Research Article
Received:28.09.2024
Accepted:30.12.2024
Published:31.12.2024

Citation: Kılınç, A., Kızmaz, S., Aksakal Taşkıran, Ş., & Emre, İ. (2024). Determination of teachers' awareness of environmental ethics. *International Journal of Scholars in Education*, *7*(2), 116-128. https://doi.org/10.52134/ueader.1557613

Determination of Teachers' Awareness of Environmental Ethics

Alparslan KILINÇ*, Sevim KIZMAZ**, Şeyma AKSAKAL TAŞKIRAN***, İrfan EMRE****

Abstract: Environmental ethics defines the moral principles governing the relationship between humans and their environment, emphasizing the need for harmony with nature. Raising awareness about environmental issues is believed to be achievable through education, with teachers playing a critical role in this process. This study aims to assess the level of environmental ethics awareness among teachers from various disciplines(classroom,science and social studies teachers) and examine whether variables such as gender, age, field, seniority, educational background, and academic status influence their opinions. The research employed a quantitative survey method, involving 346 teachers from public schools in Elazığ. Participants completed a personal data form and the Environmental Ethics Awareness Scale. The data were analyzed using the MANOVA test. Results indicated no significant differences across all sub-dimensions for teachers graduating from faculties outside the Faculty of Education. However, a significant difference was observed regarding the field variable, while other variables like gender, age, and seniority showed no significant differences. Arithmetic means of teachers' responses revealed that most opinions were at the "Agree" level across the sub-dimensions, except for specific items. These findings suggest that while teachers generally exhibit awareness of environmental ethics, their views vary depending on their field of expertise. This study highlights the importance of integrating environmental ethics into educational practices to further enhance teachers' awareness and their ability to address environmental issues effectively. Future research could expand on these findings by exploring other variables and methodologies to provide deeper insights into teachers' environmental ethics awareness.

Keywords: Environment, Environmental Ethics, Teacher.

* Teacher, Ministry of The National Education, alparslankilinc@gmail.com, ORCID: 0000-0002-7658-4220
** Teacher, Ministry of The National Education, sevimkizmaz@gmail.com, ORCID: 0009-0004-7531-2663
*** Res. Assist. Dr., Fırat University, Faculty of Education, s.aksakal@firat.edu.tr, ORCID: 0000-0001-8452-3690
**** Prof. Dr, Fırat University, Faculty of Education, iemre@firat.edu.tr , ORCID: 0000-0003-0591-3397

Introduction

Our planet's natural resources are being depleted, and many species are in danger of becoming extinct as a result of human attitudes toward the environment. The damage that people do to the environment has resulted in issues like climate change and global warming (Göz, 2011; Tozdan, 2022). At first, it was believed that the natural resources would never run out, but as the Industrial Revolution progressed, it became clear that they were fast running out, upsetting the ecological balance (Ergün & Çobanoğlu, 2012).

The emergence of environmental difficulties typically happened in the second half of the 20th century, and in this regard, the 1952 London air pollution incident that claimed over 4,000 lives is significant (Ertan, 2004). Despite the fact that several domestic and international agreements, conferences, and regulations have been signed, environmental issues have not significantly decreased as a result of these efforts; rather, they have become worse (Kırkpınar Özsoy & Çini, 2020).

Since its emergence as a distinct branch of philosophy in the 1970s, environmental ethics—which focuses on analyzing the moral dilemmas that arise in the interactions between humans and the non-human environment—has greatly broadened in scope (Palmer, McShane & Sandler, 2014). It is the study of the moral relationships that exist between people and other living things, as well as between people and their environmental surroundings. Establishing guidelines for people and their natural environments, accepting these guidelines as guiding principles, and promoting a positive outlook on environmental challenges are the goals of environmental ethics (Sandler, 2013). The systematic study of the moral connections between people and the environment, as well as the application of moral principles to regulate human behavior toward the natural world, are the broad definitions of environmental ethics (Sönmez, 2019). Therefore, environmental ethics include educating people about the appropriate behaviors to display, the obligations to fulfill in accordance with these regulations, and the possible repercussions of the attitudes they embrace (Öğüt Ebil &İdemen, 2010).

The degree of consciousness people have about environmental ethics is referred to as environmental ethics awareness (Buzlukçu, 2023). The three main categories of environmental ethics methods are ecocentric, biocentric, and anthropocentric (Kayaer, 2013). Since people are at the center of the world, everything that exists must be assessed according to how useful it is to us, according to the anthropocentric (human-centered) approach, which is regarded as a conventional ethical stance (Laal, 2009). However, environmental ethics clarifies the obligations that humans have while also explaining that respect should be shown to living things other than humans and that nature should be assessed in a variety of ways (Sönmez, 2017).

Teachers are one of the most important components of environmental education. Teachers help people develop positive attitudes and actions by imparting knowledge to them. Thus, it is important to start by looking at the attitudes and actions of educators (Çiller, 2023). Teacher candidates across a range of disciplines are the primary subject of studies on environmental ethics and awareness (Saka, 2016; Deniz, 2019; Sönmez, 2019). There are comparatively few studies that involve instructors, and those that do exist are frequently restricted to one or two branches (Duru & Bakanay, 2021). Additionally, there aren't many studies like this one that include social studies, science, and classroom teachers. Consequently, it is thought that this study will add to the body of knowledge, especially with regard to teaching disciplines. It is acknowledged that people's lack of awareness about environmental issues is the main cause of environmental problems, and in this regard, education in schools is said to be essential for resolving environmental issues and increasing awareness (Altın & Akcanca, 2023).

It is also far simpler to educate environmentally conscientious people under the direction of instructors who function as role models, given the influence that educators have on their students. As a result, educators have a big role to play in fostering environmental awareness and building the cognitive skills necessary to address environmental challenges. Thus, it is thought that research on teachers' perspectives on environmental concerns advances the discipline (Duru & Bakanay, 2021; Tekiroğlu & Hayır Kanat, 2021).

Finding out how knowledgeable instructors from various areas are of environmental ethics is the main goal of this study. The following research questions were sought in order to achieve this goal:

1. How much do instructors know about environmental ethics?
2. Do branch characteristics, gender, seniority, education level, age, and the school from which a teacher graduated significantly affect their understanding of environmental ethics?

Methodology

Model of the Research

This study was carried out utilizing the survey technique in order to ascertain the environmental ethical awareness levels of primary and secondary school teachers based on a number of criteria. This approach seeks to depict a scenario, either historical or present, as it is at the moment. The objective is to portray the situation as it is and in a way that is appropriate for its particular circumstances (Karasar, 2010).

Population and Sample

Teachers of social studies, science, and classroom instruction at Turkey's public schools make up the study's general population. Classroom and subject teachers from elementary and high schools in Elazığ province during the 2023–2024 school year make up the study's sample. One of the sampling strategies used in quantitative research, the simple random sampling approach, was used to choose the sample. According to Cohen, Manion, and Morrison (2007), random sampling is a technique where every member of the population has an equal and independent probability of being included in the sample.

The research involved 346 instructors in all. The following tables include descriptive information about the sample's demographic characteristics:

Table 1
Distribution by branch variable

Branch	n	%
Classroom Teacher	213	61.6
Science Teacher	79	22.8
Social Studies Teacher	54	15.6
Total	346	100

Of the instructors who took part in the study, 79 (22.8%) were science teachers, 54 (15.6%) were social studies teachers, and 213 (61.6%) were elementary school teachers.

Table 2
Distribution by gender

Gender	n	%
Female	164	47.4
Male	182	52.6
Total	346	100

182 (52.6%) of the participants who took part in the survey were male, and 164 (47.4%) were female.

Table 3
Distribution by seniority

Seniority	n	%
1-10 years	33	9.5
11-20 years	107	30.9
21 -30 years	173	50.0
31 years and above	33	9.5
Total	346	100

Of the research participants, 33 (9.5%) had one to ten years of seniority, 107 (30.9%) had eleven to twenty years, 173 (50.0%) had twenty to thirty years, and 33 (9.5%) had thirty-one years or more.

Table 4
Distribution by school graduated from

School Graduated From	n	%
Faculty of Education	225	65.0
Other	121	35.0
Total	346	100

A total of 121 (35.0%) of the instructors who took part in the study are graduates of different faculties, and 225 (65.0%) are graduates of the Faculty of Education.

Table 5
Distribution by educational level

Educational Level	n	%
Bachelor’s degree	266	76.9
Graduate degree	80	23.1
Total	346	100

Two hundred and sixty-six (76.9%) of the study's participating instructors hold a bachelor's degree, and eighty (23.1%) hold a graduate degree.

Table 6
Distribution by age

Age range	n	%
22-32 years	37	10.7
33-43 years	117	33.8
44-54 years	154	44.5
55 years and above	38	11.0
Total	346	100

37 (10.7%) of the study's participating instructors are between the ages of 22 and 32, 117 (33.8%) are between the ages of 33 and 43, 154 (44.5%) are between the ages of 44 and 54, and 38 (11.0%) are 55 years of age or older.

Data Collection Tools

Personal Data Form

The study employed a personal data form to gather demographic data from the participating instructors. Variables including gender, age, branch, seniority, school attended, and educational attainment are all included in the form.

Environmental Ethics Awareness Scale

The four sub-dimensions of the scale created by Özer and Keleş (2016) are the definition of environmental ethics, its goal, the causes of its creation, and the appropriate actions. Using a 5-point Likert scale (Strongly Disagree to Strongly Agree), the measure has 23 items. The scale's Cronbach alpha reliability coefficient was 0.95, and the confirmatory factor analysis's findings were consistent with previous research. The scale's reliability coefficient in this investigation was 0.99.

Data Collection Process

After receiving clearance from the Ethics Committee and authorization from the Elazığ Provincial Directorate of National Education, the study's data were gathered during the autumn semester of the 2023–2024 academic year. Teachers who chose to participate were asked to complete the scale and the personal data form, and the instructions made clear the goal of the study.

Data Analysis

Percentage and frequency analyses were performed to examine the opinions of classroom teachers, science teachers, and social studies teachers on the Environmental Ethics Awareness Scale's sub-dimensions as well as individual data. MANOVA tests were used once the data's normality distribution was examined. The Scheffe post-hoc test was employed when significant differences between groups were discovered. Sample size, outliers, normality, homogeneity of regression, linearity, multicollinearity, singularity, and homogeneity of variance and covariance matrices were all found to be free of significant violations for the MANOVA test analysis. The statistical program SPSS was used to analyze the data. The results of the necessary studies to ascertain the normality distribution showed that the data was distributed normally.

Findings

Descriptive Statistics

The findings of the study done to ascertain the normalcy distribution are shown in Table 7.

The findings show that the data is distributed normally. For the scale and its subdimensions, the significant values derived from the Shapiro-Wilk and Kolmogorov-Smirnov tests were $p < .05$. The probability of Kolmogorov-Smirnov test findings being less than.05 has been seen to rise in the social sciences, especially when the sample size is big (Balcı & Ahi, 2017). Nonetheless, the results are deemed sufficiently robust when the sample size in each cell

surpasses 20 (Tabachnick & Fidell, 2007). This research also looked at other facts that were pertinent to normalcy.

Table 7
Descriptive Statistics

Scales/Subdimensions	Mean	Trimmed Mean	Min.	Max.	Mode	Median	Kurtosis	Standard Error of Kurtosis	Skewness	Standard Error of Skewness	Kolmogorov-Smirnov	Shapiro-Wilk
Environmental Ethics Definition	24.60	25.01	7.00	35.00	35.00	32.50	-1.563	.260	-.596	.131	.000	.000
Environmental Ethics Purpose	10.69	10.88	3.00	15.00	15.00	15.00	-1.563	.260	-.606	.131	.000	.000
Environmental Ethics Reason	17.56	17.84	5.00	25.00	25.00	22.00	-1.478	.260	-.592	.131	.000	.000
Environmental Ethics Measure	27.72	28.13	8.00	40.00	40.00	35.00	-1.481	.260	-.591	.131	.000	.000
Environmental Ethics Awareness Scale (Total Scale)	80.58	81.87	23.00	115.00	105.00	115.00	-1.539	.260	-.608	.131	.000	.000

The kurtosis and skewness values, which are regarded as markers of a normal distribution, were determined to fall between -1.96 and +1.96, and their corresponding standard error values were 0.133 and 0.266 (Uysal & Kılıç, 2022). Additionally, the MANOVA assumptions were examined as well, and it was found that they were frequently satisfied.

Table 8
Results of the multivariate variance analysis of the environmental ethics awareness scale based on gender

Effect	Wilk's Lambda	F	Hypothesis sd	Error sd	p	Partial Eta Squared	Observed Power
Intercept	.148	492.139	4.00	341.00	.000	.852	1.00
Group	.989	.961	4.00	341.00	.824	.011	.304

Table 9
Between-group effects for subdimension scores of the environmental ethics awareness scale based on gender

Source	Dependent Variable	df	F	p*	Partial Eta Squared	Observed Power
Intercept	Environmental Ethics Definition	1	1362.408	.000	.798	1.000
	Environmental Ethics Purpose	1	1335.762	.000	.795	1.000
	Environmental Ethics Reason	1	1569.573	.000	.820	1.000
	Environmental Ethics Measure	1	1604.501	.000	.823	1.000
Gender	Environmental Ethics Definition	1	.050	.824	.000	.056
	Environmental Ethics Purpose	1	.037	.847	.000	.054
	Environmental Ethics Reason	1	.019	.890	.000	.052
	Environmental Ethics Measure	1	.016	.900	.000	.052

*p > .05

Male and female instructors do not significantly vary in any of the subdimensions when the gender variable data are analyzed (p>.05).

Table 10
Results of the multivariate variance analysis of the environmental ethics awareness scale based on seniority

Effect	Wilk's Lambda	F	Hypothesis sd	Error sd	p	Partial Eta Squared	Observed Power
Intercept	.217	301.658	4.00	339.00	.000	.783	1.00
Group	.986	.388	12.00	897.201	.968	.005	.201

Table 11
Between-group effects for subdimension scores of the environmental ethics awareness scale based on seniority

Source	Dependent Variable	df	F	p*	Partial Eta Squared	Observed Power
Intercept	Environmental Ethics Definition	1	865.152	.000	.717	1.00
	Environmental Ethics Purpose	1	852.787	.000	.714	1.00
	Environmental Ethics Reason	1	997.016	.000	.745	1.00
	Environmental Ethics Measure	1	1014.658	.000	.748	1.00
Seniority	Environmental Ethics Definition	1	.382	.766	.003	.125
	Environmental Ethics Purpose	1	.494	.687	.004	.150
	Environmental Ethics Reason	1	.451	.717	.004	.141
	Environmental Ethics Measure	1	.343	.795	.003	.117

*p>.05

Evaluation of the seniority variable findings reveals that none of the subdimensions show a significant difference between groups (p>.05).

Table 12
Results of the multivariate variance analysis of the environmental ethics awareness scale based on graduation school

Effect	Wilk's Lambda	F	Hypothesis sd	Error sd	p	Partial Eta Squared	Observed Power
Intercept	.153	471.219	4.00	341.00	.000	.847	1.00
Group	.964	3.188	4.00	341.00	.014	.036	.823

Table 13
Between-group effects for subdimension scores of the environmental ethics awareness scale based on graduation school

Source	Dependent Variable	df	F	p*	Partial Eta Squared	Observed Power
Intercept	Environmental Ethics Definition	1	1326.516	.000	.794	1.00
	Environmental Ethics Purpose	1	1314.763	.000	.793	1.00
	Environmental Ethics Reason	1	1533.170	.000	.817	1.00
	Environmental Ethics Measure	1	1566.653	.000	.820	1.00
Graduation School	Environmental Ethics Definition	1	7.083	.008	.020	.756
	Environmental Ethics Purpose	1	8.912	.003	.025	.845
	Environmental Ethics Reason	1	8.366	.004	.024	.822
	Environmental Ethics Measure	1	8.278	.004	.023	.818

*p<.05

For the graduation school variable, there is a significant difference (p<.05) across all subdimensions favoring the group graduating from non-education faculties.

Table 14
Results of the multivariate variance analysis of the environmental ethics awareness scale based on the education level variable

Effect	Wilk's Lambda	F	Hypothesis sd	Error sd	p	Partial Eta Squared	Observed Power
Intercept	.200	341.256	4.00	341.00	.000	.800	1.00
Group	.970	2.648	4.00	341.00	.033	.030	.737

Table 15
Between-group effects for subdimension scores of the environmental ethics awareness scale based on education level

Source	Dependent Variable	df	F	p*	Partial Eta Squared	Observed Power
Intercept	Environmental Ethics Definition	1	984.252	.000	.741	1.00
	Environmental Ethics Purpose	1	972.001	.000	.739	1.00
	Environmental Ethics Reason	1	1131.162	.000	.767	1.00
	Environmental Ethics Measure	1	1143.151	.000	.769	1.00
Education Level	Environmental Ethics Definition	1	.129	.719	.000	.065
	Environmental Ethics Purpose	1	.305	.581	.001	.085
	Environmental Ethics Reason	1	.115	.737	.000	.063
	Environmental Ethics Measure	1	.001	.976	.000	.050

*p>.05

There is no discernible difference between groups in any of the subdimensions when the findings for the education level variable are analyzed (p>.05).

Table 16
Results of the multivariate variance analysis of the environmental ethics awareness scale based on the age variable

Effect	Wilk's Lambda	F	Hypothesis sd	Error sd	p	Partial Eta Squared	Observed Power
Intercept	.207	324.867	4.00	339.00	.000	.793	1.00
Group	.963	1.070	12.00	897.201	.382	.012	.563

Table 17
Between-group effects for subdimension scores of the environmental ethics awareness scale based on age

Source	Dependent Variable	df	F	p*	Partial Eta Squared	Observed Power
Intercept	Environmental Ethics Definition	1	909.450	.000	.727	1.00
	Environmental Ethics Purpose	1	894.211	.000	.723	1.00
	Environmental Ethics Reason	1	1041.774	.000	.753	1.00
	Environmental Ethics Measure	1	1074.067	.000	.758	1.00
Age	Environmental Ethics Definition	3	1.838	.140	.016	.476
	Environmental Ethics Purpose	3	1.785	.150	.015	.464
	Environmental Ethics Reason	3	1.915	.127	.017	.494
	Environmental Ethics Measure	3	2.180	.090	.019	.552

*p>.05

There is no discernible difference between groups in any of the subdimensions when the age variable findings are analyzed (p>.05).

Table 18
Results of the multivariate variance analysis of the environmental ethics awareness scale based on the field variable

Effect	Wilk's Lambda	F	Hypothesis sd	Error sd	p	Partial Eta Squared	Observed Power
Intercept	.125	595.123	4.00	340.00	.000	.875	1.00
Group	.643	21.016	8.00	680.00	.000	.198	1.00

Table 19
Between-group effects for subdimension scores of the environmental ethics awareness scale based on branch

Source	Dependent Variable	df	F	p*	Partial Eta Squared	Observed Power
Intercept	Environmental Ethics Definition	1	1900.333	.000	.847	1.00
	Environmental Ethics Purpose	1	1921.193	.000	.849	1.00
	Environmental Ethics Reason	1	2233.346	.000	.867	1.00
	Environmental Ethics Measure	1	2129.497	.000	.861	1.00
Branch	Environmental Ethics Definition	2	74.42	.000	.303	1.00
	Environmental Ethics Purpose	2	79.98	.000	.313	1.00
	Environmental Ethics Reason	2	81.66	.000	.323	1.00
	Environmental Ethics Measure	2	68.83	.000	.286	1.00

*p<.05

Upon evaluating the data using the branch variable, it is found that all subdimensions show a significant difference between groups (p <.05). There was a substantial difference between classroom teachers and both science and social studies teachers across all subdimensions, according to the findings of the Scheffee test, one of the post hoc tests. But there was no discernible difference between social studies and science teachers.

When the arithmetic means of the groups for each subdimension are examined:

- In the first subdimension, Definition, the arithmetic mean of Classroom Teachers was $\bar{X}$=19.23, while the mean of Science Teachers was $\bar{X}$=33.50, and that of Social Studies Teachers was $\bar{X}$=32.72

- In the second subdimension, Purpose, the arithmetic mean of Classroom Teachers was $\bar{X}$=8.28, while the mean of Science Teachers was $\bar{X}$=14.74, and that of Social Studies Teachers was $\bar{X}$=14.27.

- In the third subdimension, Reason, the arithmetic mean of Classroom Teachers was $\bar{X}$=13.87, while the mean of Science Teachers was $\bar{X}$=23.55, and that of Social Studies Teachers was $\bar{X}$=23.33.

- In the fourth subdimension, Measure, the arithmetic mean of Classroom Teachers was $\bar{X}$=22.30, while the mean of Science Teachers was $\bar{X}$=36.54, and that of Social Studies Teachers was $\bar{X}$=36.20.

These findings indicate significant differences in arithmetic means across the branches for all subdimensions.

Conclusion, Discussion, and Recommendations

It is underlined that in order to create a culture of environmental ethics, educators must first be very conscientious, and that society consciousness may foster environmental ethics in people. Environmental ethics are typically viewed by educators as a collection of regulations (Taşçı, 2023). Additionally, it is mentioned that society and educators are crucial in creating value-based curricula that guarantee pupils appreciate the environment throughout their life (Somashekara & Praveena, 2023). Depending on their level of understanding, people's beliefs have a big impact on emerging environmental challenges such waste management methods (Cavaliere et al., 2020).

Upon reviewing the instructors' answers to the scale, it was discovered that they agreed with the Definition of Environmental Ethics subdimension's items at the "Agree" level.

The items "If humans lived a life without technology, they would better understand the value of both living and non-living things" and "To ensure human welfare, people's negative behaviors towards the environment must be limited" were rated as "Neutral" by teachers in the Measures to be Taken for Environmental Ethics subdimension. Responses were at the "Agree" level for the remaining items in this subdimension. The items in the subdimensions of the Reasons for the Emergence of Environmental Ethics and the Objectives of Environmental Ethics were also rated as "Agree" by participants.

Tekiroğlu and Hayır-Kanat's (2021) study of Social Studies teachers revealed that their scores on the scale's subdimensions were nearly equal to the maximum score, suggesting that they were highly aware of the definition, emergence reasons, goals, and countermeasures for environmental issues pertaining to environmental ethics. According to Anokye et al. (2024), instructors were probably very conscious of the surroundings.

Upon analyzing the study's overall findings, no discernible variations were found between the groups according to age, seniority, gender, or educational attainment. Karakaya and Yılmaz (2017) observed no significant differences in seniority or educational level, however they did find a significant variation in the gender variable between science and biology professors. Tekiroğlu and Hayır-Kanat's (2021) study of social studies teachers also found no differences in environmental ethics awareness by gender, length of service, or involvement in environmental in-service training. Environmental ethics awareness varied significantly by gender but not by department, according to Sönmez's (2019) study of Science and Classroom teacher candidates. Similar findings were made by Somashekara and Praveena in their 2023 study of classroom teachers, which did not reveal any gender-based changes.

There are no notable gender differences in environmental concerns, despite some study suggesting that women are more sensitive to environmental issues than males (Zelezny et al., 2000; Hunter et al., 2004; Saka, Sürmeli & Öztuna, 2013). In contrast, Macdonald and Hara's (1994) study found that men were more concerned about the environment than women. Significant differences were found across all subdimensions in favor of groups comprising graduates from faculties other than education faculties with regard to the variable of educational background. This might be the case because educators in disciplines that have a direct bearing on the environment, like biology and chemistry, receive more academic training on environmental issues and, as a result, are more conscious of environmental ethics.

There were notable variations between the groups in every subdimension when the findings were analyzed using the branch variable. Classroom teachers differed significantly from both science and social studies teachers in every subdimension. Nonetheless, no noteworthy distinctions between teachers of social studies and science were discovered. In the

subdimensions of Reasons for the Emergence of Environmental Ethics and Measures to be Taken for Environmental Ethics, their arithmetic means were especially similar.

With several items demonstrating notable variances based on gender, branch, and professional experience, Ceyhan and Şahin's (2018) study also revealed that teachers of science and classrooms demonstrated a high level of ethical sensitivity towards technology and environmental challenges. According to Anokye et al. (2024), teachers' opinions and comprehension of environmental problems are greatly influenced by their educational background. The researchers also observed that people's views on the environment, including waste management, are influenced by their specialized knowledge and academic accomplishments (Anokye, 2024).

The research's conclusions allow for the following suggestions to be made:

1. Future research could be organized utilizing mixed or qualitative research approaches to better interpret the findings of this quantitative study.

2. Teachers from various branches can participate in comparative research.

3. It is possible to do experimental research on environmental ethics awareness.

4. By taking into account characteristics other than those employed in this study, similar research can be carried out.

References

Altın, M., & Akcanca, N. (2023). Students' self-efficacy regarding environmental education and the relationship between their perceptions of environmental ethics awareness and their ecological citizenship. *Gazi Eğitim Bilimleri Dergisi*, 9(2), 179-197. https://dx.doi.org/10.30855/gjes.2023.09.02.003.

Anokye, K., Mohammed, A.S., Agyemang, P., Agya, B.A., Amuah, E.E.Y., & Sodoke, S. (2024). Understanding the perception and awareness of senior high school teachers on the environmental impacts of plastic waste: Implications for sustainable waste education and management. *Social Sciences & Humanities Open*, 10, 100999.

Balcı, S., & Ahi, B. (2017).[SPSS user guide Step-by-step data analysis with SPSS]. Anı Yayıncılık.

Buzlukçu, C. (2023). The relationship between environmental ethics awareness, environmentally friendly behavior and person-organization fit in eco-friendly hotels, *Seyahat ve Otel İşletmeciliği Dergisi,* 20(2), 208-226. https://doi.org/10.24010/soid.1281224.

Cavaliere, A., Pigliafreddo, S., De Marchi, E., & Banterle, A. (2020). Do consumers really want to reduce plastic usage? Exploring the determinants of plastic avoidance in food-related consumption decisions. *Sustainability*, 12(*22*), 9627. https://doi.org/10.3390/su12229627

Ceyhan, B., & Sahin, N. (2018). Teachers' sensitivity towards technology and environmental ethics. *Education Sciences,* 8(3), 121. https://doi.org/10.3390/educsci8030121

Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education*. Oxon:Routledge.

Çiller, N. (2023). Determining the environmental ethics cognitive structures and alternative concepts of teacher candidates (Yayımlanmamış yüksek lisans tezi). Necmettin Erbakan Üniversitesi, Eğitim Bilimleri Enstitüsü, Matematik ve Fen Bilimleri Eğitimi Anabilim Dalı, Konya.

Deniz, S. (2019). Investigation of the relationship between environmental ethics awareness and science and technology literacy of pre-service teachers (Yüksek lisans tezi). Siirt Üniversitesi, Fen Bilimleri Enstitüsü, Siirt.

Duru, B., & Bakanay, Ç.D. (2021). Investigation of environmental ethical attitudes of preschool teachers. *Karaelmas Journal of Educational Sciences*, 9, 47-63.

Ergün, T., & Çobanoğlu, N. (2012). Sustainable development and environmental ethics. *Ankara Üniversitesi Sosyal Bilimler Dergisi,* 3(1), 97-123. https://doi.org/10.1501/sbeder_0000000041.

Ertan, B. (2004). 2000'li Yıllarda çevre etiği yaklaşımları ve Türkiye. *Yönetim Bilimleri Dergisi*, 2(1), 93-108.

Göz, K. (2011). Çevre ahlakı ve insan, *Artvin Çoruh Üniversitesi Orman Fakültesi Dergisi,* 12(*1*), 92-100.

Hunter, L.M., Hatch, A., & Johnson, A. (2004) Cross-national gender variation in environmental behaviors'. *Social Science Quarterly*, 85(*3*), 677-694.

Karakaya, F., & Yılmaz, M. (2017). Environmental ethics awareness of teachers. *International Electronic Journal of Environmental Education*, 7(2), 105-115.

Karasar, N. (2010). Bilimsel araştırma yöntemi. Ankara: Nobel Yayıncılık.

Kayaer, M. (2013). Çevre ve etik yaklaşımlar. *Siyaset, Ekonomi ve Yönetim Araştırmaları Dergisi*, 1(*2*), 63-76.

Kırkpınar Özsoy, N., & Çini, P. (2020). An evaluation of anthropocentric global environmental politics in the framework of ecocentric environmental ethics view. *Alternatif Politika*, 12 (*1*), 20-49.

Laal, M. (2009). Brief history of enviroethics and its challenges. *Journal of Medical Ethics and History of Medicine*, 2(10).

MacDonald, W. L., & Hara, N. (1994). Gender differences in environmental concern among college students. *Sex Roles*, 31(5-6), 369–374. https://doi.org/10.1007/BF01544595.

Öğüt Ebil, A. Ö., & İdemen, B. (2010). Planlama ve çevre etiği: Uygulamalı disiplinlerde çevre etiği. *Planlama, 20*(2), 3-13.

Özer, N., & Keleş, Ö. (2016). Çevre etiği farkındalık ölçeği geliştirme çalışması. *Fen Bilimleri Öğretimi Dergisi,* 4(1), 47-64.

Palmer, C., McShane, K., & Sandler, R. (2014). Environmental ethics. *Annual Review of Environment and Resources, 39*(1), 419–442. https://doi.org/10.1146/annurev-environ-121112-094434.

Patton, M. Q. (2005). *Qualitative research*. John Wiley & Sons, Ltd.

Saka, M., Sürmeli, H., & Öztuna, A. (2009). Which attitudes preservice teachers' have towards environmental ethics. Procedia Social and Behavioral Sciences, 1, 2475–2479.

Saka, M. (2016). A study of pre service teacher' critical thinking dispositions as predictors of environmental ethics approaches. *Sakarya University Journal of Education, 6*(3), 100-115. https://doi.org/10.19126/suje.220185

Sandler, R. L. (2013). Environmental virtue ethics. In H. LaFollette (Ed.), *The International Encyclopedia of Ethics* (pp. 1665–1674). Blackwell.

Somashekara, M., & Praveena, K. B. (2023). A study on environmental behavior in relation to environmental ethics of elementary school teachers of Mysore district. *International Journal of Creative Research Thoughts (IJCRT, 11*(7), b460–b466.

Sönmez, D. (2017). Investigation of thesis on environmental ethics in field education and training. *Gaziantep University Journal of Educational Sciences, 1*(1), 55-66.

Sönmez, D. (2019). Investigation of environmental ethics awawreness of science and classroom teacher candidates by different variables. *Manisa Celal Bayar Üniversitesi Sosyal Bilimler Dergisi*, 17(4), 239-248. https://doi.org/10.18026/cbayarsos.545715.

Tabachnick, B. G., & Fidell, L. S. (2007). Using multivariate statistic. Pearson Education, Inc.

Taşçı, N. (2023). Regarding teachers' environmental ethics determining the sensitivity (Yüksek lisans tezi). Sosyal Bilimler Enstitüsü, Felsefe Ana Bilim Dalı, Kastamonu Üniversitesi.

Tekiroğlu, A., & Hayır-Kanat, M. (2021). Çevre etiği farkındalığı ve sürdürülebilir çevre tutumu arasındaki ilişki. *Ulakbilge Sosyal Bilimleri Dergisi*, 59, 630–645. https://doi.org/10.7816/ulakbilge-09-59-11.

Tozdan, N. (2022). Ortaokul öğrencilerinin çevre etiği duyuşsal düzeylerinin belirlenmesi (Yüksek lisans tezi). Aksaray Üniversitesi Fen Bilimleri Enstitüsü, İlköğretim Ana Bilim Dalı Fen Bilgisi Eğitimi Bilim Dalı, Aksaray.

Uşak, M. (2006). Çevre bilimi. In M. Aydoğdu & K. Gezer (Eds.), *Çevre bilimi* (pp. 1–9). *Anı Yayıncılık*. ISBN: 975-6376-81-3.

Uysal, İ., & Kılıç, A. (2022). Normal Distribution Dilemma. Anadolu Journal of Educational Sciences International, 12(1), 220-248. https://doi.org/10.18039/ajesi.962653

Zelezny, L. C., Chua, P., & Aldrich, C. (2000). Elaborating on gender differences in environmentalism – statistical data included. *Journal of Social Issues, 56*(3), 443-457.