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# **Is New Teaching Programs Successful to Develop Turkish Elementary Students' Attitudes Towards Environment?**

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Environmental education (EE) for all citizens of a society has an increasing importance in today's. Thus, it is a critical subject to provide an adequate environmental education for all citizens beginning from kindergartens to upper high schools. To achieve this, environmental subjects are situated into teaching programs to educate students about the environmental challenges and also to provide them adequate environmental attitudes. Environmental education is a learning process which increases people's knowledge and awareness about the environment.

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*Environmental education includes the subjects below:*

- Awareness and sensitivity about the environment and environmental challenges,
- Knowledge and understanding about the environment and environmental challenges,
- Attitude concern for the environment and help to maintain environmental quality,
- Skills to mitigate the environmental problems,
- Participation for exercising existing knowledge and environmental related programmes.

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It is an effective way of solving environmental issues is that of developing individuals who are consciousness about the environment. This can be achieved by informing individuals about the environmental topics and providing them with positive attitudes about the environment. It is a fact that individuals who have negative attitudes about the environment would be concerned to environmental problems and going on to produce issues to the environment.

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However, literature shows that students have many misconceptions about the environment, their environmental knowledge is not adequate and also they are not concerned to environmental problems (Boyes & Staneisstreet, 1999; Bozkurt, 2001). These all studies mean that environmental education provided for students and as parallel to this their environmental attitudes are not adequate.

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In the literature there are a lot of studies about environmental attitudes of students in which students' environmental attitudes are examined. In a study, the effects of school type and gender on sixth, seventh, eighth and tenth grade students' attitudes toward the environment were investigated (Tuncer, Ertepinar, Tekkaya & Sungur, 2005). A 45-item Likert-type questionnaire consisting of four dimensions, namely, awareness of environmental problems, national environmental problems, solutions to the problems and awareness of individual responsibility, was used to measure students' environmental attitudes. They found that there is statistically significant mean difference between boys and girls with respect to scores on each dimension of the questionnaire. The literature also supported these views (Arslan, Sağır & Cansaran, 2008; Yılmaz, Boone & Andersen, 2004). However, opposite results in some studies are encountered (Alp, Ertepinar, Tekkaya & Yılmaz, 2006; Gökçe & 2007). These researchers found that female students' environmental attitudes are quite different from male ones. Thus, it is not clear that which of female or male students' environmental attitudes are more positive and also how much effective of students' grade levels on their environmental attitudes.

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In Turkey, teaching programs has been changed in 2004 and new teaching programs are being implemented now. These programs are based on the constructivist learning approach and issues about environmental topics have a big part in it. Through these programs, students are encouraged to learn environmental topics and also to conduct projects related to it. Thus it can be discussed that if new teaching programs are adequate to develop students with environmental attitudes. In the current study we tried to clarify Turkish elementary students' environmental attitudes. The data obtained is believed to provide us important signs about how the new teaching programs based on the constructivist learning approach effect and also develop students' attitudes toward environment. This study evaluates the role of gender and education level with regard to the environmental attitudes of elementary school students in Turkey and this data is used to help teachers and policy makers consider how such data might be best used.

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### **Environmental Education in Turkey**

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The formal science education curriculum for grades 4–8 prepared by the Ministry of National Education includes five main topics; the world and universe, matter and energy, living organisms, and natural resources. The concepts related to environmental issues are mainly taught when the topic of living organisms is considered. In all public schools, teachers are asked to teach these concepts. Since public education in Turkey is centralized, all students have to be taught the same concepts (Yilmaz, Boone & Andersen, 2004).

Typically 45 different environmental concepts are taught in grades 4–8. Among these 45 concepts, eleven concepts (habitat destruction, habitat degradation, habitat fragmentation, deforestation, air pollution, water pollution, soil pollution, public awareness about environmental problems, recycling, environmental protection, and water cycle) are presented in many grades in an effort to increase students' understanding.

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### **Method**

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The study used a survey method. The sample selected from four elementary schools which are chosen randomly in Rize. The sample consists of 600 elementary students 306 of whom are female and 294 of whom are male attending to 4-8 grade elementary students.

The study subjects' grade levels and genders were presented in the table 1 and 2. The measurement tool named "Environmental Attitude Scale" of Leeming et al (1995) is translated into Turkish, rearranged and reliability and validity studies are done by Aslan, Sağır and Cansaran (2008). The rearranged form has 24 items and Cronbach Alpha reliability coefficient is found .86. The obtained data is evaluated in open ended and demographic questions using frequency, percentage and descriptive statistical methods. Besides the frequencies, percentages, and mean scores of the variables, independent t-test scores and one-way ANOVA scores were used in the data analysis process of the Environmental Attitude Scale.

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**Table 1. The study subject's grade levels and genders.**

	Grade levels	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	4,00	130	21,7	21,7	21,7
	5,00	128	21,3	21,3	43,0
	6,00	123	20,5	20,5	63,5
	7,00	114	19,0	19,0	82,5
	8,00	105	17,5	17,5	100,0
	Total		600	100,0	100,0

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## *Method*

**Table 2. The study subject's genders.**

	Genders	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,00	306	51,0	51,0	51,0
	2,00	294	49,0	49,0	100,0
	Total	600	100,0	100,0	

**1: female; 2: male**

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## Results

Table 3. The descriptive statistics of the data

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
4.grade	130	86,7692	12,47356	1,09400	84,6047	88,9337	43,00	111,00
5.grade	128	81,9083	13,42805	1,18871	79,5580	84,2545	37,00	104,00
6.grade	123	82,5122	12,54132	1,13081	80,2736	84,7508	35,00	105,00
7.grade	114	82,7544	13,73875	1,28875	80,2051	85,3037	34,00	103,00
8.grade	105	83,9810	12,40856	1,21078	81,5800	86,3819	39,00	103,00
Total	600	83,6083	13,01116	,53118	82,5651	84,6515	34,00	111,00

From the table it is clear that grade 4 students' environmental attitude mean scores is 3.6154. This is higher than the others. In addition, the other grades' environmental attitude mean scores are very close to each others. In order to elicit whether there is a statistical difference among five groups ANOVAs analyses was done. Table 4 below shows the ANOVAs analysis.

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Table 4. The ANOVAs analysis

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1915,190	4	478,797	2,883	.023
Within Groups	99489,788	595	167,210		
Total	101404,958	599			

From the table 4, it is seen that there is a difference among groups at 0.05 meaning level. In order to elicit between which groups there is a statistical difference, multiple comparisons and Tukey HSD test done.

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Table 5. Tukey HSD test results

(I) grade	(J) grade	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
4.grade	5.grade	4,86298*	1,61014	,022	,4574	9,2686
	6.grade	4,25704	1,62655	,069	-,1935	8,7075
	7.grade	4,01484	1,65921	,111	-,5250	8,5547
	8.grade	2,78828	1,69667	,470	-1,8541	7,4307
5.grade	4.grade	-4,86298*	1,61014	,022	-9,2686	-,4574
	6.grade	-,60595	1,63271	,996	-5,0733	3,8614
	7.grade	-,84814	1,66528	,986	-5,4045	3,7083
	8.grade	-2,07470	1,70259	,741	-6,7333	2,5838
6.grade	4.grade	-4,25704	1,62655	,069	-8,7075	,1935
	5.grade	,60595	1,63271	,996	-3,8614	5,0733
	7.grade	-,24219	1,68112	1,000	-4,8420	4,3576
	8.grade	-1,46876	1,71811	,913	-6,1698	3,2323
7.grade	4.grade	-4,01484	1,65921	,111	-8,5547	,5250
	5.grade	,84814	1,66528	,986	-3,7083	5,4045
	6.grade	,24219	1,68112	1,000	-4,3576	4,8420
	8.grade	-1,22657	1,74908	,956	-6,0123	3,5592
8.grade	4.grade	-2,78828	1,69667	,470	-7,4307	1,8541
	5.grade	2,07470	1,70259	,741	-2,5838	6,7333
	6.grade	1,46876	1,71811	,913	-3,2323	6,1698
	7.grade	1,22657	1,74908	,956	-3,5592	6,0123

\*. The mean difference is significant at the 0.05 level.

From the table 5, it is seen that there is a difference just between 4 and 5 grades on behalf of 4 grades. It is also researched in the current study that if there is a meaningful difference between male and female students. In order to elicit this question, independent t-test done.

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Table 6 and 7 shows descriptive statistics according to gender of students and also t test results.

Table 6. Group Statistics

	cinsiyet	N	Mean	Std. Deviation	Std. Error Mean
total	female	306	85,1373	12,32726	,70470
	male	294	82,0170	13,52496	,78879

From the table 7, it is seen that there is a significant difference for gender on the behalf of female students' attitude scores as parallel to the literature [t (598) =2,955; p>0.05]. The mean of female students' attitude scores is 3.54; on the other hand male's is 3.41.

Table 7. Independent Samples Test Results

	Levene's Test for Equality of Variances		t-test for Equality of Means						
								95% Confidence Interval of the Difference	
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
total Equal variances assumed	4,774	,029	2,955	598	,003	3,12025	1,05578	1,04677	5,19373
Equal variances not assumed			2,950	587,706	,003	3,12025	1,05773	1,04285	5,19764

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### **Discussions & Implications**

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The mean scores of the elementary students' responses to the attitude questionnaire are obtained as 83.60. This attitude score can be evaluated as they have high attitude related to the environmental issues. In addition, the findings revealed that the gender proves significant difference on the attitudes of the students, whereas grade levels do not have any significant effect on the environmental attitudes of the Turkish elementary students.

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The issue of students' attitudes toward environmental issues has been evaluated by a number of authors. In these studies a range of attitudinal instruments have been used. These studies indicated different patterns for factors such as gender, age, and level of education (Ma & Bateson 1999, Zimmermann 1996). In a number of studies, the effects of gender upon environmental attitudes have been analyzed. These studies suggested that females have more positive attitudes and greater concern with regard to environmental issues than do males (Davidson & Freudenburg 1996, Gardos & Dodd 1995). This results support the current study result. However, some researchers have found males to be more sensitive to environmental issues than females (Hes-Quimbita & Pavel, 1996). In addition, some authors have found no gender differences in their studies. In addition, some studies carried out in the 1970s, 1980s, and 1990s suggested that there is no significant gender difference in terms of general environmental attitudes.

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Related to the second question of the current study, attitudes of students toward environmental issues have been measured for a variety of grades (Musser & Diamond 1999). Those authors found that in many grades students exhibited positive attitudes toward environmental issues. However, some of this work also suggested that young children had more positive attitudes toward environmental issues than did older students. These results also supported the current study result. In the current study 4 grade student's environmental attitudes is higher than the others. The research of Malkus and Musser (1997) revealed that first grade students were more concerned about the environment than were third or fifth graders. Malkus and Musser (1993) have also been previously reported similar results. Wojtowicz (1995) investigated the environmental attitudes of elementary, middle, high school, and university students. In that study, elementary students were found to be the most committed population with regard to environmental issues.

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