	222	56.3
	Girls	172	43.7
<i>Grade Levels</i>	Grade 9	127	32.2
	Grade 10	84	21.3
	Grade 11	129	32.7
	Grade 12	54	13.7
<i>Students’ Fields of Study</i>	Social Sciences	68	17.3
	Turkish-Maths	95	24.1
	Sciences	96	24.4
	Other	135	34.3

Table 2: The arithmetic mean and standard deviation values of Secondary Education students' views towards environmental thought scale

No	Statements in the Scale	$\bar{x}$	Ss
1	The extinct living things are being exaggerated too much, there are many species in nature already, some of them may be extinct it is not important.	4,27	1,33
2	Building luxuries roads instead of spending money for historical places is more useful for our country.	4,57	,788
3	Erosion is not seen in our country any more.	4,29	,843
4	Pesticides used in agriculture are useful for environment.	4,49	,762
5	There is no point in selling deforested areas for evaluating it as an income to the state	4,32	1,23
6	The state should give permission to the touristic buildings in the forests and National Parks	4,16	1,25
7	To build houses swampy areas should be dried and buildings should be built there.	4,62	,791
8	Human waste is not a problem because the environment cleans itself.	4,47	1,01
9	There is no danger of Ozone layer in Turkey because there are holes over America.	4,50	1,06
10	Putting off the lights when living the room does not provide so much energy save.	4,60	,797
11	There is so much water in the nature that human beings cannot pollute.	4,07	1,35
12	Consumption of natural resources is important for our future.	3,31	1,56
13	One of the major problems of Turkey is irregular urbanization.	3,89	1,36
14	Continuous heating of our globe may cause disasters in the future	3,98	1,49

Table 3: T-test results of secondary education students' environmental thought scores and "gender" variable

Gender	N	$\bar{x}$	Ss	sd	t	P
Male	222	58.12	7.98	392	-2,313	,021*
Female	172	60.08	8.84			

\*p<0.05

Table 4: The ANOVA results of secondary education students' environmental thought scores according to grade levels

Source of variance	Sum of squares	df	Mean square	F	P	Significant difference
Between Groups	3615.411	3	1205.137	19.418	.000*	Grades 9-11
Within Groups	24204.427	390	62.063			Grades 10-11
Total	27819.838	393				Grades 11-12

\*p<0.05

Arithmetic mean of environmental thought scale is 4.25. This value is between the choices "I agree" and "I definitely agree" of the average. This result shows that students have a *positive* level of attitude in terms of environmental thought. The statements with the highest average are 7, 10, 2 and 9th items in order. It can be said that students are aware that houses should not be built in swampy areas, saving electricity is important and the holes in the ozone layer is risky for Turkey. Besides, the points that students took from "Consuming natural resources rapidly is important for our future" item are at a very low rate. This finding means that students do not have positive thoughts about the importance of natural resources.

**Do the Secondary Education Students' Environmental Thought Levels Have Significance According to "Gender" Variable?:** In order to determine whether there is a significant difference or not between secondary education students' environmental thought scores and "gender" variable, *independent samples t-test* was used and the results of the analysis were indicated in Table 3.

When table 3 was examined, secondary education students' environmental thought scores show significant difference according to "gender" [ $t_{(392)}=-2,313;p<05$ ]. This finding can also be commented as there is a meaningful relation between secondary education students' environmental thought score levels and "gender" variable.

**Do the Secondary Education Students' Environmental Thought Levels Have Significance According to "Grade Level" Variable?:** Whether there is significant difference between secondary education students' environmental thought scores and their grade levels was determined by "One way variance analysis (ANOVA)" and the results of the analysis were shown in Table 4.

When table 4 was examined secondary education students' environmental thought scores show significant difference according to "grade levels"  $F_{(3,390)}=19,418;p<0.05$ . This finding can also be interpreted as there is a meaningful relation between secondary education students' environmental thought score levels and "grade levels". "Tukey test" was applied to determine

Table 5: The ANOVA results of secondary education students' environmental thought scores according to their fields of study

Source of variance	Sum of squares	df	Mean square	F	P	Significant difference
Between Groups	7477,176	3	2492,392	47,783	,000*	Social Sciences-other
Within Groups	20342,661	390	52,161			Turkish, Maths-other
Total	27819,838	393				Science-other

\*p<0.05

Table 6: Arithmetic mean and standard deviation values of secondary education students' views on environmental behaviour scale

No	Statements in the Scale	$\bar{x}$	Ss
1	I watch the TV and radio programmes about environment	2,87	,983
2	I follow the developments about environment from the daily newspapers.	2,48	,933
3	I watch the documentaries about environmental issues.	2,97	1,13
4	I read books about environment out of lesson books.	2,06	,930
5	I follow the popular magazines about environment	2,44	1,49
6	I follow the scientific articles about environment	2,23	1,09
7	I warn a person that harms nature without hesitation	3,38	1,43
8	I would like to be volunteer in the activities about the cleanliness of environment when organized.	3,30	1,28
9	My friend knows me as sensitive to the environment	3,53	1,21
10	I may work for a long time for a liveable environment when necessary	3,04	1,39
11	I share my knowledge with my friend about environment	3,15	1,29
12	I am careful about buying something a recycling	3,16	1,29
13	I prefer the products unhamful to the environment even they are more expensive	2,77	1,30

which grade levels indicated the difference. According to the results of the test there is significant difference between 11th grades and other grades.

**Do the Secondary Education Students' Environmental Thought Levels Show Significance According to Their "Field of Study" Variable?:** Whether there is significant difference between secondary education students' environmental thought scores and their fields of study was determined by "One way variance analysis (ANOVA)" and the results of the analysis were shown in Table 5.

When table 5 was examined secondary education students' environmental thought scores show significant difference according to their "fields of study" [ $F_{(3,390)}=47.783; p<0.05$ ]. This finding can also be interpreted as there is a meaningful relation between secondary education students' environmental thought score levels and their fields of study. "Tukey test" was applied to determine which grade levels indicated the difference. According to the results of the test there is significant difference between 9th grade students who did not choose any field of study and (Social Sciences, Turkish, Maths and Science) other fields.

**Environmental Behaviour Levels of Secondary Education Students:** Arithmetic mean and standard deviation values of secondary education students' views on environmental behaviour scale are given in Table 6 below.

Arithmetic mean of environmental thought scale is 2,88. This value is between the choices "rarely" and "sometimes" so this result is evaluated as students have a *semi-negative* level of attitude in terms of environmental behaviour. The statements with the highest average are 11, 7 and 8th items in order. According to these statements it can be said that students can treat with a feeling of responsibility to the people damaging the environment and participate in the activities about environment. Students took the highest scores from the items 4, 6 and 5. Besides these results that students get the benefit of popular magazines, articles and books at the lowest levels was understood from the following statements which took the lowest scores.

**Do the Secondary Education Students' Environmental Behaviour Levels Have Significance According to "Gender" Variable?:** Whether there is significant difference between secondary education students' environmental behaviour scores and their gender was determined by *Independent t test* and the results of the analysis were shown in Table 7.

When table 7 was examined secondary education students' environmental behaviour scores do not show significant difference according to *gender* [ $t_{(392)}=,381; p>05$ ]. This finding can also be interpreted as there is not a meaningful relation between secondary education students' environmental behaviour levels and their gender.

Table 7: Independent t test results of secondary education students' environmental behaviour scores according to "gender"

Gender	N	$\bar{x}$	S	sd	t	P
Male	222	37.59	9.68	392	,381	,703*
Female	172	37.23	8.51			

\*p>0.05

Table 8: ANOVA results of secondary education students' environmental behaviour scores according to their grade levels

Source of variance	Sum of squares	df	Mean square	F	P	Significant difference
Between Groups	1427,306	3	475,769	5,851	,001*	Grades 9-10
Within Groups	31713,732	390	81,317			Grades 10-12
Total	33141,038	393				Grades 11-12

\*p<0.05

Table 9: ANOVA results of secondary education students' environmental behaviour scores according to their fields of study

Source of variance	Sum of squares	df	Mean square	F	P	Significant difference
Between Groups	802,709	3	267,570	3,227	,023*	Social sciences-science
Within Groups	32338,329	390	82,919			
Total	33141,038	393				

\*p<0.05

**Do the Secondary Education Students' Environmental Behaviour Levels Show Significance According to "Grade Level" Variable?:** Whether there is significant difference between secondary education students' environmental behaviour scores and their grade levels was determined by "One way variance analysis (ANOVA)" and the results of the analysis were shown in Table 8.

When table 8 was examined secondary education students' environmental thought scores show significant difference according to their "grade levels" [ $F_{(3-390)}=5,851; p<0.05$ ]. This finding can also be interpreted as there is a meaningful relation between secondary education students' environmental behaviour score levels and their grade levels. "Tukey test" was applied to determine which grade levels indicated this difference. According to the results of the test there is significant difference between 9th and 10th grades, 9th and 12th grades and 11th grades and 12th grades. That there is more emphasis on environmental issues and acquisition of more knowledge on environment through the upper grades may cause this difference.

**Do the Secondary Education Students' Environmental Behavior Levels Have Significance According to Their "Field of Study" Variable?:** Whether there is significant difference between secondary education students' environmental thought scores and their fields of study was determined by *One way variance analysis (ANOVA)* and the results of the analysis were shown in Table 9.

When table 9 was examined secondary education students' environmental behaviour scores show significant difference according to their "fields of study" [ $F_{(3-390)}=3,227; p<0.05$ ]. This finding can also be interpreted as there is a meaningful relation between secondary education students' environmental behaviour scores and their fields of study. "Tukey test" was applied to determine which grade levels indicated this difference. According to the results of the test there is significant difference between the students studying social sciences and the students studying science. This may be arisen from the different emphasis of environmental issues in the students' lessons in relation with their fields of study.

## RESULTS AND DISCUSSION

The arithmetic average of secondary education students' replies to the environmental thought scale is 4,25. This result indicates that students have a positive attitude in terms of environmental thought. The arithmetic average of secondary education students' replies to the environmental behaviour scale is 2,88. According to this result it can be inferred that students have a semi-negative level in terms of environmental behaviour.

84 % of the research students extinct living things are important for our world, 90% of them erosion is still active in our country, 91% of them pesticides used in agriculture are harmful to the environment, 85% of them deforested lands should not be sold, 77% touristic buildings should not be allowed in national parks and forests by the state,

88% swampy areas should not be dried to build houses, 84% the ozone layer is risky for Turkey and 84% of the students stated that the waste is an important problem for the environment.

There are researches supporting the findings of this research at secondary education level. Some of them are given; in his study [4] pointed out that secondary education students have a semi-positive performance in terms of environmental knowledge and environmental thought and a semi-negative attitude towards environmental behaviour. In their studies [15] stated that secondary education students have positive attitudes towards environment. In their study they stated that in students' developing environmental conscious written and visual media is important.

In their studies [16] stated that secondary education students' level about environmental issues is not at an ideal level. In their studies, [5] stated that a ten day environmental science course improved high school students' conscious. [17, 18] high school students have positive and high level of attitude towards environment however they have lack of knowledge about environmental problems. In his study [19] pointed out that teaching with active learning method in the teaching of environmental issues increase the students' success. [20] stated that high school students' sensitivity towards environment is at medium level and they have conceptual misunderstandings about environment and their attitudes towards environment did not show significant difference according gender variable. [8] pointed that secondary education students' perceptions and sensitivity towards environment education and solid waste is varied in terms of their places of living, schools, grade levels, their following newspapers and watching documentaries on ecology. Also the students that were successful in the test about the related theme were more sensitive than the students that were unsuccessful in the same test.

71 % of the research students stated that the increasing temperature of our globe (global warming) would cause disasters. [21-28] reached the same conclusions in their studies.

Most of the research students pointed out one of the major problems in Turkey as irregular urbanization. [10, 29] stated that "*rapid increase of population*" is an important environmental problem. One of the major factors of environmental problems in Turkey is regional rapid population increase and migrations. Because rapid population increase prevents taking precautions about environment. In relation with the population increase and migrations houses and dwelling areas are chosen

randomly close to the city center. Agricultural lands historical and touristic are almost invaded and pieces of land are grabbed. As a result natural areas with high economic values and historical and cultural sources are being captured. Being industrial facilities and dwelling areas in the same areas inclines the negative conditions more. In the infrastructural activities in the areas that was opened to dwelling without conscious and planning, natural and artificial environment is harmed to a great extent during these activities [30-32].

The research students pointed out that the diminishing of natural resources is crucial for their future. In their studies [10, 29] found out the greatest environmental problem in the world as "over use and unconscious consumption of natural resources".

A majority of the research secondary education students replied as they did not follow daily events about environment, did not watch documentaries about environment, did not read books about environment, did not follow popular magazines and scientific articles and did not watch programmes about environment on TV or radio. The researches show that visual media is important in students' building conscious about environment [33, 10].

In this research secondary education students' attitudes towards environmental problems indicate a significant difference. This result supports the results of the studies carried out by [34-38].

The results taken from the researches put forth that there are severe problems in the education of environment in general. The troubles and insufficient environment education prevent the steps and precautions in protecting the environment and in the solutions of the environmental problems. The main issue of raising conscious individuals about environment is having the individuals acquire positive attitudes towards environment. As a result the main target of environment education can be explained as to have all parts of community be conscious about environment, have them acquire positive and permanent change of behaviour, to raise people responsible for every issue from consumption of energy to using natural resources, providing active participation in the solution of problems.

Environment education contains all parts of community and the most important target audience of the young generation. Because young generation is not responsible for the environmental problems but they are the ones who will be affected from it the most and hence they should be acquired knowledge, conscious and sensitivity the most.

Based on the research results some suggestions considered as providing contributions to give a more efficient environmental education and contemplate for the lacking points in the secondary education are given below:

- Some precautions should be taken in order to increase secondary education students' attitudes towards environment. One way of providing this is shaping the education to provide the students take responsibility of protecting environment by acquiring knowledge, conscious, skills and values to the students.
- Environment education is not only a factor related to educational process but also a factor covering the whole life process. Because of this environment education should be handled and evaluated in lifelong learning principle.
- In order to have the students be conscious about the environment media and means of communication should be used.
- Researches indicate that in the In the teaching of environmental issues student centered teaching methods have a positive influence on students' success and attitudes in the lessons. Thus in the teaching of environmental issues constructivism based methods should be used.
- Student participation should be provided to the scientific activities such as conference, panel and seminars.

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