ORIGINAL ARTICLE

Investigation of 7th and 8th Grade Middle School Students' Environmental Ethics Attitude Levels in Relation to Different Variables

Nilgün Tozdan,[1] Özgül Keleş[2]

1. Ministry of Education, Osmaniye, Turkey
2. Aksaray University, Faculty of Education, Aksaray, Turkey

***Abstract**: One way to increase people's positive behaviors toward nature is to ensure that students gain environmental ethics attitude concerning environmental issues. In this regard, the current study investigates the 7th and 8th-grade students' environmental ethics attitude levels in relation to some variables (grade level, gender, school type). The study employed the survey model, one of the quantitative methods. The current research's sampling was selected using the stratified sampling method. A total of 723 students (349 seventh graders and 374 eighth graders) attending middle school participated in the current study. The "Environmental Ethics Attitude Scale" was used as a data collection tool in this research. The findings of the current study have revealed that the 7th and 8th-grade students' environmental ethics attitude levels vary significantly depending on gender in favor of the female students ($U_{(142857)} = 560.34$; $p < 0.001$). Moreover, no statistically significant difference was found between the environmental ethics attitude levels of the 7th graders and 8th graders ($U_{(124827)} = 63752.00$; $p > 0.05$). In addition, no statistically significant difference was found between the environmental ethics attitude level of the students attending schools located in peripheral districts of the city and that of the students attending schools located in the central districts of the city ($U_{(191838)}) = 48993$; $p > 0.05$). The seventh-grade and eighth-grade students' eccentric environmental ethics attitude mean score and anthropocentric environmental ethics attitude mean score were very close to each other. This shows that the students have environmental ethics attitude yet cannot give up anthropocentric behaviors. Similar studies can be conducted with students from different grade levels.*

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***About the Authors**: Nilgün Tozdan, PhD, Ministry of Education, Osmaniye, Turkey, E-mail: nilgunozer2768@gmail.com. ORCID: https://orcid.org/0000-0001-9054-0470*

Özgül Keleş, Professor, Aksaray University, Faculty of Education, Aksaray, Turkey, E-mail: ozgulkeles@gmail.com. ORCID: https://orcid.org/0000-0003-0812-2443

***Correspondence to**: Prof. Özgül Keleş at Aksaray University of Turkey.*

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Introduction

PEOPLE have been living in close interaction with nature since ancient times. However, with the development of technology and industry, people have started to exploit nature more and have nearly gone to war with it. They have started to destroy nature and think they have more right to live than other living creatures. As a result, deterioration in the natural balance started. With the advent of the idea that through the acquisition of ethical behaviors towards nature, this deterioration can be hindered, leading to the emergence of environmental ethics approaches. Environmental ethics is a branch of ethics that questions the relationship between humans and their natural environment and tries to determine the correct behaviors towards the environment environmental ethics is one of the prominent ways of seeking answers to environmental problems. Therefore, from early ages onward, environmental ethics attitude should be inculcated in individuals; thus, a society responsive to nature can be generated.

In recent years, acid rain, destruction of forests, nuclear waste, extinction of species, and global warming problems have shown that people have started interacting with the environment on a global scale. The impact of these actions is not only for today; it can last for hundreds of years or millennia. Therefore, questions about how we should behave towards the environment are increasingly becoming important (Fredericks, 2008). Due to the problems such as climate change, rapid consumption of fossil fuels, and non-renewable resources and distancing of life from being sustainable, a new education is needed to equip active and participating individuals with the necessary knowledge and experience to take part in the creation of a new system (Keleş, 2007). The environmental challenge facing our communities, nation, and planet is increasing daily to deal with this challenge, ethical sensibilities and relationships need to be developed and implemented (Martin & Beatley, 1993). Like environmental pollution, environmental conversion involves a multi-faceted process. Just as there are many ways of polluting the environment, there are different ways of protecting it. One of them is displaying ethical behaviors towards nature (Kayaer, 2013).

Ethics is a practical framework for finding solutions to environmental problems and making suggestions to protect them. Therefore, ethics is an essential concept for solving environmental problems (Des Jardins, 2006). Ethics also determines how people should live. Ethics also explains why entities around us are essential for us (Nelson, 2002). Ethics and environmental research are two complementary disciplines positioned to find answers to questions about how people should behave towards the environment (Fredericks, 2008). Ethics is one of the fundamental values that educators should aim to promote (Schlottmann, 2009). While ethical behavior inspires new and unusual ideas that can unexpectedly lead to change, it also suggests alternative and better tools to address the environmental issues (Nalukenge, 2009).

In the 1960s, a vital link was established between education, environmental management, and international development efforts. In 1968, for the first time, a declaration on environmental ethics was issued at the UNESCO Paris Biosphere Conference (Kopnina, 2012). Environmental ethics emerged as a discipline to explore and express appropriate relationships with the natural world in the 1970s and is continuing to evolve (Goralnik, 2011). Environmental ethics has been developed in response to unique problems caused by loss of biodiversity, pollution, and other environmental problems (Nelson, 2002). Environmental ethics is a new sub-disciplinary philosophy interested in the field of ethics about environmental protection problems. It aims to provide global envi-

ronmental protection with ethical management and motivation (Yang, 2016). Besides, it is an interdisciplinary area that aims to explain appropriate human / nature relations (Goralnik, 2011). Environmental ethics is one of the new sub-disciplines of the philosophy surrounding environmental issues with ethical problems. It aims to provide ethical justification and moral motivation for global environmental protection (Keleş & Özer, 2016).

Environmental ethics has brought a new dimension to conserving natural resources, one of humanity's most significant concerns. This discipline also examines the value and moral status of the environment and non-human beings. In addition, this discipline examines and discusses people's environmental obligations (Mathivanan & Pazhanivelu, 2013). Since environmental ethics examines the relationships between human and ecological environments, it advises asking what is good and bad in human behaviors towards the living and non-living environment and to do what is good and avoid what is wrong.

Environmental ethics does not seek solutions to environmental problems by forcing people; instead explains to people what they should do by imposing some restrictions on them. If people do what is required by environmental ethics, they become happy; otherwise, they will face difficult situations in the future (Özer, 2015). Man is a part of nature. If nature is maltreated, it maltreats people; if nature is treated well, nature will also treat people well. Environmental ethics is not only about people but also other living things or the environment. Environmental ethics is a sustainable concept covering the future environment. The central tenet of environmental ethics is to support sustainable life now and in the future (Mantatov & Mantatova, 2015). Environmental ethics has developed many approaches. These approaches are subsumed under three main headings that are anthropocentric, biocentric, and ecocentric. In addition, there are many other approaches such as ecofeminism, deep ecology, earth ethics, spiritual mystic ecology, social ecology, and futuristic approach. The common goal of all these approaches is to protect the environment. However, they differ in the path followed to achieve this goal.

Significance of the Research

Complex environmental issues will be a significant concern for the next generation that will live with the consequences of past and present actions. Education can play an essential role in this regard. Environmental education can influence the choices students make as a part of the community by encouraging them to connect with and recognize their environment (Dobrinski, 2008). Because environmental cognitive awareness starts to develop at the ages of 9-10 and children can evaluate people-nature interaction in this period, the importance of the quality of the environmental education given in elementary education can be better understood. Environmental education based on ethical and aesthetic values can be an excellent opportunity to educate individuals at peace with nature from these ages when children's values and belief systems begin to take shape (Şimşek, 2011). The primary purpose of environmental ethics education is to develop the skills of students to make ethical, correct decisions, take action and conduct analyses about nature and non-human lifestyles (UNESCO, 2009). A good environmental education can be provided by conscious teachers who have adopted environmental ethics and have high environmental sensitivity and awareness (UNESCO-UNEP, 1990). Environmental ethics must be known and applied to teach students environmental education. Therefore, environmental ethics should be applied in daily life and related to

classes. Environmental ethics responds to environmental problems. Through the environmental ethics attitude to be imparted to students, students are believed to find solutions to environmental problems from an early age. In this way, they will find solutions to global environmental problems in the future, and they will grow as conscious individuals.

A great deal of research has been carried out in the field of environmental ethics. In the related literature, studies focus on the comparison of the undergraduate students' environment and environmental ethics knowledge (Wongchantra et al., 2008), on the attitudes of the last-year students towards environmental ethics (Saka, Sürmeli & Öztuna (2009), on environmental ethics approaches adopted by high school students (Turan, 2009); on the determination of how green university students are based on their ethical attitudes (Özdemir, 2012); on the explanation of the role of the critical thinking on the development of ethical attitudes (Quin, 2012); on the pre-service science teachers' environmental ethics perceptions (Bülbül, 2013); on the elicitation of what environmental ethics means and the need for environmental ethics education (Taneja & Gupta, 2015), the pre-service science teachers' environmental ethics awareness levels (Özer, 2015) and on the undergraduate students' ethical attitudes towards the environment (Sungur, 2017).

Existing research shows a limited number of studies conducted with young children on environmental ethics, especially in the field of education (middle-primary school level). Therefore, environmental should be instilled at young ages for next generation to have a conscious attitude towards the environment.

Learning environmental ethics raises awareness of the issues of environmental ethics in students; motivates them to make ethical decisions towards nature and to act in line with their ethical decisions (World Commission on the Ethics of Scientific Knowledge and Technology, 2009). When the science curriculum was examined, it was found that there are objectives about environmental ethics in the seventh and eighth grades; thus, these grades were included in the current study (MoNE, 2018). In addition, due to the rural and urban environment where schools are located, schools are named peripheral and central. Moreover, the current study attempted to determine whether the environmental ethics attitude scores vary significantly by gender. Based on the idea that if environmental ethics education makes young children recognize the attitude, a promising future and an environment where the natural balance is protected will emerge, the current study will determine the seventh and eighth graders' environmental ethics attitude levels. Students having an environmental ethics attitude mean future generations have environmental consciousness. Therefore, the current study seeks to answer the question "What is the environmental ethics attitude of the seventh and eighth graders?'' Do the seventh and eighth-grade students' environmental ethics attitudes mean scores vary significantly depending on;

- Gender?
- Grade level?
- Type of the school attended?

Method

In the current study, the relational survey technique, one of the descriptive survey models, was used to investigate the middle school seventh and eighth-grade students' environmental ethics attitude levels in relation to different variables.

Participants

The current research sampling comprises 723 students (374 seventh graders and 374 eighth graders) attending schools located in the İslahiye province of the city of Gaziantep in Turkey. The participating students were selected using the stratified sampling method, one of the quantitative sampling methods. As it was thought that it would be difficult to reach all the middle schools in the İslahiye province of the city of Gaziantep, peripheral and central schools were selected proportional to their population ratios and included in the study. Due to the global Covid-19 pandemic, the data was delivered to the students electronically via google forms with the contributions of teachers in different schools. Therefore, the number of participants in this study is limited to the sample of the study. The current study included seventh and eighth-grade students attending two central and three peripheral middle schools. Demographic features of the participating students are given in **Table 1**.

Data Collection Tool

In the current study, as the data collection tool, the "Environmental Ethics Attitude Scale" developed by Gürbüzoğlu Yalmancı (2015) was used. The Environmental Ethics Attitude Scale is a five-point Likert scale aiming to determine students' environmental ethics attitudes. The scale used in the current study consists of a total of 21 items collected under the sub-dimensions of anthropocentric ethics and ecocentric ethics. The Cronbach Alpha coefficient of this scale developed by Gürbüzoğlu Yalmancı (2015) was found to be .87. In the current study, the Cronbach Alpha reliability coefficient was calculated to be .73. In order to determine the construct validity of the scale, factor analysis was conducted, and the Varimax rotation method was used. Any factor with an eigenvalue higher than 1.00 was taken into the scale. Confirmatory factor analysis was conducted to test the hypothesis constructed over the factor analysis; thus, the construct validity was established. From the scale developed by Gürbüzoğlu Yalmancı (2015), two factors, one of which is the anthropocentric approach including four items and the other one is the ecocentric approach including seventeen items, were selected and administered to the students.

Data Analysis

In data analysis, descriptive statistics (percentages, frequencies, arithmetic means, and standard deviations) and to determine whether the distribution is normal or not, Kolmogorov-Smirnov Test was used in the SPSS 17 program package.

As seen in **Table 2**, the total score obtained from the Kolmogorov-Smirnov test shows that the data do not show a normal distribution. Therefore, non-parametric tests were used in the current study.

Results

The current study's first sub-problem aims to answer the question, "Do the seventh and eighth-grade students' environmental ethics attitudes mean scores vary significantly depending on gender?"

Table 1. Demographic Features of the Participating Students.

Variable		N	%
Gender	Female	369	51,0
	Male	354	49,0
School	Central School	534	73,9
	Peripheral School	189	26,1
Grade	7th grade	349	48,3
	8th grade	374	51,7
Total		723	100

Table 2. Kolmogorov-Smirnov(a) Test Related to Normal Distribution.

Kolmogorov-Smirnov (a)			
	F	df	P
Total Score	0.081	723	0.000

Table 3. Mann Whitney U Test Results Related to students' Environmental Ethics Attitude Scores in Relation to Gender.

Group	N	Mean Rank	Rank Sum	U	p
Female	369	387.15	142,857.00	560,34	0.001
Male	354	335.79	118,869.00		

Table 4. Mann Whitney U Test Results Related to Students' Environmental Ethics Attitude Scores in Relation to Grade Level.

Group	N	Mean Rank	Rank Sum	U	p
7th Grade	349	357.67	124,827.00	63,752.00	0.590
8th Grade	374	366.04	136,899.00		

Table 5. Mann Whitney U Test Results to Students' Environmental Ethics Attitude Scores in Relation Type of the School Attended.

Group	N	Mean Rank	Rank Sum	U	p
Central School	534	359.25	191,838.50	48,993.500	0.551
Peripheral School	189	369.78	69,887.50		

As seen in **Table 3**, the environmental ethics attitude means scores vary significantly depending on gender in favor of the female students. The participating female students' environmental ethics attitude mean score is significantly higher than that of the male students.

The second sub-problem of the current study aims to find an answer to the question, "Do the seventh and eighth-grade students' environmental ethics attitude mean scores vary significantly depending on grade level?"

As seen in **Table 4**, the seventh and eighth-grade students' environmental ethics attitude mean scores do not vary significantly depending on grade level. The eighth-grade students' environmental ethics attitude level was not found to be significantly higher than that of the seventh-grade students.

The current study's third sub-problem aims to answer the question, "Do the seventh and eighth-grade students' environmental ethics attitude mean scores vary significantly depending on the type of the school they attended?"

As seen in **Table 5**, the seventh and eighth-grade students' environmental ethics attitude mean scores do not vary significantly depending on the type of they school attended. The environmental ethics attitude mean score of students attending central schools was not significantly higher than that of those attending peripheral schools.

Findings and Interpretations Related to the Responses Given to the Scale Items

The participating students' responses to each item on the scale were analyzed. Frequencies and percentages of their responses to the items are given in **Table 6**.

While the first four factors belong to the anthropocentric ethics approach, the other items belong to the eccentric approach factor. As can be seen in Table 6, the scale item having the highest mean in the anthropocentric ethics approach factor is "Living things useful for human beings should be protected" with 4.70 and 6 (0.8%) of the students stating that they strongly disagree with this statement, 20 (2.8%) stated that they disagree, 11 (1.5%) stated that they are undecided, 105 (14.5%) stated that they agree and 581 (80.4%) stated that they strongly agree.

The scale item having the lowest mean in the anthropocentric ethics approach factor is "Nature exists for human beings" with 3.70 and 83 (11.5%) of the students stating that they strongly disagree with this statement, 95 (13.1%) stated that they disagree, 86 (11.9%) stated that they are undecided, 149 (20.6%) stated that they agree and 310 (42.9%) stated that they strongly agree.

The scale item having the highest mean in the ecocentric ethics approach factor is "Laws laid down for the order of environment should be abided by" with 4.64 and 10 (1.4%) of the students stating that they strongly disagree, 9 (1.2%) stated that they disagree, 34 (4.7%) stated that they are undecided, 124 (17.2%) stated that they agree and 546 (75.5%) stated that they strongly agree.

The scale item having the lowest mean in the ecocentric ethics approach factor is "Increasing human population poses a threat to the protection of nature" with 3.37 and 98 (13.6) of the students stating that they strongly disagree with this statement, 86 (11.9%) stated that they disagree, 178 (24.6%) stated that they are undecided, 166 (23.0%) stated that they agree and 195 (27.0%) stated that they strongly agree.

Table 6. Frequencies and Percentages of the Responses Given by the Students to the Scale Items.

Item No.	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree		Mean
	N	%	N	%	N	%	N	%	N	%	
Q1	581	80.4	105	14.5	11	1.50	20	2.8	6	0.8	4.70
Q2	271	37.5	146	20.2	195	27.0	68	9.4	43	5.9	3.73
Q3	310	42.9	149	20.6	86	11.9	95	13.1	83	11.5	3.70
Q4	459	63.5	150	20.7	56	7.70	29	4.0	29	4.0	4.35
Q5	320	44.3	226	31.3	124	17.2	31	4.3	22	3.0	4.09
Q6	382	52.8	150	20.7	138	19.1	31	4.3	22	3.0	4.16
Q7	512	70.8	130	18.0	44	6.10	16	2.2	21	2.9	4.51
Q8	421	58.2	146	20.2	66	9.10	52	7.2	38	5.3	4.18
Q9	306	42.3	209	28.9	169	23.4	25	3.5	14	1.9	4.06
Q10	195	27.0	166	23.0	178	24.6	86	11.9	98	13.6	3.37
Q11	234	32.4	182	25.2	215	29.7	53	7.3	39	5.4	3.71
Q12	341	47.2	164	22.7	98	13.6	72	10.0	48	6.6	3.93
Q13	493	68.2	137	18.9	42	5.80	20	2.8	31	4.3	4.44
Q14	483	66.8	138	19.1	48	6.60	26	3.6	28	3.9	4.41
Q15	272	37.6	131	18.1	127	17.6	77	10.7	116	16.0	3.51
Q16	404	55.9	175	24.2	94	13.0	24	3.3	26	3.6	4.25
Q17	345	47.7	156	21.6	132	18.3	37	5.1	53	7.3	3.97
Q18	441	61.0	181	25.0	62	8.60	23	3.2	16	2.2	4.39
Q19	546	75.5	124	17.2	34	4.70	9	1.2	10	1.4	4.64
Q20	389	53.8	150	20.7	126	17.4	30	4.1	28	3.9	4.16
Q21	451	62.4	147	20.3	71	9.80	29	4.0	25	3.5	4.34

Discussion and Conclusion

The current study aims to determine the levels of the seventh and eighth-grade students' environmental ethics attitudes. The results of the study are given below. When the seventh and eighth-grade students' environmental ethics attitude levels were analyzed depending on the gender variable, it was found that the female students' environmental ethics attitude mean score was significantly higher than that of the male students.

Wongchantra et al. (2008) assigned the undergraduate students to the experimental and control groups and gave them environmental issues ethics training. They also found a significant difference in favor of the female students. The findings of Wongchantra et al. (2008) also support the current study's findings. Similarly, Keleş and Özer (2016) also found a significant difference in favor of the female participants in their study focusing on environmental awareness levels. In addition, Alpak Tunç (2016) found a significant difference between the ecocentric attitudes of female and male students in their study on science teachers. In the study of Wongchantra and Nuangchalerm (2011) on environmental ethics with undergraduate students, the female students were significantly improved compared to the male students. These findings reported in the literature support the findings of the current study. Furthermore, as girls

are more sensitive and emotional than boys, it is thought that their environmental ethics attitude was found to be higher than that of the boys in the current study.

The current study found no statistically significant difference between the seventh and eighth-grade students. Saka, Sürmeli and Öztuna (2009) conducted a study and found no difference between the pre-service teachers from different departments regarding their ecological approaches to environmental ethics. Alpak Tunç (2016) did not find a significant difference between the ecocentric attitudes of pre-service science teachers from every grade level. In addition, it was also found that senior students had higher anthropocentric attitudes. In addition, in the study conducted by Bülbül (2013), it was found that the environmental science course did not make any difference in perceptions of environmental ethics. These findings reported in the literature support the findings of the current study. According to these results, students' environmental ethics attitudes are not only affected by the course at school. In addition, family, place of residence, and many other factors affect their attitudes towards the environment. In addition, environmental ethics is a theoretically difficult course and it is thought that students have problems understanding it. Martin and Beatley (1993) stated that the environmental ethics course is a theoretical course, and students have difficulty in it as they can acquire few special skills.

No statistically significant difference was found between the students attending peripheral and central schools. Therefore, there is no study on young children's environmental ethics. However, in one of the many studies conducted on university students, Özer (2015) found no statistically significant difference in the environmental awareness levels of the university students from universities located in 12 different regions in Turkey. In addition, Mathivanan and Pazhanivelu (2013) found no significant difference between the environmental ethics mean scores of the high school students living in urban areas and those living in rural areas. Thus, it seems that the school attended does not significantly influence students' environmental ethics attitudes. In light of these findings, it is thought that more than in schools where students are educated, their social environments, family environment, and out-of-school environments affect their environmental ethics attitudes.

In the current study, the mean score for the items in the anthropocentric dimension was found to be 4.12, while that of the items in the ecocentric dimension was found to be 4.13. These values show that while the students have the ecocentric environmental ethics attitude, they do not give up the anthropocentric environmental ethics attitude. Özdemir (2012) administered the Environmental Ethics Scale to the pre-service teachers from different departments in his study. The majority of the participants were found to be caring about other creatures and believed that they should be protected. Moreover, it was concluded that the participants adopted a strong environmentalist movement. Özdemir's (2012) study supports the current study's findings. Alagoz and Akman (2016) found that gender does not affect teacher candidates' anthropocentric or ecocentric approaches regarding environmental problems. In addition, it was revealed that the averages of students in questions measuring the ecocentric approach within the New Environmental Paradigm Scale are higher. The highness of average can be assessed as there is a change towards ecocentric approach from anthropocentric approach depending on the increase in students' environmental awareness. According to this study, it can be said that the interest and protective style of the family has positive results on the teacher candidates in respect of the anthropocentric approach, but that it has no effect when the ecocentric approach is in the subject. These results show that; in the time period in which we live, as people act with the idea of being the ruler of nature by

displaying human-centered behaviors in general, the participants of the current study may have been influenced by the people around, their families. Thus, they may think the ecocentric approach is the best yet cannot give up anthropocentric behaviors.

If a serious step is not taken to find a solution to the preference for the anthropocentric behaviors, the environment on the verge of collapse will lead us to an irreversible path and a future impossible to live in. This terrible situation is not an outcome of a person or a group's actions but the collective actions of humanity (Taneja & Gupta, 2015). Environmental ethics, especially with environmental laws, makes possible accurate, fair, functional, and careful thinking. When environmental problems are treated with these approaches, students will see what effect ethics creates (McGowa & Buttrick, 2017). According to the results found in this study, only the education given to young students is not enough. It is thought that this education should be effective in families and applied to daily life. In light of the result of this study, it is suggested that similar studies should be conducted in different provinces and classes and that families should be involved in such studies.

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