

## INVESTIGATION OF THE ENVIRONMENTAL ATTITUDES OF PRE-SERVICE TEACHERS ACCORDING TO DIFFERENT VARIABLES

Nilüfer OKUR AKÇAY<sup>1</sup>, Havva Sibel KURT<sup>2</sup>

### Abstract

The aim of this study is to investigate the environmental attitudes of pre-service teachers according to age, gender, the programs that they study and the regions that they live in. The study group of the research consists of a total of 420 students who study at a university in Eastern Anatolia in the first semester of the 2019-2020 academic year. This study employs a quantitative research approach. The data collection tools used in this research were personal information forms and "Environmental Attitude Scale" developed by Berberoğlu and Tosunoğlu (1995) to determine university students' environmental attitude. In data analysis, non-normally distributed variables were analyzed through Kruskal-Wallis test, and normally distributed variables were analyzed through ANOVA test. The results of the analysis of the findings obtained in this research show that environmental attitude scores were in favor of the groups with older age and female pre-service teachers, whereas there was no significant difference according to the programs and regions.

**Keywords:** pre-service teacher, environment, attitude, environmental, education.

### 1. INTRODUCTION

Due to modernization and industrialization, people seem to have forgotten the role of nature in human life (Çabuk, 2019). These reasons form the basis of deteriorating balance of nature as it is rendered into an object of human life and the basis of emerging various environmental problems (Köşker, 2019). Both the living and the non-living are whole for environment. Thus, when the balance of this integrity deteriorates, it may endanger the sustainability of the environment, the people's lives, along with the food and water resources, turning the progress of life into an issue. Today, desertification, destruction of the ozone layer, depletion of natural resources, deforestation, acid rains, fog formation, loss of biodiversity, harmful wastes, water pollution are amongst the most dangerous ecological problems.

Today, various agreements and protocols have been installed both in Turkey and throughout the world to protect the sustainability of the environment. For example, the Kyoto Protocol (1997) was signed within the widest possible framework by 160 countries, including Turkey –albeit only to come into effect as late as 2005. The articles of the Kyoto Protocol aim at reducing greenhouse gases and energy use and promoting renewable energy sources. Along with this platform, there are competitions, panels, short films and etc. organized every year in order to raise awareness of ecological protection, furthermore, various academic studies delve into ways of reaching a wider audience for awareness.

---

<sup>1</sup> Assoc.Prof.Dr., Education Faculty of Ağrı İbrahim Çeçen University, TURKEY, nilokur-7@hotmail.com, <https://orcid.org/0000-0002-3276-5564>

<sup>2</sup> Dr., Opticianary of Lokman Hekim University, TURKEY, sibelkurt\_@hotmail.com, <https://orcid.org/0000-0001-6198-1269>

Countries also made amendments to their education systems for the elimination of environmental problems. These attempts that start with basic education and reach to university level aim at achieving educational gains in individuals (Okumuş & Okur Akçay, 2020). For this purpose, there are courses, aptly named environmental education, offered at different levels. In a similar manner, the educational activities carried out in order to raise the awareness of individuals about the environment are called environmental education. Environmental education is deemed vital for a sustainable society (Guzelyurt and Özkan, 2018). Accordingly, the protection of the environment primarily depends on the attitudes developed by the individuals. There are certain factors that determine those environmental attitudes and behaviors amongst individuals. As it can be seen in Figure 1, the variables that shape the attitude towards environment are: ecological knowledge, environmental awareness, political education, level of education and culture, social environment and habitat, income and financial situation, occupation, gender, and age.

Environmental attitudes include all the feelings and emotions regarding the environment, and these can be expressed as emotions caused by environmental problems and through the stance against environmental problems and the efforts made to solve these problems (Bakan, 2020). There are many components of the environmental attitude in individuals, and the relationship between these components is of great importance in constituting the resources for developing a positive environmental attitude. According to the study conducted by Solekah, Handriana, Usman, Supriyanto (2020) in Indonesia, other components of environmental attitude are religious beliefs and experiences. Thus, social values and beliefs can also change the environmental attitude.



**Figure 1.** *Main Factors Determining Attitudes in Individuals (Atasoy, 2015).*

Social environment, school activities and mass media, as well as non-governmental organizations play an major role in raising positive environmental behavior and awareness (Sert-Çıbık, 2019). The efforts to protect and improve the environment aim at ensuring that the present and future generations live in a healthier and welfarer environment, and thus these efforts conclude that the burden rests on humanity to ensure this goal. In the development of appropriate resources, the most important tool is education (Çelikkıran, 1995). Without a doubt, the way to develop desired behaviors also lies in education. Through environmental education received for this purpose, the individuals can become sensitized to the environment and exhibit positive attitudes-behaviors. The goal of environmental education is to ensure individuals perceive environmental problems correctly and exhibit a positive environmental attitude along with sensitive and responsible behaviors (Hungerford & Volk, 1990, cited in Arık&Yılmaz, 2017).

The literature on environmental education reveals the diverse studies carried out: For example, in his study, Aydın (2010) examines the opinions of pre-service geography teachers on environmental issues and environmental education. Güven (2013) examines the environmental attitudes of pre-service science teachers, and his findings indicate that their attitudes are at a medium level. Another study examines the environmental attitudes of pre-service science teachers regarding environmental issues and their perceptions of environmental pollution (Arık&Yılmaz, 2017). The study conducted by Yılmaz, Morgil, Aktuğ, and Göbekli (2002) investigates the level of environmental knowledge of high school and university students regarding environmental problems and concepts, and they observe that the level of knowledge of the students is insufficient. The study conducted by Erdaş-Kartal and Ada (2019) attempts to find out the opinions of pre-service pre-school teachers on environmental problems and recycling, and it concludes that their knowledge is limited. In his study, Erol (2005) examines the environmental attitudes of the primary school pre-service teachers and identifies that their environmental knowledge is at a sufficient level. Yılmaz and Gültekin (2012) also examine the opinions of pre-service primary school teachers on environmental problems, concluding their knowledge is at a sufficient level. The literature reveals that there are various studies of different disciplines pertaining to the environmental attitudes of pre-service teachers (Çimen et al., 2019; Güşta-Şahin and Doğu, 2018). In addition, the literature also encompasses studies on students from all university departments (Acungil, 2020; Ek et al., 2009; Teyfur, 2017). In contrast with the available literature, this study aims to examine the environmental attitudes of pre-service teachers studying under various departments of a faculty of education according to different variables. In consideration of the importance of environmental education in teacher training and of the role that the teachers have in raising environmental awareness in their students, the data of this research is expected to offer contributions to the literature. The sub-problems of the study conducted for this purpose are as follows:

1. Do pre-service teachers' points on the environmental attitude scale differ according to their age?
2. Do pre-service teachers' points on environmental attitude scale differ according to their gender?
3. Do pre-service teachers' points on environmental attitude scale differ according to the program that they are studying?
4. Do the marks of pre-service teachers on the environmental attitude scale differ according to the region they live in?

## 2. METHOD

This study employs one of the quantitative search approaches, the survey model. The survey model is carried out to describe a situation as it is (Karasar, 2005). The survey model was deemed appropriate for this study, since it aims at describing the environmental attitudes of pre-service science, mathematics, social studies, primary school and pre-school teachers. Based on the samples used, a researcher using the survey method can often arrive at generalizations of the population of the study (Christensen, Johnson, & Turner, 2013).

### 2.1. Sample

The study group consists of 420 pre-service teachers enrolled at a university in Eastern Anatolia in the first semester of the 2019-2020 academic year. The demographic features of the study group are provided in the table below.

Table 1. Demographic Characteristics of the Study Group

<b>Variables</b>		<b>f</b>	<b>%</b>
<b>Gender</b>	Female	250	59.5
	Male	170	40.5
<b>Age</b>	20 and below	223	53
	21-23	149	35
	24 and above	48	12
<b>Region that they live in</b>	Eastern Anatolia	255	60.7
	South Eastern Anatolia	83	19.7
	Central Anatolia	16	3.8
	Black Sea	5	1.1
	Marmara	16	3.8
	Mediterranean	33	7.8
	Aegean	12	2.8
<b>Programs</b>	Pre-School	171	40.7
	Social Studies	82	19.7
	Science	59	14
	Primary School	57	13.5
	Mathematics	51	12.1

As it can be seen in Table 1, 59.5% of the pre-service teachers who participated in this research were female and 40.5% male; 53% were aged 20 and below, 35% were at the ages between 21 and 23, and 12% were aged 24 and above. Whereas most of the pre-service teachers lived in Eastern Anatolia (60.7%), and the region with the least frequency was the Black Sea Region (1.1%). 40.7% of the pre-service teachers studied in pre-school, 19.7% in social studies, 14% in science, 13.5% in primary school, and 12.1% in mathematics education departments.

### 2.2. Data Collection Tools

The data collection tools employed in the research were personal information forms and Environmental Attitude Scale.

*Personal Information Forms:* These were used to collect data on the variables of pre-service teachers' age, gender, programs that they study, and region that they live in.

*Environmental Attitude Scale*: On account of determining the environmental attitudes of pre-service teachers, this study made use of the Environmental Attitude Scale (EAS) developed by Berberoğlu and Tosunoğlu (1995), which was originally developed to determine the environmental attitudes of university students. The EAS is a 5-point Likert scale consisting of 21 items. While the highest score that can be received from the EAS is 105, the lowest score is 21. The scale consists of positive items (3<sup>rd</sup>, 4<sup>th</sup>, 6<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup>, 14<sup>th</sup>, 17<sup>th</sup>, 20<sup>th</sup> and 21<sup>st</sup> items) and negative items (1<sup>st</sup>, 2<sup>nd</sup>, 5<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup>, 18<sup>th</sup> and 19<sup>th</sup> items). Whereas the positive items in the scale are categorized as “Strongly Agree: 5, Agree: 4, Undecided: 3, Disagree: 2, Strongly Disagree: 1,” in contrast, the negative items are categorized as “Strongly Agree: 1”, “Agree: 2”, “Undecided: 3”, “Disagree: 4”, “Strongly Disagree: 5.” Berberoğlu and Tosunoğlu determined that the internal consistency coefficient of the scale that they developed was 0.77. In this study, the Cronbach’s alpha value of the scale was calculated as 0.84.

### 2.3. Data Analysis

The data from the other data collection tool, the personal information forms, are presented in a table in percentages and frequencies. In analysis of the data obtained through the environmental attitude scale, Kolmogorov-Smirnov test and Shapiro-Wilk test were performed to determine the conformity to the normal distribution. “Kruskal-Wallis” test and “Mann-Whitney U” test were performed for the variables that did not show normal distribution in normality test analysis, and ANOVA test was performed for those with normal distribution.

## 3. FINDINGS

This section provides the analyses of the data obtained for the sub-problems of the research.

### 3.1. Findings Obtained Regarding the First Sub-Problem of the Study

Normality test was conducted to determine whether the scores of the pre-service teachers on the environmental attitude scale were in accordance with the normal distribution in terms of the age variable. Since the sample size of the data was more than 30 people, “Kolmogorov-Smirnov” normality test was performed, and according to the results of the test, the data did not have a normal distribution. Therefore, Kruskal-Wallis test was applied to determine the scores of the pre-service teachers on the environmental attitude scale differ according to the age variable. The findings are seen in Table 2.

Table 2. Kruskal-Wallis test results for the age groups of pre-service teachers

Age Group	N	Mean Rank	SD	$X^2$	p
20 and below	223	210.83	2	13.842	0.001
21-23	149	191.88			
24 and above	48	266.76			

As it can be seen in Table 2, the attitudes of pre-service teachers differ significantly according to age ranges ( $X^2= 13.842$ ;  $SD=2$ ;  $p < 0.05$ ). ANOVA test was performed to determine which group or groups caused this difference, ANOVA test results are provided in Table 3.

Table 3. Analysis of variance results by age variable

Source	Sum of Squares	df	Mean Square	f	p
Intergroup	992,854	2	496,427	6,561	0,002
Intragroup	31549,858	417	75,659		
Total	32542,712	419			

As a result of the variance analysis performed in Table 3, a statistically significant difference was found ( $f=6.561$ ;  $p<0.05$ ). The results of Tamhane multiple comparison performed in order to determine from which age groups this difference arises indicated that the difference was caused by the age group of 24 and above. There was a statistically remarkable difference between the age group 24 and above ( $X= 86.312$ ), the age group 20 and below ( $X= 82, 165$ ;  $p= 05$ ;  $p<0.05$ ) and the age group 21-23 ( $X= 81.094$ ;  $p = 0$ ;  $p<0.05$ ). According to these results, the higher age in the group 24 and above caused a significant difference on attitude scores.

### 3.2. Findings Obtained Regarding Second Sub-Problem of the Study

Normality test was conducted to determine whether the scores of the pre-service teachers on the environmental attitude scale were in accordance with the normal distribution in terms of the gender variable. Since the sample size of the data was more than 30 people, Kolmogorov-Smirnov normality test was performed, and according to the results of the test, the data did not have a normal distribution. Therefore, Kruskal-Wallis test was applied to appoint the scores of the pre-service teachers on the environmental attitude scale differ according to the gender variable. The findings are presented in Table 4.

Table 4. Mann-Whitney U test results of attitude scores according to gender variable

Gender	n	Rank Sum	Mean Rank	U	z	p
Female	250	55283.50	221.13	18591.500	-2.179	0.029
Male	170	33126.50	194.86			
Total	420					

According to Table 4, the mean rank of the scores of males on the environmental attitude scale (194.86) are lower than the mean rank of the scores of the females (221.13). The results indicate that this difference is in favor of female pre-service teachers ( $U= 18591.500$ ;  $p < 0.05$ ).

### 3.3. Findings Obtained Regarding the Third Sub-Problem of the Study

Normality test was conducted to establish whether the scores of the pre-service teachers on the environmental attitude scale were in accordance with the normal distribution in terms of the program variable. Since the sample size of the data was more than 30 people, Kolmogorov-Smirnov normality test was performed, and according to the results of the test, the data had a normal distribution. Therefore, the ANOVA test was applied to define whether the scores obtained by the pre-service teachers from the environmental attitude scale differ according to the program that they study. The findings are shown in Table 5.



Table 5. ANOVA test results of attitude scores according to the studied program

Source	Sum of Squares	df	Mean Square	f	p
Intergroup	78.379	4	19.595	0.250	0.909
Intragroup	32464.333	415	78.227		
Total	32542.712	419			

According to the ANOVA test results, there was no significant difference between the groups or between any two groups ( $f=0.250$   $p>0.05$ ). There was no difference between the scores of students of different departments of pre-school, social studies, science, primary school, and mathematics on the environmental attitude scale.

### 3.4. Findings Obtained for the Fourth Sub-Problem of the Study

Normality test was conducted to assign whether the scores of the pre-service teachers on the environmental attitude scale were in accordance with the normal distribution in terms of the variable of the region they lived in. Whereas Kolmogorov-Smirnov test was used for data with a sample size of more than 30 people, Shapiro-Wilk test was used for data with a sample size of less than 30, and according to the results of these test, the data did not have a normal distribution. Therefore, Kruskal-Wallis test was applied to note whether the scores obtained by the pre-service teachers from the environmental attitude scale differ according to the region they live in. The findings are presented in Table 6.

Table 6. Kruskal-Wallis test results according to the region pre-service teachers live in

Regions they live in	n	Mean Rank	sd	$X^2$	p
Eastern Anatolia	255	204.46	6	9.859	0.131
Southeastern	83	204.02			
Central Anatolia	16	275.47			
Black Sea	5	169.50			
Marmara	16	257.63			
Mediterranean	33	210.20			
Aegean	12	252.08			

According to Table 6, the marks of the pre-service teachers on the scale do not differ significantly according to the regions they live in ( $X^2 = 9.859$ ;  $SD=6$ ;  $p > 0.05$ ).

## 4. DISCUSSION AND CONCLUSION

The aim of this study is to state the environmental attitudes of pre-service teachers according to different variables. The results of the analyses of the data obtained for this purpose demonstrate that there was an important difference between the ages of the pre-service teachers, leading to the conclusion that the environmental attitude increases with an increase in the age group. In the study conducted by Koçarslan et al. (2017) with university students, there was also a significant difference according to the age of the students. Likewise, in the study conducted by Ek et al. (2009) with university students, there was a remarkable difference between the age groups of the students and their scores on the environmental attitude scale, with the conclusion that this difference was in favor of the higher age group. Thereby, the studies in the literature support the present study. In contrast, there are also studies in literature in which there is no significant difference between

students' environmental sensitivity according to their age groups (Çabuk&Karacaoğlu, 2003).

Another result obtained from the findings of the search is that the scores of pre-service teachers' environmental attitudes differ according to gender. According to the results of this research, the scores of environmental attitude are in favor of female pre-service teachers. According to the “Gender and environmental Statistics” report of the OECD (2020) that include the results of the surveys conducted around the world, environmental attitudes and behaviors differ according to gender. Studies indicate that age and gender factors in environmental behavior change environmental behavior preferences. For example, in 11 countries (Australia, Canada, Chile, France, Israel, Japan, Korea, Netherlands, Spain, Sweden and Switzerland), whereas the percentage of females who use public transport is higher than males, the percentage of males using their own vehicles is higher than females. According to the report, women worldwide are more motivated towards the environment. The gender factor is also examined in the literature, and the results of the analysis of literature highlight the fact that there is a respectable difference in favor of females in attitude scores (Ağtaş, Bektaş & Güneri, 2019; Ahi & Özsoy, 2015; Çavuşoğlu, Altay, Nuriyeva & Öngör, 2017; Değirmenci, 2013; Gül, Çobanoğlu, Aydoğmuş & Türk, 2018; Okur Akçay, Halmatov & Ekin, 2017; Sönmez & Yerlikaya, 2017). In their study, Gökçe and Sarıyar (2019) investigate why the positive environmental attitude is in favor of females. According to the results of their study, this can stem from gender roles, emotional and physiological characteristics, traditions, family and environmental factors and etc. In contrast, some studies find no difference in environmental attitude based on gender (Soğukpınar & Karışan Korucu, 2020; Sürdür, Hastürk & Köklünar, 2017; Ultay, Ultay & Cilingir, 2019). Furthermore, there are some studies stating that environmental attitude scores are in favor of males. Sarac and Özarslan (2018) examine the environmental attitude levels and metacognitive abilities of gifted and talented students in terms of gender. The results of their study show that the environmental attitudes of gifted and talented male students were higher than the environmental attitudes of female students, and that the metacognitive ability levels of male students were higher than those of female students.

According to the analyses of the results of the other findings of this research, there were no remarkable differences in the attitudes of pre-service teachers towards the environment according to the programs that they study and the regions that they live in. Literature survey reveals that other studies obtained different results. For example, the study conducted by Öz Aydın, Şahin, and Korkmaz (2013) compares the environmental attitudes of pre-service science, primary school and pre-school teachers and finds that the pre-service pre-school teachers had the lowest scores. Özgen (2012) investigates the attitudes of pre-service mathematics, primary school, social studies and science teachers towards environmental problems, and the results of his study finds a statistically significant difference amongst pre-service teachers. Supporting the present study, Kanbak (2015) does not find a significant difference in the environmental attitudes amongst university students according to the place they live in. Following suggestions can be made according the results of this research:

According to the results of this search, the positive environmental attitude increases with an increase in age groups. More studies can be conducted to increase the environmental awareness of younger age groups. In such studies, emphasis can be on practical work rather than theoretical. Such studies may include fieldwork in nature studies that can create a



change in the interests and attitudes of younger age groups. In addition, further studies can retest the attitude scale used in this study with different age groups.

## REFERENCES

- Acungil, Y. (2020). Üniversite öğrencilerinin çevresel tutum ve davranış düzeylerini belirlemeye yönelik bir çalışma: Tokat Gaziosmanpaşa Üniversitesi örneği. *Ankara Üniversitesi SBF Dergisi*, 75(3), 997-1032.
- Ağtaş, B., Bektaş, O. & Güneri, E. (2019). Determination of attitude towards environment levels of secondary school students. *Online Science Education Journal*, 4(1), 66-85.
- Ahi, B & Özsoy, S. (2015). Elementary school teachers' attitudes towards environment: Gender and professional seniority factors. *Kastamonu Eğitim Dergisi*, 23(1), 31-56.
- Arık, S. & Yılmaz, M. (2017). Fen bilimleri öğretmen adaylarının çevre sorunlarına yönelik tutumları ve çevre kirliliğine yönelik metaforik algıları. *Kastamonu Eğitim Dergisi*, 25(3), 1147-1164.
- Atasoy, E. (2015). *İnsan doğa etkileşimi ve çevre için eğitim*. İstanbul: Sentez Yayıncılık.
- Aydın, F. (2010). Coğrafya öğretmen adaylarının çevre sorunları ve çevre eğitimi hakkındaki görüşleri (Gazi Üniversitesi Örneği). *International Online Journal of Educational Sciences*, 2(3), 818-839.
- Bakan, H. E. (2020). *Fen Bilgisi Öğretmen Adaylarının Çevreye Yönelik Tutumları*. Necmettin Erbakan Üniversitesi Eğitim Bilimleri Enstitüsü. Yüksek Lisans Tezi. Konya.
- Christensen, L.B., Johnson, R.B. & Turner, L.A. (2013). *Research methods, design, and analysis* (12th Edition), Pearson, ISBN-10: 9780205961252.
- Çabuk, B. & Karacaoğlu, Ö. C. (2003). Üniversiteli öğrencilerinin çevre duyarlılıklarının incelenmesi. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 36(1), 189-198.
- Çabuk, B (2019). *Erken Çocukluk Döneminde Çevre Eğitimi ve Sürdürülebilirlik* (Ed. Pamuk, E.D s:1-38). Anı Yayıncılık. Ankara.
- Çavuşoğlu F., Altay, B., Nuriyeva, G. & Öngör, B. (2017). Analysis of environment knowledge and attitudes of the primary school students. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, 20(4):254-259.

- Çelikkıran, A. (1995). İnsan, çevre, eğitim. *Kuram ve Uygulamada Eğitim Yönetimi*, 4(4), 569-572.
- Çimen, H. & Benzer, S. (2019). Fen bilgisi ve sınıf öğretmen adaylarının sürdürülebilir çevreye yönelik tutumlarının incelenmesi. *İnsan & İnsan*, 6(21), 525-542.
- Değirmenci, M. (2013). Examination of elementary students' environmental attitudes in terms of different variables (Example of the province of Kayseri). *Middle Eastern & African Journal of Educational Research*, Issue 3, 59-68.
- Ek, H. N., Kılıç, N., Ögdüm, P., Düzgün, G. & Şeker, S. (2009). Adnan Menderes Üniversitesinin farklı akademik alanlarında öğrenim gören ilk ve son sınıf öğrencilerinin çevre sorunlarına yönelik tutumları ve duyarlılıkları. *Kastamonu Eğitim Dergisi*, 17(1), 125-136.
- Erdaş-Kartal, E. & Ada, E. (2019). Okul öncesi öğretmen adaylarının çevre problemleri ve geri dönüşüm hakkındaki görüşleri. *YYÜ Eğitim Fakültesi Dergisi*, 16(1), 818-847.
- Erol, G.H. (2005). *Sınıf öğretmenliği ikinci sınıf öğrencilerinin çevre ve çevre sorunlarına yönelik tutumları*. Yayınlanmamış Yüksek Lisans Tezi, Pamukkale Üniversitesi, Denizli.
- Gökçe, N. & Sarıyar, S. (2019). Reasons for the differentiation of the attitudes of female and male students towards the environment: Teachers and parents opinions. *Western Anatolia Journal of Educational Sciences*, 10(2), 131-145.
- Gül, S., Çobanoğlu, İ. H., Aydoğmuş, M. & Türk, H. (2018). Investigation of primary school teachers' environmental attitudes: Samsun city case. *Ondokuz Mayıs University Journal of Education Faculty*, 37(2), 139-157.
- Güştâ-Şahin, H. & Doğu, S. (2018). Okul öncesi öğretmen adaylarının çevre sorunlarına ilişkin tutum ve davranışlarının incelenmesi. *İlköğretim Online*, 17(3), 1402-1416.
- Güven, E. (2013). Çevre sorunlarına yönelik tutum ölçeğinin geliştirilmesi ve öğretmen adaylarının tutumlarının belirlenmesi. *Gazi University Journal of Gazi Educational Faculty (GUJGEF)*, 33(2), 411-430.
- Güzelyurt, T. & Özkan, Ö. (2018). Okul öncesi öğretmenlerinin okul öncesi dönemde çevre eğitimine ilişkin görüşleri: durum çalışması. *Turkish Studies*, 13(11), 651-668.
- Kanbak, A. (2015). Üniversite öğrencilerinin çevresel tutum ve davranışları: Farklı değişkenler açısından Kocaeli Üniversitesi örneği. *Kocaeli Üniversitesi Sosyal Bilimler Dergisi*, (30), 77-90.

- Karasar, N. (2005). *Bilimsel araştırma yöntemi*. Nobel Yayınları.
- Keleş, Ö., Uzun, N. & Uzun, F. (2010). Öğretmen adaylarının çevre bilinci, çevresel tutum, düşünce davranışlarının doğa eğitimi projesine bağlı değişimi ve kalıcılığının değerlendirilmesi. *Elektronik Sosyal Bilimler Dergisi*, 9(32),384-401.
- Koçarlan, H., Kılınç E., Gedik, A. & Paksoy, M. (2017). Üniversite öğrencilerinin çevre du- yarlılıkları üzerine bir araştırma, *Journal of Social and Humanities Sciences Research*, 4(15), 1910-1916.
- Köşker, N. (2019). Pre-school children's perceptions of nature. *Bolu Abant İzzet Baysal University Journal of Faculty of Education*. 19(1), 294-308.
- OECD (2020). Gender and environmental statistics. (p.9). [brochure-gender-and-environmental-statistics.pdf \(oecd.org\)](https://www.oecd.org/dataoecd/12/51/5c9d8d8d.pdf)
- Okumuş, S. & Okur Akçay, N. (2020). Investigation of preservice preschool teachers' attitudes towards environment in terms of various variables. *Turkish Studies Education*, 15(2), 1101-1112.
- Okur Akçay, N., Halmatov, M. & Ekin, S. (2017). Examination of preschool teacher candidates' attitudes towards the tree and the environment. *Iğdır Üniversitesi Sosyal Bilimler Dergisi*, 13, 1-18.
- Öz Aydın, S., Şahin, S. & Korkmaz, T. (2013). İlköğretim fen bilgisi, sınıf ve okul öncesi öğretmen adaylarının çevresel tutum düzeylerinin belirlenmesi ve karşılaştırılması. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, 7(2), 248-267.
- Özgen, N. (2012). Öğretmen adaylarının çevre sorunlarına yönelik tutumları: Türkiye örneği. *Kastamonu Eğitim Dergisi*, 20(2), 403-422.
- Sadık, F. & Çakan, H. (2010). Biyoloji bölümü öğrencilerinin çevre bilgisi ve çevre sorunlarına yönelik tutum düzeyleri. *Ç.Ü. Sosyal Bilimler Enstitüsü Dergisi*, 19(1), 351-365.
- Sarac, H. & Özarslan, M. (2018). Üstün zekâlı ve yetenekli öğrencilerin çevresel tutum düzeyleri ile bilişüstü yetilerinin bazı değişkenler açısından incelenmesi. *Journal of Computer and Education Research*, 6(11), 65-87.
- Sert- Çıbık, A. (2019). Öğretim Programlarında Çevre Eğitimi. H.G.Hastürk (Ed), *Çevre eğitimi içinde* (277-344). Ankara, Anı Yayıncılık.

- Solekah, N.A., Handriana, T., Usman, I. & Supriyanto, A.S. (2020). Green marketing tools, supply chain, religiosity, environmental attitude and green purchase behavior. *International Journal of Supply Chain Management*, 9(4), 371-378.
- Soğukpınar, R. & Karışan Korucu D. (2020). Investigation of elementary school students' attitudes towards environment. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, (53)583-606.
- Sönmez, E. & Yerlikaya, Z. (2017). A field study on environmental knowledge levels and environmental attitudes of secondary education students: The case of Kastamonu city. *Kastamonu Eğitim Dergisi*, 25(3), 1239-1249.
- Teyfur, E. (2017). Üniversite öğrencilerinin çevreye yönelik görüşleri. *Iğdır Üniversitesi Sosyal Bilimler Dergisi*, 11, 73-87.
- Ultay, N., Ultay, E. & Cilingir, S.K. (2019). Investigation of environmental knowledge levels and attitudes of preservice pre-school teachers in terms of various variables. *Akdeniz Eğitim Arastirmalari Dergisi*, 13(28), 173-185.
- Yılmaz, A., Morgil, İ., Aktuğ, P. & Göbekli, İ. (2002). Ortaöğretim ve üniversite öğrencilerinin çevre, çevre kavramları ve sorunları konusundaki bilgileri ve önerileri. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 22, 156-162.
- Yılmaz, F. & Gültekin, M. (2012). Sınıf öğretmeni adaylarının çevre sorunları bağlamında öğrenim gördükleri programa ilişkin görüşleri. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi*, 18, 120-132.
- Yürüdü, E., Hastürk, H.G. & Köklünar, S. (2017). İlköğretim 8. sınıf öğrencilerinin çevreye yönelik tutumlarının incelenmesi. *Tarih Okulu Dergisi*, 10(29), 447-466.