



## EXAMINATION OF THE ENVIRONMENTAL AWARENESS PRIMARY SCHOOL STUDENTS AND THEIR ATTITUDES TOWARDS THE ENVIRONMENT

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### Abstract:

In this study, it is aimed to determine the environmental awareness of primary school students and their attitudes towards the environment. The environmental awareness and attitudes towards the environment of 4th grade primary school students have been examined according to the variables of gender, mother's education level, and father's education level. Relational survey model, one of the quantitative research methods, was used in the research. The study group of the research consists of 90 primary school students (54 girls, 36 boys) studying in a public school in the Central Black Sea Region in the 2020-2021 academic year. The research data has been collected using the "Primary School Environmental Awareness Scale" developed by Yıldız Yılmaz and Mentiş Taş (2017) and the "Primary School Environmental Attitude Scale" developed by Artvinli and Demir (2018). Pearson Correlation Analysis was used to find the relationship between students' environmental awareness and attitudes towards the environment in the data obtained in the study. In order to determine whether primary school students' environmental awareness and attitudes towards the environment change according to the determined variables, the distribution of the data was examined and Pearson Product-Moment Correlation, Two-Factor ANOVA for Unrelated Samples, Mann-Whitney U Tests from Non-Parametric Test methods were applied. According to the research findings, it was determined that the general averages of environmental awareness and the environmental responsibility in the sub-dimension of primary school students were at a high level, the sub-dimensions of life in nature and the recyclable

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energy sources and their usage were at a very high level, and the sub-dimension of the continuity of living things was at a moderate level. It has been found out that the environmental awareness of primary school students has not changed according to the variables of gender, mother's education level, and father's education level. It has been determined that the attitudes and sub-dimensions of primary school students towards the environment are at a moderate level. There was no statistically significant difference in the attitudes towards the environment and its sub-dimensions according to the educational status of the mother. A significant difference has been found in the positive environmental behaviors sub-dimension, which is one of the environmental attitude sub-dimensions, according to the educational status of the father. There was no statistically significant difference between primary school students' environmental awareness and their attitudes towards the environment. In order to increase students' environmental awareness and attitudes towards the environment, it is recommended to plan theoretical and applied activities by associating them with different courses.

**Keywords:** environment, environmental education, environmental awareness, environmental attitude, primary school students

## 1. Introduction

Human beings have lived as a part of the environment they live in since the day they came into existence, and have used nature and resources for their own needs. In recent years, activities such as industrialization, rapid population growth, urbanization and unconsciousness in the use of resources have caused the environment to change and accordingly, the natural balance to deteriorate and environmental problems that threaten all people (Yıldız, Sipahioğlu and Yılmaz, 2000).

Problems and environmental problems occurring in any part of the world do not only threaten living beings in a limited area and in a certain region, but also threaten all living and non-living beings by spreading all over the world through water and weather events through natural cycles. In the past, it was thought that the natural resources to meet the needs of the world's population would not be exhausted for a long time, and could even be infinite, but since the 20th century, this thought has been replaced by concern. Today, many scientific studies have revealed that resources are limited and are gradually decreasing as a result of human activities (Şafak and Erkal, 1999).

In the 20th and 21st centuries, the rapid development of technology gave birth to modern technology, and as a result of modern technological activities, people started to damage natural resources and consume resources unconsciously (Hastürk, 2016; Yücel and Babuş, 2005). Environmental problems have become inevitable when unconscious and insensitive human behavior is added to the increase in consumption as a result of improved living conditions (Uyanık, 2016).

It is thought that environmental problems that threaten the world cannot be solved unless significant changes are made in people's lifestyles that pollute the environment

and cause environmental problems (Selvi, 2007). The causes of environmental problems are in fact people's value judgments, lifestyles and attitudes. Raising generations who love, protect and care about nature has become even more important in the current century. Environmental problems are often caused by people's lack of understanding of nature and the ecological environment and inappropriate use of natural resources. Developing and strengthening public environmental awareness and encouraging everyone to pay attention to and protect our common environment is the fundamental solution to environmental problems (Wang et al. 2004). Therefore, in order to prevent environmental problems, it is of great importance to plan an education that will change the perspective of today's people towards nature (Gökçe, Kaya, Aktay, & Özden, 2007).

In the age we live in, learning to respect the environment, giving due importance to the environment, working to protect and improve it has become one of the essential elements of lifelong learning in terms of the balance of natural life and existence (Tung, Huang, & Kawala, 2020). Understanding the nature of environmental problems, proposing solutions to these problems and bringing about changes in people's behaviors related to the environment is only possible through environmental education (Özbuğutu, 2014).

The primary goal of environmental education is to change students' perspective on the environment. In order to be in harmony with the environment, students, who will take part in society as adult individuals in the future, should have comprehensive knowledge about the environment, develop positive attitudes, and be raised as individuals who are responsible and aware of the consequences of their actions (Gök, 2012). Environmental degradation can only be prevented if future generations are sensitive to the environment (Phenice & Griffore, 2003). It is known that childhood is a critical period in terms of concern, awareness, attitude, interest, behavior, valuing and acquiring knowledge about the natural world. Especially in recent years, the increase in environmental concerns has led to the inclusion of more studies on environmental awareness in preschool and primary school curricula (Gökçe et al. 2007). These characteristics can be possible with an effective environmental education. In order to increase the effectiveness of environmental education, it is important to carry out studies primarily during the preschool period and then in primary school periods (Vatansever Bayraktar & Fırat, 2020). In this context, it is thought that determining the environmental awareness and attitudes towards the environment of primary school students will have an impact on the prevention and solution of current and future environmental problems. The process of raising sensitive individuals who have knowledge and awareness about the environment is an extremely important issue that should start in the family and be addressed at preschool and primary education levels (Kıyıcı, Yiğit, & Darçın, 2014). Planning the activities to be carried out for raising environmental awareness from early age groups means taking steps for a livable environment in the future.

In order to ensure the permanence of environmental education given in school environments, it should cover a period starting from preschool period and including primary school (Başal, 2015). Considering that the attitudes and behaviors acquired

especially in the basic education period form the basis of the desired behavior in the future, it is very important to determine the characteristics such as attitudes, behaviors and awareness about the environment in preschool and primary school period (Demir & Yalçın, 2014). Developing environmental awareness and supporting positive attitudes towards the environment starting from the primary school level can help raise environmentally literate citizens and build a sustainable future (Baş, Tuncer, Ertepinar, 2011).

Environmental education is an education that aims to raise individuals who are knowledgeable, conscious and able to play an active role in solving environmental problems, not only on a regional scale but also on a national and even global scale. Environmental education aims not only to produce solutions to problems related to environmental issues, but also to create a world population with responsibilities in terms of attitudes and awareness that can prevent the formation of new problems. With this feature, environmental education draws attention as a lifelong interdisciplinary approach (Moseley, 2000). The nature of environmental education implies understanding the environment through education, being aware and conscious of the relationship between people's personal needs and wants and the environment, and changing people's attitudes and values towards the environment (Clements, Chenyang, & McCright, 2014).

Environmental awareness and environmental attitude are two important concepts emphasized in environmental education (Ham, Mrcela, & Horvat, 2016). Environmental awareness can be defined as having knowledge about the environment and its components, being sensitive to the environment and showing effective behaviors in protecting the environment (Grodzinska-Jurczak, Stepska, Niezpotek, & Bryda, 2006). According to Corraliza (2001), environmental awareness occurs when certain human actions based on a group of values, beliefs and regulations try to reduce the negative impact on the environment. The higher the environmental awareness, the higher the tendency to exhibit pro-environmental behavior (Handayani et al., 2021). As Grob (1995) states, in order to have environmental awareness, it is necessary to accept environmental problems emotionally. Because the onset or continuation of these problems is often linked to people's behavior (Castro & Lima, 2001). Cui, Hoje, and Velasquez (2015) defined environmental awareness as emotional attitudes towards the environment and environmental value. Morrison, Roderick and Parton (2015) considered environmental awareness as the public's perception that they understand the whole environment and environmental issues.

One of the best ways to protect the environment is to create environmental awareness in society and especially in students who will be future leaders (Thappa, 2001). Environmental awareness is one of the components of strengthening sustainable development in any country. Sustainable development can be defined as development that does not harm the environment or compromise the ability of future generations to meet their own needs while meeting the needs of the present (Dale, 2007). People with sustainable environmental awareness can show sensitivity to environmental crises in the world (Adriess, Plessis, & Al Shomoa, 2012).

Attitudes, which are effective in all areas of human life, also have an important effect when it comes to environmental education, raising public awareness and protecting national resources (Ekici, 2005). It has long been known that the root cause of many environmental problems and issues is irresponsible environmental behavior. One of the most important factors in behavior is undoubtedly attitude (Levine & Strube, (2012).

Environmental attitudes can be expressed as persistence and consistency, individual views about the value of the environment and human responsibility and role in the environment, as well as emotional dispositions such as aversion or favoritism and agreement or disagreement with respect to cognition (Brick and Lewis, 2014). Attitude towards the environment is considered as individual, persistent and consistent psychological awareness, emotion appraisal, or the idea and intention of action towards environmental problems (Lokhost, Hoon, Rutte, & Snoo, 2014).

Pro-environmental attitudes are defined as a set of values and actions that raise individual awareness about the environment (Schmitz & Rocha, 2018). The individual's assimilation of the accumulation of knowledge about the environment and the transformation of the acquired situation into behavior develops awareness and a positive attitude towards the environment (Alım, 2006). A person with positive environmental attitudes is more likely to make lifestyle choices that are less damaging to the environment (Tikka, Kuitunen, & Tynys, 2000).

Individuals' attitudes towards the environment often begin to take shape at an early age. Generally, by the time children reach adolescence, they have a certain amount of knowledge on issues such as technology and ecology. Research also shows that as individuals' knowledge about the environment increases, their attitudes towards the environment change positively (Bradley, Waliczek, & Zajicek, 2001). One of the most important issues that have been emphasized recently is the need to change not only active physical efforts to solve environmental problems but also the attitudes that people have developed about the environment (Lehman & Geller, 2004).

When the related literature was examined, it was found that environmental awareness was taught to university students (Lualhati, 2019; Navotny, Huttmanova, Valentiny, & Kalistova, 2021); high school students (Danielraja, 2019); middle school students (Aminrad, Sayed Zekeriya, Saman Hadi, & Sakari 2013; Şahin, 2022; ); primary school students (Çelikler, Aslan, & Yenikalaycı, 2019; Erdem, Meriç, & Meriç, 2019; Moravic & Cvjeticanin, 2014; Muldoon, Shelford, & Olivia, 2019) and preschool children (Akbayrak & Kuru Turaşlı, 2018).

Regarding attitudes towards the environment, teachers (Gül, Çobanoğlu, Aydoğmuş, & Türk 2019); university students (Orbanic & Kovac 2021; Türksever, 2021); high school students (Koruoğlu 2013); secondary school students (Ağtaş, Bektaş, & Güneri 2019; Atasoy & Ertürk, 2008; Erdoğan 2021; Erol, 2005; Hassan, Rahman, & Abdullah, 2011; Schimitz & Rocha, 2018; Soğukpınar & Karışan Korucu, 2020); primary school students (Aguilar, Waliczek, & Zajicek, 2008; Jinliang, Yunyan, Xiang, Xiafel, & Yuanmel 2004; Uzun & Şenler 2020; Yurttaş & Erdaş Kartal, 2021). However, when the

literature was examined, no study was found in which primary school students' environmental awareness and attitudes were addressed together. Therefore, it is thought that this study will contribute to the literature.

This research can provide information about the effectiveness of environmental education offered to students while determining the environmental awareness and attitudes towards the environment of primary school students. Therefore, it is thought that this research will provide data to the relevant literature for environmental education to be planned starting from early age groups and shed light on the curriculum designers.

Based on the mentioned characteristics, the aim of the study is to examine the environmental awareness and attitudes towards the environment of 4th grade primary school students. For this purpose, the problem statement of the study was determined as "Is there a statistically significant relationship between primary school students' attitudes towards the environment and their environmental awareness?". In this context, the following sub-problems were formed within the framework of the main objective of the research.

- 1) What is the level of environmental awareness of 4th grade primary school students?
- 2) Environmental awareness of 4th grade primary school students; i) Does it differ according to gender ii) mother's education level iii) father's education level?
- 3) What is the level of 4th grade primary school students' attitudes towards the environment?
- 4) Attitudes of 4th grade primary school students towards the environment; i) Does it differ according to gender ii) mother's education level iii) father's education level?

## **2. Material and Methods**

In this study, which aims to examine the environmental awareness and attitudes towards the environment of fourth grade primary school students, the relational screening model, one of the screening models, which is one of the quantitative research methods, was used. The relational survey model examines the relationship between two or more variables. In the relational survey model, which examines the variables without intervention, if there is a change detected, it is tried to determine how this change occurs (Karasar, 2011).

### **2.1. Working Group**

The study group of the research consists of 90 primary school fourth grade students studying in a district of a province in the Central Black Sea Region in the 2020-2021 academic year. While determining the study group of the research, the sample was selected by convenience sampling method. This sample was determined due to the size of the study population, the difficulty of collecting the data required for the research, the fact that the researcher was working in this region and the disruption of face-to-face education as a result of the declaration of "Pandemic" due to the "Covid-19" virus.

Convenience sampling is a non-random sampling method in which the sample segment to be selected from the main mass is determined by the judgment of the researcher. In convenience sampling, data are collected from the main population in the easiest, fastest and most economical way (Malhotra, 2004: 321, Aaker et al., 2007: 394, Zikmund, 1997: 428). The gender and parental education levels of the students participating in the study are given in Table 1 below.

**Table 1:** Distribution of the Students Participating in the Study According to Gender and Parental Education Status

Variables		N	%
Gender	Female	54	60.0
	Male	36	40.0
Mother Education Level	Primary School Graduate	23	25.6
	Secondary School Graduate	37	41.1
	High School Graduate	29	32.2
	University Graduate	1	1.1
Father's Education Level	Primary School Graduate	16	17.8
	Secondary School Graduate	18	20.0
	High School Graduate	45	50.0
	University Graduate	11	12.2
Total		90	100

As seen in Table 1, when the demographic characteristics of the students participating in the study are analyzed, it is seen that 54 (60%) of the students are female and 36 (40%) are male. Table 1 shows that 23 (25.6%) of the students' mothers were primary school graduates, 37 (41.1%) were middle school graduates, 29 (32.2%) were high school graduates and 1 (1.1%) was a college graduate. Table 1 also shows that 16 (17.8%) of the students' fathers were primary school graduates, 18 (20%) were middle school graduates, 45 (50%) were high school graduates and 11 (12.2%) were college graduates.

## 2.2. Data Collection Tools

"Primary School Environmental Awareness Scale" and "Environmental Attitude Scale for Primary School Students" were used as data collection tools in the study. Detailed information about the data collection tools is given below.

### 2.2.1. Primary School Environmental Awareness Scale

In order to determine the environmental awareness levels of primary school students, the 5-point Likert-type "Primary School Environmental Awareness Scale" consisting of 35 items and 4 sub-dimensions developed by Yıldız Yılmaz and Mentiş Taş (2017) was used. The sub-dimensions in the scale were determined as "Life in Nature", "Transformable Energy Sources and Uses", "Environmental Responsibility", "Continuity of Living Things". The "Life in Nature" sub-dimension of the scale consists of 15 items (1st, 2nd, 3rd, 4th, 4th, 5th, 6th, 7th, 7th, 8th, 9th, 10th, 10th, 11th, 12th, 15th, 16th, 17th items); the "Transformable Energy Sources and Uses" sub-dimension consists of 12 items (14th, 18th,

20th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 29th, 30th, 31st, 32nd, 33rd items); the "Environmental Responsibility" sub-dimension consists of 5 items (13th, 19th, 21st, 34th, 35th items); and the "Environmental Responsibility" sub-dimension consists of 5 items (13th, 19th, 21st, 34th, 35th items), 30th, 31st, 32nd, 33rd items; "Environmental Responsibility" sub-dimension consists of 5 items (13th, 19th, 21st, 34th, 35th items); "Continuity of Living Things" sub-dimension consists of 3 items (22nd, 23rd, 24th items). The items in the scale were scored as "Fully Agree" 5 points, "Agree" 4 points, "Undecided" 3 points, "Disagree" 2 points, "Strongly Disagree" 1 point. Exploratory factor analysis was conducted to test the construct validity of the "Primary School Environmental Awareness Scale" and item sum analysis, item discrimination and test-retest analyses were conducted to test its reliability.

The Cronbach's Alpha value for the whole scale was found to be .843. Cronbach's alpha value takes a value between -1 and +1 and the closer it gets to 1, the higher the reliability (Taber, 2018). There was a significant relationship between the test-retest results and the Pearson correlation coefficient was .884. It was concluded that the scale was valid and reliable. In line with these data, it was concluded that the scale could be used for this study.

### 2.2.2. Primary School Environmental Attitude Scale

In order to determine the attitudes of 3rd grade primary school students towards the environment, the Primary School Environmental Attitude Scale developed by Artvinli and Demir (2018) as a 3-point Likert-type 43-item scale was used. The scale has 3 sub-dimensions: "Positive Environmental Behaviors", "Environmental Knowledge and Awareness" and "Negative Environmental Behaviors". The "Positive Environmental Behaviors" sub-dimension of the scale consists of 27 items between items 1-27, "Environmental Knowledge and Awareness" consists of 10 items between items 28-37, and the "Negative Environmental Behaviors" sub-dimension consists of 6 items between items 38-43. The response options of the scale were determined as Agree 3 points, Partially Agree 2 points, Disagree 1 point. Reliability values for the sub-dimensions and the whole scale for the Primary School Environmental Attitude scale are given in Table 2.

**Table 2:** Reliability Values of the Subscales of the Primary School Environmental Attitude Scale

Scale Subdimension	Reliability Value
Positive Environmental Behaviors	.94
Environmental Knowledge and Awareness	.75
Negative Environmental Behaviors	.71
Primary School Environmental Attitude	.93
Primary School Environmental Awareness	.88

When Table 2 is examined, it is seen that the Cronbach's Alpha internal reliability coefficient of the scale is 0.93 for the whole scale; 0.94, 0.75, 0.71 for the sub-dimensions of positive environmental behaviors, environmental knowledge and awareness, and



negative environmental behaviors, respectively; and the primary school environmental awareness scale is 0.88. According to Büyüköztürk (2016), a reliability coefficient of 0.70 and higher is considered sufficient for the reliability of the test scores. In line with these data, it was concluded that the scale was usable for this study.

### 2.3. Data Analysis

The data obtained in the research were recorded in computer environment and statistical analyzes were made. The data obtained through the scales were analyzed one by one, the scores of each participant were determined and filed in SPSS data entry pages together with the information in the information form. In the analyses, all necessary descriptive statistical measures and Pearson Product Moment Correlation, Two-Factor ANOVA for Unrelated Samples, Mann-Whitney U Test from Nonparametric Test methods were analyzed according to the type of data groups. A significance level of .05 was adopted for the analyses. In the descriptive interpretation of the students' scores from the environmental attitude scale and the environmental awareness scale, the "series width / number of groups to be made" formula (Tekin, 1993) was calculated and given in Table 3.

**Table 3: Scoring Levels of the Scales Used in the Study**

Scales	Very Low	Low	Middle	High	Very High
1. Environmental Attitude	60-108	109-156	157-204	205-255	253-300
2. Positive Environmental Behaviors	27-49	50-71	72-92	93-113	114-135
3. Negative Environmental Behaviors	3-5	6-7	8-9	10-12	12-13
4. Environmental Knowledge	10-18	19-26	27-34	35-42	43-50
5. Environmental Awareness	35-63	64-91	92-119	120-147	148-175
6. Life in Nature	15-27	28-39	40-51	52-60	61-75
7. Convertible Energy Sources and Utilization	12-22	23-31	32-41	42-50	51-60
8. Environmental Responsibility	5-9	10-13	14-17	18-21	22-25
9. Continuity of Living Things	3-5	6-7	8-10	11-13	14-15

As seen in Table 3, the total score ranges taken as reference in the evaluation of the research findings are as follows: 60-108 "very low", 109-156 "low", 157-204 "medium", 205-252 "high", 253-300 "very high" for the environmental attitude scale; 27-49 "very low", 50-71 "low", 72-92 "medium", 93-113 "high", 114-135 "very high" for the positive environmental behaviors sub-dimension scoring; Total score ranges for the negative environmental behaviors subscale scoring; 3-5 "very low", 6-7 "low", 8-9 "medium", 10-12 "high", 12-13 "very high"; Total score ranges for the environmental knowledge subscale scoring; 10-18 "very low", 19-26 "low", 27-34 "medium", 35-42 "high", 43-50 "very high" and total score ranges for the environmental awareness scale; 35-63 "very low", 64-91 "low", 92-119 "medium", 120-147 "high", 148-175 "very high"; total score ranges for the scoring of the life in nature subscale; 15-27 "very low", 28-39 "low", 40-51 "medium", 52-60 "high", 61-75 "very high"; total score ranges for the scoring of the sub-dimension of convertible energy sources and use; 12-22 "very low", 23-31 "low", 32-41 "medium", 42-50

"high", 51-60 "very high"; total score ranges for the environmental responsibility sub-dimension scoring; 5-9 "very low", 10-13 "low", 14-17 "medium", 18-21 "high", 22-25 "very high" and finally total score ranges for the continuity of living things sub-dimension scoring; 3-5 "very low", 6-7 "low", 8-10 "medium", 11-13 "high", 14-15 "very high". In addition, the normality of the data distribution was examined and presented in Table 4.

**Table 4:** Normality Testing of the Data Used in the Study

	Kurtosis Value	Skewness Value
Mother Education Level	-1.06	-0.02
Father's Education Level	-0.45	-0.27
Gender	1.87	.41
Environmental Attitude	1.07	-.82
Positive Environmental Behaviors	1.11	-1.58
Environmental Knowledge Awareness	-.37	-.38
Negative Environmental Behaviors	-.23	.85
Environmental Awareness	.47	-.62
Life in Nature	-1.13	1.17
Convertible Energy Sources	-1.16	1.26
Environmental Responsibility	1.26	-1.04
Continuity of Living Things	.03	.70

Based on Table 4, the normality of the data was examined and the necessary test techniques were determined. As a result of the analyses conducted to examine the normality of the data distribution, the kurtosis value for the mothers' education level was calculated as (-1,06) and the skewness value as (-,02), the kurtosis value for the fathers' education level as (-,45) and the skewness value as (-,27), and the kurtosis value for the gender variable as (-1,87) and the skewness value as (.41). Considering the normality of the data distribution of the scales, the kurtosis value (1,07) and skewness value (-,82) for environmental attitude, the kurtosis value (1,11) and skewness value (-1,58) for positive environmental behaviors sub-dimension, the kurtosis value (-,37) and skewness value (-,38) for environmental knowledge awareness sub-dimension, and the kurtosis value (-,23) and skewness value (.85) for negative environmental behaviors sub-dimension were calculated. When the normality of the environmental awareness scale is examined, the kurtosis value (.47) and skewness value (-.62), the kurtosis value (1.43) and skewness value (-1.13) of the life in nature sub-dimension, the kurtosis value (1.43) and skewness value (-1.13) of the transformable energy resources sub-dimension, the kurtosis value (1.43) and skewness value (-1.13) of the transformable energy resources sub-dimension, and the kurtosis value (1.43) of the transformable energy resources sub-dimension, 17) and skewness value (-1,16), kurtosis value (1,26) and skewness value (-1,04) for the environmental responsibility sub-dimension, and kurtosis value (.03) and skewness value (.70) for the continuity of living things sub-dimension.

Tabachnick and Fidell (2013) stated that the kurtosis and skewness values should be between +1.5 and -1.5 in order for the data to have a normal distribution. It was

determined that the data, except for the variables of gender and pre-school education, had a normal distribution and met the homogeneity of variances condition.

The Mann-Whitney U Test, one of the nonparametric test methods, was used to test whether the environmental attitude of the students participating in the study differed according to their gender. Pearson Correlation Analysis was used to examine the relationship between students' environmental awareness and environmental attitude. In addition, the Two-Factor ANOVA test for Unrelated Samples was applied to test whether there was a significant difference between the educational levels of the students' parents and their environmental attitudes and environmental awareness.

### 3. Findings

#### 3.1 Correlation Results of Students' Environmental Attitude and Environmental Awareness

The correlation results of students' environmental attitude and environmental awareness are given in Table 5.

**Table 5:** Correlation Results of the Scales Used in the Study and Subscale Scores (n:90)

Variables		1	2	3	4	5	6	7	8	9
1. Environmental Attitude	r	1								
2. Positive Environmental Behaviors	r	.86**	1							
3. Negative Environmental Behaviors	r	.33**	-.07	1						
4. Environmental Knowledge	r	.79**	.58**	.19	1					
5. Environmental Awareness	r	.09	.02	.11	0.08	1				
6. Life in Nature	r	-.02	-.04	.03	-.06	.08**	1			
7. Convertible Energy Sources and Utilization	r	.06	.01	.03	.15	.79**	.50**	1		
8. Environmental Responsibility	r	.08	-.07	.21*	.09	.72**	.51**	.50**	1	
9. Continuity of Living Things	r	.22*	.18	.13	.10	.14	-.12	-.10	-.01	1

\*\*: $p < 0.01$  - \*: $p < 0.05$

As seen in Table 5, there was no statistically significant relationship between the environmental attitude scores of the students participating in the study and their environmental awareness ( $r = .09$ ,  $p > 0.05$ ). However, a low-level positive relationship was found between environmental attitude and the continuity of living things, which is one of the sub-dimensions of environmental awareness ( $r = .22$ ;  $p < .01$ ). In addition, a low-level relationship was found between environmental attitude scores and the sub-dimensions of negative environmental behaviors ( $r = .33$ ;  $p < .01$ ), while a high-level relationship was found between the sub-dimensions of positive environmental behaviors ( $r = .86$ ;  $p < .01$ ) and environmental knowledge ( $r = .79$ ;  $p < .01$ ). In addition, a low-level positive correlation was found between the general environmental awareness scale scores of the students and the continuity of living things sub-dimension of the scale ( $r = .33$ ;  $p < .01$ ).

### 3.2 General Distribution of Students' Environmental Awareness

Descriptive statistics on students' environmental awareness are presented in Table 6.

**Table 6:** Descriptive Statistics Regarding Students' Environmental Awareness (Life in Nature, Convertible Energy Sources and Uses, Environmental Responsibility, Continuity of Living Things)

Scales	n	Minimum	Maximum	$\bar{X}$	S
Environmental Awareness	90	110	175	146.37	12.24
Life in Nature	90	45	75	65.02	6.54
Convertible Energy	90	34	60	53.40	5.32
Environmental Responsibility	90	9	25	20.84	2.89
Continuity of Living Things	90	3	15	7.10	3.14

Table 6 shows the scores that students received from the environmental awareness scale. The lowest score for environmental awareness was 110, the highest 175, the standard deviation was 12.24, and the mean score was 146.37. The lowest score for the sub-dimension of living in nature is 45, the highest 75, the standard deviation is 6.54, and the mean score is 65.02. The minimum score for the sub-dimension of transformable energy sources and use is 34, the maximum score is 60, the standard deviation is 5.32, and the mean score is 53.40. The lowest score for the environmental responsibility sub-dimension is 9, the highest is 25, the standard deviation is 2.89, and the mean score is 20.84. The lowest score for the continuity of living things sub-dimension was 3, the highest was 15, the standard deviation was 3.14, and the mean was 7.10. Considering the mean scores of the students, it was seen that the continuity of living things sub-dimension was at a medium level, their environmental responsibility and environmental awareness were high, and the sub-dimensions of life in nature and the sub-dimensions of transformable energy sources and their use were very high.

### 3.3 General Distribution of Students' Environmental Attitudes

Descriptive statistics on students' environmental attitudes are given in Table 7.

**Table 7:** Descriptive Statistics on Students' Environmental Attitudes (Positive Environmental Behaviors, Environmental Knowledge and Awareness, Negative Environmental Behaviors)

Scales	N	Minimum	Maximum	$\bar{X}$	S
Environmental Attitude	90	98	180	152.23	15.01
Positive Environmental Behaviors	90	45	81	74.71	8.12
Environmental Knowledge Awareness	90	17	30	25.57	3.13
Negative Environmental Behaviors	90	6	18	9.61	3.48

Table 7 shows the scores of the students from the environmental attitude scale. The lowest score was 98, the highest 180, the standard deviation was 15.01 and the mean score was 152.23. The minimum score for the positive environmental behaviors sub-dimension is 45, the maximum score is 81, the standard deviation is 8.12, and the mean score is 74.71. The lowest 17, the highest 30, the standard deviation 3,13, and the average of the scores

of the environmental knowledge awareness sub-dimension is 25,57. The lowest 6, the highest 18, the standard deviation 3,48, and the mean of the scores of the negative environmental behaviors sub-dimension is 9,61. Considering the mean scores of the students, it was seen that the environmental knowledge awareness sub-dimension of the students was at a low level and the positive environmental behaviors, negative environmental behaviors, environmental attitude and negative environmental behaviors were at a medium level.

### 3.4 Analysis of Students' Environmental Attitudes According to Gender

Mann-Whitney U Test for Unrelated Measures was conducted to understand whether the environmental attitudes of the students differed according to their gender. The findings of the Mann-Whitney U Test are given in Table 8.

**Table 8:** U-Test Results of Students' Environmental Attitudes According to Gender

Scales	Gender	n	Rank Mean	Rank Sum	U	P
Environmental Attitude	Female	54	41.66	2249.50	764.50	.09
	Male	36	51.26	1845.50		
Positive Environmental Behaviors	Female	54	43.44	2345.50	860.50	.35
	Male	36	48.60	1749.50		
Environmental Knowledge Awareness	Female	54	40.44	2184.00	699.50	.02
	Male	36	53.08	1911.00		
Negative Environmental Behaviors	Female	54	43.26	2336.00	851.00	.31
	Male	36	48.86	1759.00		

As seen in Table 8, there was no statistically significant difference in students' environmental attitude, positive environmental behaviors and negative environmental behaviors in terms of gender [U=764,50, p>.05; U=860,50, p>.05; U=851,00, p>.05]. However, it was observed that the environmental knowledge awareness of the students differed significantly in terms of their gender [U=2303,50, p<.05]. Considering the rank averages, it is understood that the environmental knowledge awareness of male students is higher than that of female students. This finding indicates that gender affects environmental knowledge awareness.

### 3.5 Analysis of Students' Environmental Awareness According to Gender

Mann-Whitney U Test for Unrelated Measures was conducted to understand whether students' environmental awareness differed according to their gender. The findings of the Mann-Whitney U Test are given in Table 9.

**Table 9: U-Test Results of Students' Environmental Awareness According to Gender**

Scales	Gender	n	Rank Mean	Rank Sum	U	P
Environmental Awareness	Female	54	44.80	2419.00	934.00	.75
	Male	36	46.56	1676.00		
Life in Nature	Female	54	46.69	2521.00	908.00	.60
	Male	36	43.72	1574.00		
Convertible Energy Sources and Utilization	Female	54	44.49	2402.50	917.500	.65
	Male	36	47.01	1692.50		
Environmental Responsibility	Female	54	42.56	2298.00	813.00	.19
	Male	36	49.92	1797.00		
Continuity of Living Things	Female	54	43.35	2341.00	856.00	.34
	Male	36	48.72	1754.00		

As seen in Table 9, there was no statistically significant difference between the environmental awareness of the students and the sub-dimensions of life in nature, transformable energy sources and their use, environmental responsibility, and continuity of living things in terms of gender [U=934,00, p>.05; U=908,00, p>.05; U=917,500, p>.05; U=813,00, p>.05; U=856,00, p>.05].

### 3.6 Environmental Awareness of Students According to Their Mother's Education Level

The analysis of the scores of the environmental awareness scale and its sub-dimensions according to the education level of the students' mothers is given in Table 10.

**Table 10: Environmental Awareness (Life in Nature, Convertible Energy Sources and Uses, Environmental Responsibility, Continuity of Living Things) Levels According to the Education Levels of Students' Mothers**

Mother Education Level	n	Environmental Awareness		Life in Nature		Convertible Energy		Environmental Responsibility		Continuity of Living Things	
		$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
Primary School Graduate	23	143.09	14.76	63.22	8.63	52.22	5.36	20.26	3.58	7.39	3.61
Secondary School Graduate	37	148.97	10.40	66.27	5.50	54.16	4.86	21.29	2.57	7.24	3.20
High School Graduate	29	145.41	12.07	64.79	5.80	53.20	5.84	20.69	2.71	6.72	2.76
Higher School M.	1	153.00	-	67.00	-	58.00	-	22.00	-	6.00	-
<b>Total</b>	<b>90</b>	<b>146.37</b>	<b>12.24</b>	<b>65.02</b>	<b>6.54</b>	<b>53.40</b>	<b>5.31</b>	<b>20.84</b>	<b>2.89</b>	<b>7.10</b>	<b>3.14</b>

Table 10 shows the average scores of the students according to their mothers' level of education. It was seen that the highest mean scores of the environmental awareness of the students were graduates of higher education ( $\bar{X}$  =153,00) and the lowest mean scores were graduates of primary school ( $\bar{X}$ =143,09). According to the mean scores of the

students from the sub-dimension of life in nature, it was seen that the students with the highest awareness had mothers who were graduates of higher education ( $\bar{X}=67,00$ ) and the lowest ones were graduates of primary school ( $\bar{X}=63,22$ ). According to the results of the students' mean scores from the sub-dimension of transformable energy sources and their use, it was seen that the mothers of the students with the highest awareness were graduates of higher education ( $\bar{X}=58,00$ ) and the lowest were graduates of primary school ( $\bar{X}=52,22$ ). According to the results of the students' mean scores from the environmental responsibility sub-dimension, it was seen that the mothers of the students with the highest awareness were graduates of higher education ( $\bar{X}=22,00$ ) and the lowest ones were graduates of primary school ( $\bar{X}=20,26$ ). According to the results of the students' mean scores from the sub-dimension of life in nature, it was seen that the mothers of the students with the highest awareness were primary school graduates ( $\bar{X}=7,39$ ) and the lowest ones were high school graduates ( $\bar{X}=6,00$ ).

One Dimensional Analysis of Variance was conducted to determine whether the environmental awareness of the students showed statistically significant differences according to their mothers' educational status. The findings of the One Dimensional Analysis of Variance are given in Table 11.

**Table 11:** Variance Analysis of Students' Environmental Awareness According to their Mother's Education Status

		Sum of Squares	Sd	Mean Squares	F	P
Environmental Awareness	Between Groups	569.07	3	189.69	1.28	.29
	Within Groups	12767.83	86	148.46		
	Total	13336.90	89			
Life in Nature	Between Groups	137.99	3	45.99	1.08	.36
	Within Groups	36.69	86	42.68		
	Total	3807.95	89			
Convertible Energy	Between Groups	75.90	3	25.30	.89	.45
	Within Groups	2439.70	86	28.37		
	Total	2515.60	89			
Environmental Responsibility	Between Groups	17.45	3	5.82	.69	.56
	Within Groups	726.37	86	8.44		
	Total	743.82	89			
Continuity of Living Things	Between Groups	8.02	3	2.67	.26	.85
	Within Groups	870.09	86	10.12		
	Total	878.10	89			

As seen in Table 11, there is no statistically significant difference between students' environmental awareness, life in nature, transformable energy sources, environmental responsibility and continuation of living things dimensions and their mothers' educational status [ $F(3,89)= .29, p>.05$ ;  $F(3,89)= .36, p>.05$ ;  $F(3,89)= .45, p>.05$ ;  $F(3,89)= .45, p>.05$ ;  $F(3,89)= .56, p>.05$ ;  $F(3,89)= .85, p>.05$ ].

### 3.6 Environmental Awareness of Students According to Father's Education Level

The analysis of the scores of the environmental awareness scale and its sub-dimensions according to the education level of the students' fathers is given in Table 12.

**Table 12:** Environmental Awareness (Life in Nature, Convertible Energy Sources and Their Use, Environmental Responsibility, Continuity of Living Things) Levels According to the Education Levels of Students' Fathers

Father's Education Level	n	Environmental Awareness		Life in Nature		Convertible Energy		Environmental Responsibility		Continuity of Living Things	
		$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
Primary School Graduate	16	144.25	14.21	62.50	8.82	53.25	6.50	21.19	2.48	7.31	2.96
Secondary School Graduate	18	147.39	13.95	66.00	7.44	52.89	5.48	20.94	2.79	7.55	3.71
High School Graduate	45	147.75	11.17	65.22	5.26	53.89	4.95	20.62	3.09	7.22	3.15
Higher School Graduate	11	146.18	11.87	66.27	5.92	53.27	5.33	21.09	3.01	5.54	2.06
<b>Total</b>	<b>90</b>	<b>146.36</b>	<b>12.24</b>	<b>65.02</b>	<b>6.54</b>	<b>54.40</b>	<b>5.31</b>	<b>20.84</b>	<b>2.89</b>	<b>7.10</b>	<b>3.14</b>

Table 12 shows the average scores of the students according to their fathers' education levels. It was seen that the fathers of the students with the highest mean scores of environmental awareness were high school graduates ( $\bar{X}=147,75$ ) and the lowest were primary school graduates ( $\bar{X}=144,25$ ). According to the results of the mean scores of the students' life in nature sub-dimension, it was seen that the fathers of the students with the highest awareness were high school graduates ( $\bar{X}=66,27$ ) and the lowest were primary school graduates ( $\bar{X}=62,20$ ). According to the results of the students' mean scores from the sub-dimension of transformable energy sources and their use, it was seen that the fathers of the students with the highest awareness were high school graduates ( $\bar{X}=53,89$ ) and the lowest were middle school graduates ( $\bar{X}=52,89$ ). According to the results of the students' mean scores from the environmental responsibility sub-dimension, it was seen that the fathers of the students with the highest awareness were primary school graduates ( $\bar{X}=21,19$ ) and the lowest were high school graduates ( $\bar{X}=20,62$ ). According to the results of the students' mean scores from the sub-dimension of life in nature, it was seen that the fathers of the students with the highest awareness were middle school graduates ( $\bar{X}=7,55$ ) and the lowest ones were high school graduates ( $\bar{X}=5,54$ ).

One Dimensional Analysis of Variance was conducted to determine whether the environmental awareness of the students showed a statistically significant difference according to the educational status of their fathers. The findings of the One Dimensional Analysis of Variance are given in Table 13.



**Table 13:** Variance Analysis of Students' Environmental Awareness According to Father's Education Status

		Sum of Squares	Sd	Mean Squares	F	P
Environmental Awareness	Between Groups	97.68	3	32.56	.21	.89
	Within Groups	13239.22	86	153.94		
	Total	1336.90	89			
Life in Nature	Between Groups	137.99	3	45.99	1.08	.36
	Within Groups	3669.96	86	42.68		
	Total	3807.95	89			
Convertible Energy	Between Groups	8.99	3	2.99	.10	.96
	Within Groups	2506.61	86	29.15		
	Total	2515.60	89			
Environmental Responsibility	Between Groups	4.95	3	1.65	.19	.90
	Within Groups	738.87	86	8.59		
	Total	743.82	89			
Continuity of Living Things	Between Groups	31.71	3	10.57	1.07	.36
	Within Groups	843.39	86	9.84		
	Total	878.10	89			

As seen in Table 13, there is no statistically significant difference between students' environmental awareness, life in nature, transformable energy sources, environmental responsibility and continuation of living things dimensions and their mothers' educational status [ $F(3,89) = .89, p > .05$ ;  $F(3,89) = .36, p > .05$ ;  $F(3,89) = .96, p > .05$ ;  $F(3,89) = .96, p > .05$ ;  $F(3,89) = .90, p > .05$ ;  $F(3,89) = .36, p > .05$ ].

### 3.7 Environmental Attitudes of Students According to Their Mother's Education Level

The analysis of the scores obtained by the students from the environmental attitudes scale and its sub-dimensions according to their mothers' education levels is given in Table 14.

Table 14 shows the average scores of the students according to their mothers' level of education. It was seen that the highest mean scores of the students' environmental attitudes were obtained from their mothers who graduated from high school ( $\bar{X}=160,00$ ) and the lowest mean scores were obtained from their mothers who graduated from high school ( $\bar{X}=151,00$ ). According to the results of the mean scores of the students' positive environmental behaviors sub-dimension, it was seen that the students with the highest awareness were high school graduates ( $\bar{X}=81,00$ ) and the lowest were high school graduates ( $\bar{X}=73,55$ ). According to the results of the mean scores of the students' negative environmental behaviors sub-dimension, it was seen that the mothers of the students with the highest awareness were high school graduates ( $\bar{X}=10,00$ ) and the lowest were primary school graduates ( $\bar{X}=9,27$ ). According to the results of the students' mean scores from the environmental knowledge awareness sub-dimension, it was seen that the mothers of the students with the highest awareness were college graduates ( $\bar{X}=27,00$ ) and the lowest were middle school graduates ( $\bar{X}=24,95$ ).

**Table 14:** Environmental Attitude (Positive Environmental Behaviors, Environmental Knowledge and Awareness, Negative Environmental Behaviors) Levels According to the Education Levels of Students' Mothers

Education Level of Mothers	n	Positive Environmental Behaviors		Negative Environmental Behaviors		Environmental Knowledge Awareness		Environmental Attitude	
		$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
Primary School Graduate	33	75.00	8.79	9.82	3.61	26.43	3.46	154.17	16.96
Secondary School Graduate	37	75.27	6.69	9.72	3.65	24.95	3.12	151.78	13.07
High School Graduate	29	73.55	9.39	9.27	3.29	25.62	2.85	151.00	16.25
Higher School Graduate	1	81.00	-	10.00	-	27.00	-	160.00	-
<b>Total</b>	<b>90</b>	<b>74.71</b>	<b>8.12</b>	<b>9.61</b>	<b>3.48</b>	<b>25.57</b>	<b>3.13</b>	<b>152.23</b>	<b>15.01</b>

One Dimensional Analysis of Variance was conducted to determine whether the environmental attitudes of the students showed statistically significant differences according to the educational status of their fathers. The findings of the One Dimensional Analysis of Variance are given in Table 15.

**Table 15:** Variance Analysis of Students' Environmental Awareness According to their Mother's Education Status

		Sum of Squares	Sd	Mean Squares	F	P
Positive Environmental Behaviors	Between Groups	92.01	3	30.67	.46	.71
	Within Groups	5782.47	86	67.24		
	Total	5874.48	89			
Negative Environmental Behaviors	Between Groups	4.99	3	1.66	.13	.94
	Within Groups	1072.39	86	12.47		
	Total	1077.38	89			
Environmental Knowledge Awareness	Between Groups	33.73	3	11.24	1.15	.33
	Within Groups	840.37	86	9.77		
	Total	874.100	89			
Environmental Attitude	Between Groups	198.52	3	66.17	.29	.83
	Within Groups	19867.58	86	231.02		
	Total	20066.10	89			

As seen in Table 15, there is no statistically significant difference between the environmental attitudes, positive and negative environmental behaviors and environmental knowledge awareness of the students and their mothers' educational status [ $F(3,89)=.29, p>.05$ ;  $F(3,89)=.71, p>.05$ ;  $F(3,89)=.94, p>.05$ ;  $F(3,89)=.33, p>.05$ ;  $F(3,89)=.83, p>.05$ ].

### 3.8 Environmental Attitudes of Students According to Father's Education Level

The analysis of the scores obtained by the students from the environmental attitudes scale and its sub-dimensions according to their fathers' education levels is given in Table 16.

**Table 16:** Environmental Attitude (Positive Environmental Behaviors, Environmental Knowledge and Awareness, Negative Environmental Behaviors) Levels of Students According to Father's Education Level

Education Level of Fathers	n	Positive Environmental Behaviors		Negative Environmental Behaviors		Environmental Knowledge Awareness		Environmental Attitude	
		$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
Primary School Graduate	16	75.25	5.98	10.00	3.56	26.50	2.39	154.94	11.25
Secondary School Graduate	18	77.83	4.80	9.17	3.81	36.39	3.11	158.28	10.74
High School Graduate	45	74.73	8.39	9.84	3.46	25.42	3.24	151.60	15.19
Higher School Graduate	11	68.72	11.27	8.82	3.12	23.45	2.94	141.00	19.69
<b>Total</b>	<b>90</b>	<b>74.71</b>	<b>8.12</b>	<b>9.61</b>	<b>3.48</b>	<b>25.57</b>	<b>3.13</b>	<b>152.23</b>	<b>15.01</b>

Table 16 shows the average scores of the students according to their fathers' level of education. It was seen that the highest mean scores of the students' environmental attitudes were obtained from their mothers who graduated from secondary school ( $\bar{X}=158,28$ ) and the lowest from their mothers who graduated from high school ( $\bar{X}=141,00$ ). According to the results of the mean scores of the students' positive environmental behaviors sub-dimension, it was seen that the fathers of the students with the highest awareness were middle school graduates ( $\bar{X}=77,83$ ) and the lowest ones were high school graduates ( $\bar{X} =68,72$ ). According to the results of the students' mean scores from the negative environmental behaviors sub-dimension, it was seen that the fathers of the students with the highest awareness were primary school graduates ( $\bar{X}=10,00$ ) and the fathers of the students with the lowest awareness were high school graduates ( $\bar{X}=3,12$ ). According to the results of the students' mean scores from the environmental knowledge awareness sub-dimension, it was seen that the fathers of the students with the highest awareness were college graduates ( $\bar{X}=19,69$ ) and the fathers of the students with the lowest awareness were middle school graduates ( $\bar{X}=10,74$ ). One Dimensional Analysis of Variance was conducted to determine whether the environmental attitudes of the students showed statistically significant differences according to the educational status of their fathers. The findings of the One Dimensional Analysis of Variance are given in Table 17.

**Table 17:** Variance Analysis of Students' Environmental Awareness According to Father's Education Status

		Sum of Squares	Sd	Mean Squares	F	P
Positive Environmental Behaviors	Between Groups	574.01	3	191.34	3.10	.03
	Within Groups	5300.48	86	61.63		
	Total	5874.49	89			
Negative Environmental Behaviors	Between Groups	15.34	3	5.11	.41	.74
	Within Groups	1062.05	86	12.35		
	Total	1077.39	89			
Environmental Knowledge Awareness	Between Groups	79.12	3	25.37	2.73	.057
	Within Groups	797.98	86	9.28		
	Total	874.10	89			
Environmental Attitude	Between Groups	2180.75	3	726.92	3.49	.01
	Within Groups	17885.35	86	207.67		
	Total	20066.10	89			

As seen in Table 17, there is no significant difference between students' negative environmental behaviors and environmental knowledge awareness sub-dimensions and fathers' educational status [ $F(3,89) = .74, p > .05$ ;  $F(3,89) = .057, p > .05$ ]. The sub-dimension of positive environmental behaviors and environmental attitudes of the students differed according to the educational status of the fathers [ $F(3,89) = .03, p < .05$ ;  $F(3,89) = .01, p < .05$ ]. Scheffe technique was applied to test which groups these differences were between. As a result of the analysis, it was determined that the difference was higher for the positive environmental behavior sub-dimension scores and environmental attitude scores of those whose fathers graduated from secondary school than those whose fathers graduated from higher education (I-J:9,11,  $p = .03, p < .05$ ; J:17,28,  $p = .03, p < .05$ ).

#### 4. Discussion and Recommendations

Environmental problems affect all human beings and their solutions are problems that concern the whole world. For this reason, it is important that children, who will be the adults of the future, are introduced to the environment from an early age and equipped with environmental education. Because if students who are aware of the environment, who can take environmental responsibility, and who can develop positive attitudes towards the environment are raised, there will be less concern for a livable world in the future. With an effective environmental education, individuals can achieve gains such as living in an understanding of nature and natural balance, developing positive attitudes towards the environment, and acquiring the necessary behaviors for environmental problems (Erol & Gezer, 2006; Milton et al., 1995). At this point, it is important to start environmental education from an early age. Because environmental education from an early age is an important factor in children's attitudes, perceptions and sensitivity towards the environment (Erkol & Erbasan, 2018). For this reason, in line with the aim of the study, the environmental awareness and attitudes towards the environment of primary school 4th grade students were examined.

In line with the main problem of the study, it was determined that there was no significant relationship between primary school students' environmental awareness and their attitudes towards the environment. However, Aminrad et al. (2013), in their research examining the relationship between environmental awareness, environmental attitude and environmental knowledge of secondary school students, found that there was a highly significant relationship between environmental awareness and environmental attitudes of secondary school students. In addition, a weak relationship was found between environmental awareness and environmental knowledge.

It was determined that 4th grade primary school students had high levels of environmental awareness with the scores they received from the environmental awareness scale and its sub-dimensions. Bostancıoğlu, Varol Saraçoğlu, and Öztürk (2017), Çelikler, Aksan, and Yenikalayacı (2019), Vatansever Bayraktar and Fırat (2020), and Arshad, Saleem, and Safi (2021) also determined that students' environmental awareness was high. Among the sub-dimensions of environmental awareness of primary school students, it was determined that the level of environmental responsibility was at a high level, and the sub-dimensions of life in nature and transformable energy sources were at a very high level. In this respect, the research is in parallel with the research conducted by Vatansever Bayraktar and Fırat (2020). It was determined that primary school students' environmental awareness was at a medium level according to the continuity of living things sub-dimension. However, Vatansever Bayrak and Fırat (2020) found that the continuity of living things sub-dimension was at a low level. According to the results of the research conducted by Erdem, Meriç, and Meriç (2019), it was determined that the students' environmental awareness and life in nature, transformable energy sources and their use, and environmental responsibility sub-dimensions were at a high level, while the continuity of living things sub-dimension was at a low level.

It was determined that 4th grade primary school students' environmental awareness and its sub-dimensions did not create a statistically significant difference according to the gender variable. Sancak (2019) determined the level of awareness of undergraduate students studying in the field of science and mathematics towards environmental problems, Danielraja (2019) determined the environmental awareness of high school students, Muldon et al. (2019) determined whether the level of environmental awareness of primary school children differs according to gender and age, and Navotny et al. (2021) determined the environmental awareness and sub-dimensions of university students. On the other hand, Sönmez (2021), Vatansever Bayraktar and Fırat (2020) examined the environmental awareness levels of primary school students and found that the environmental awareness of female students was statistically significantly higher than male students.

It was determined that the environmental awareness and sub-dimensions of primary school 4th grade students did not make a significant difference according to the mother's education status variable. In the studies conducted by Erdem, Meriç and Meriç (2019), Vatansever Bayraktar and Fırat (2020), no significant difference was found

between students' environmental awareness and its sub-dimensions in terms of mother's education status.

It was determined that primary school students' environmental awareness and its sub-dimensions did not create a significant difference according to their father's education status. In the study conducted by Erdem, Meriç, and Meriç (2019), it was found that environmental awareness and its sub-dimensions did not make a significant difference according to father's education status. In the study conducted by Vatansever Bayraktar and Fırat (2020), no statistically significant difference was found in the sub-dimensions of life in nature, transformable energy sources and their use, and the continuity of living things according to the father's education status variable of primary school students' environmental awareness. However, in the sub-dimension of environmental responsibility, the scale scores of students whose fathers graduated from high school were higher than those whose fathers graduated from primary and secondary school.

It was determined that the scores of primary school students from the environmental attitude scale and its sub-dimensions and their attitudes towards the environment were at a medium level. In the study conducted by Hassan, Rahman, and Abdullah (2011) with university students, it was concluded that environmental knowledge, awareness and attitude scores were at a high level, but environmental practices were at a medium level.

It was found that there was no statistically significant difference between primary school students' attitudes towards the environment and its sub-dimensions and their mother's education status. This result is in line with the studies of Ađtaş, Bektaş and Güneri (2019), Erol (2005), Yurttaş, Erdaş and Kartal (2021). It was determined that negative environmental behavior and environmental knowledge awareness sub-dimensions of primary school students' environmental attitudes and sub-dimensions did not create a significant difference according to father's education status. However, it was determined that the positive environmental behavior sub-dimension differed according to the father's education status variable. It was determined that the attitude scores of primary school students whose fathers graduated from middle school were higher than those whose fathers graduated from high school. In the study conducted by Sođukpınar and Karıřan Korucu (2020) with secondary school students, it was concluded that students' attitudes towards the environment differed according to the level of parental education.

No significant difference was found in terms of gender in terms of positive environmental behaviors and negative environmental behaviors sub-dimensions of primary school students' environmental attitudes. In the sub-dimension of environmental knowledge, male students were found to be at a higher level than female students. In the studies of Ađtaş, Bektaş and Güneri (2019), Atasoy and Ertürk (2008), Çavuşođlu, Altay and Nuriyeva (2017), Koruođlu (2013), Erol (2005), it was concluded that the gender variable affects the attitude towards the environment. On the other hand, in the research conducted by Hassan, Rahman and Abdullah (2011) Schimitz and Rocha

(2018), no significant difference was found at the level of environmental attitude according to gender.

When the results of the study and the related literature are analyzed as a whole, the following recommendations are presented. In this study, primary school students' environmental awareness and attitudes towards the environment were determined. In future studies, different variables can be added to the scales of environmental awareness and attitudes towards the environment and more detailed results of primary school students on the research topic can be obtained.

The research is a quantitative study. More in-depth research can be conducted on environmental awareness and attitudes towards the environment with both qualitative and quantitative methods.

In the study, the environmental awareness and attitudes towards the environment of 4th grade primary school students were examined. Comparisons can be made by investigating the environmental awareness and attitudes towards the environment of students at other grade levels and students at other levels (middle school, high school).

### **Conflict of Interest Statement**

The authors have no conflicts of interest to declare.

### **Acknowledgements**

This paper was prepared from the second author's master's thesis under the consultancy of the first author.

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