



Inter-Students: Students' Opinions and Ethical Perceptions on Environment and Sustainability

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Öğrenciler-Arası: Öğrencilerin Çevre ve Sürdürülebilirliğe Yönelik Görüş ve Etik Algıları

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Abstract

This research has been examined in terms of determining the views and ethical perceptions of students studying at middle school, high school and university levels towards the environment and sustainability. The research was carried out with a total of 150 students, 50 students from each education level. The interview form for the environment and sustainability developed by the researcher was used as a data collection tool in the research. As a result of the research, it was determined that the students' environmental awareness and ethical perceptions were high, but they had insufficient knowledge within the scope of sustainability. It is thought that the research data will be an example for future studies on the interdisciplinary environment or sustainability concepts.

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Öz

Bu araştırma ortaokul, lise ve üniversite kademelerinde öğrenim görmekte olan öğrencilerin çevreye ve sürdürülebilirliğe yönelik görüşlerinin ve etik algılarının belirlenmesi açısından incelemiştir. Araştırma her eğitim kademesinden 50 öğrenci olacak şekilde, toplamda 150 öğrenci ile gerçekleştirilmiştir. Araştırmada veri toplama aracı olarak araştırmacı tarafından geliştirilen çevreye ve sürdürülebilirliğe yönelik görüşme formu kullanılmıştır. Araştırma sonucunda öğrencilerin çevreye yönelik farkındalık düzeylerinin ve etik algılarının yüksek olduğu ancak sürdürülebilirlik kapsamında yetersiz bilgi düzeyinde oldukları belirlenmiştir. Araştırma verilerinin, disiplinler arası nitelikte olan çevre ya da sürdürülebilirlik kavramlarına yönelik gelecek çalışmalara örnek olacağı düşünülmektedir.

Makale Bilgisi

Anahtar Kelimeler: Çevre, sürdürülebilirlik, görüş, etik, öğrenim kademesi

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Introduction

In order to prevent global climate change, the damages caused by fossil fuels such as coal and natural gas, especially oil, which have been used in the industrial sector since the industrial revolution, have been discussed for years (Epstein, 2014). It is predicted that the amount of CO₂ in the atmosphere, which has reached almost twice its pre-industrial value due to fossil fuels, will reach much higher levels in the coming years if no measures are taken (International Energy Agency (International Energy Agency, 2020; National Oceanic and Atmospheric Administration, 2022). The world population is expected to reach 9.6 billion in 2050 and 11 billion in 2100, so it is predicted that the amount of biological capacity per capita will decrease further (World Wide Fund for Nature, 2023). Is it ethical when it is necessary to remove some members of an overpopulated species in order to maintain the balance of an ecosystem or to balance the amount of biocapacity? Or are the concepts of environment or sustainability only important for humans? When we are always expected to keep up with today's age and technology and we adopt this as a duty, we realize that the change is not only in ourselves, but in the whole of our environment. Change has different meanings for each individual; According to some, it is the invention of the magnetic compass or the production of the first cereal. Change; To an artist it might be the invention of the first oil painting, to a biologist or engineer it might be the invention of the microscope, to a philologist the publication of the first English dictionary, to a medical doctor the production of a smallpox vaccine, to some the production of the first video game or self-cleaning windows. But does the production of the first plastic have the same meaning for an environmentalist or the owner of an automotive company? What about a grandfather and grandson? The simple mathematically thoughtful answer to these questions may be uncomplicated personally, but do we all give the same answer? These and similar questions are among the questions that "environmental ethics" investigates. Some are spiritual considerations of specific questions faced by individuals in certain circumstances, while others are more global questions that communities are trying to tackle (Brennan & Lo, 2002).

Since the industrialization, the unconscious consumption of resources, the destruction of the natural environment, rapid population growth, deforestation, intense consumer lifestyle and the deterioration of the ecological balance as a result of people's efforts to dominate nature raise concerns for our future (Eroğlu, 2009; Özer, 2001; Yapıcı, 2003; Keleş, 2007). The environment is the economic, social, cultural, etc. of people throughout history. affected by all its activities, and when the environmental problems that emerged as a result of these effects became striking; Environmentalist approaches such as reversing the effects of damage to nature and ecological recovery have begun to come to the fore (Özer, 2007; Özer, 2015). Especially in the field of education, the concept of sustainable development and new approaches to this concept are seen as the cornerstone of environmental education (Bonnett, 2002). It is accepted that education, which is carried out by providing the right infrastructure for the environment in a global crisis, is the most effective way to create a social and intellectual basis for the implementation of sustainable development principles (Nasibulina, 2015). Because the sustainable development of the world largely depends on the upbringing of good people and Vernadsky's (1991) saying "a person's personality is the key to everything" sheds light on this thought (Vernadsky, 1991, s.102; Brennan & Lo, 2002; Nasibulina, 2015). Bringing the right attitude and behavior towards the environment and sustainability to individuals is seen as a long-term investment that will affect not only their national interests but also the whole world (United Nations Educational, Scientific and Cultural Organization, 2022).

In addition to the many consequences of the damage we have done to nature for many years, today we are experiencing devastating effects such as climate crisis, mucilage and COVID-19. These days, when we try to reverse and eliminate these effects, the importance of education in raising individuals with love and respect for nature comes to the fore once again. Students, who are our future, will form the basic step in gaining the desired and expected behaviors. Because, in order for the Sustainable Development Goals to be transferred to the society, it is important that they be understood correctly. In addition, various social responsibility projects, environmental or sustainability studies often show that they support an instrumental perspective on sustainability (Schuler, Rasche, Etzion & Newton, 2017). The idea of sustainable development and the development of the right attitudes and behaviors towards the environment should become the basis of education (Nasibulina, 2015).

Especially when a 'behavior' is evaluated in terms of education, gaining that behavior can only be achieved through a certain training process. Because education shows parallelism with the behavior and development level of the individual. The proposed area where the environment has been studied the most and is still necessary for research is education. In the field of education, it has been determined that there is a close relationship between the environmental phenomenon, which is emphasized as being interdisciplinary, and various courses such as science, social studies, geography, mathematics and chemistry. For many years, it has been the subject of many types of research such as articles and dissertations. In most of these studies, the attitudes of the participants towards the environment were examined. As a result of these examinations, high results were obtained on the basis of attitude or behavior in general (Tilbury, 1995; Bonnett, 2002; Akkuş, Demir & Maskan, 2005; Özdemir, 2010; Engin, 2010;

Yücel Işıldar & Yıldırım, 2010; Tanrıverdi, 2010; Güler, 2010; Kaya, Çobanoğlu & Artvinli, 2011; Kronlid & Öhman, 2013; Güven, 2014; Nasibulina, 2015; Tunç, 2015; Ergün & Çobanoğlu, 2017; Bielefeldt et al., 2018; Boca & Saraçlı, 2019; Topkaya & Doğan, 2019; Bacakoğlu & Taş, 2020; Kopnina, 2020; Walsh, Böhme & Wamsler, 2021; Tekiroğlu & Hayır Kanat, 2021).

Although the data of the studies find the participants' levels high in many aspects such as attitudes, awareness, and ethical perceptions, it is known that it is not very possible to acquire a behavior or reach the desired behavior level in terms of duration, since it is generally studied in sample groups with certain variables (Semerci, 2015). In addition, it is observed that the attitudes towards the environment do not develop sufficiently in the future, especially in children who have low environmental awareness at an early age or who do not have environmental awareness (Robertson, 2008; Wilson, 1996). A study conducted by Prince (2011) reveals that various activities related to environmental education for preschool children are effective in raising children's awareness of the concept of sustainability. There are studies that argue that there is no ecology-based environmental education at primary, high school and adult education levels in Turkey (Keleş, 2007; Özdemir, 2010; Demir & Yalçın, 2014; Gülersoy, Dülger, Dursun, Ay & Duyal, 2020). It is known that the reaction or perspective given to the developments or events in the world differs according to the changes such as age, gender, profession, and interest (Kraus, 2017). There are inconsistencies as well as differences in the definition and expression of the term generation and studies in the literature, due to reasons such as the fact that some events affect all periods instead of a certain period, or the relativity of reactions to events (Schewe & Noble, 2000; Özkan & Solmaz, 2015). According to the research carried out by Güngör and Kalburan (2022), it was determined that the ecological footprint awareness levels of the participants differed according to their education levels, according to some variables. When the results of the study by Cevher-Kalburan, Kandır and Yurt (2010) and by Şahin and Doğu (2018) are examined, it is seen that the environmental attitude scores of the participants increase as the age of the participants increases.

For this purpose, in the study carried out for the environment and sustainability; It was aimed to determine the views and ethical perceptions of students studying at different education levels on the concepts of “environment” and “sustainability”.

In this context, the research questions are;

- What is the nature of students' views on the environment and sustainability?
- Do students' views on environment and sustainability differ according to their education levels?
- What is the nature of students' ethical perceptions towards the environment and sustainability?
- Do students' ethical perceptions regarding the environment and sustainability differ according to their education levels?

Method

In the study carried out for this purpose, due to the differences and inconsistencies in the definition and expression of the reaction or perspective given to the developments or events, and some events affecting all periods instead of a certain period, or the relativity of the reactions to the events; It was aimed to determine the views and ethical perceptions of students studying at different education levels on the concepts of environment and sustainability. The research is to determine the differences of the general views of the students studying at different education levels about the environment, which is of global importance and which should be kept under the spotlight, and the differences of their views on the environment according to the education level they are studying.

A case study is a methodological approach that involves in-depth examination of a limited system using multiple data collection to gather systematic information about how it works and works. In terms of the methods and techniques included in the research; It is qualitative study and is a cross-case study (Chmiliar, 2010; Gerring, 2007). It is a study in which the descriptive analysis method for the environment and sustainability is applied within the scope of the interview form. From this point of view, the researcher aims to organize and interpret within the framework of certain concepts that are similar to each other (Creswell, 2020, pp. 72-98; Şimşek & Yıldırım, 2014) and to produce in-depth information about the feelings and opinions of students about the environment and sustainability concepts by investigating their experiences and perceptions.

The current study focused on the students' opinions and ethical perceptions on environment and sustainability. Research and publication ethics were followed. The study was approved by the Çanakkale Onsekiz Mart University Ethics Committee (Date: 15.12.2022, Number: 22/52).

Participants

This research was carried out with students studying at middle and high school levels affiliated to the Ministry of National Education in Çanakkale province, and university students studying at Çanakkale Onsekiz Mart University Faculty of Education, who voluntarily participated in the study in the 2022-2023 academic year. The universe of the research consists of students studying at secondary school, high school and university level in Çanakkale City Center. The sample of the research consists of students studying in accessible schools. The participants of the study were determined by simple random sampling method. For students studying at secondary and high school level, first of all, the necessary permissions were obtained from the school administration and classroom teachers, and the application was made. Permission was obtained from students and parents within the scope of voluntary participation principle. For students studying at university level, research permission was obtained within the scope of voluntary participation principle.

According to the education level of the students participating in the research; middle school level is classified as first group “ML”, high school level second group “HL” and university level third group “UL” codes as 3 groups in total. A total of 50 students from each education level were studied, and students studying at the middle school level were given ML1, ML2, ML3,..., ML50; HL1, HL2, HL3,..., HL50 for high school students; The students studying at the university level were given codes as UL1, UL2, UL3,..., UL50.

Since the variable to be evaluated within the scope of the research is only the level of education, students' age, gender, class level, etc. information was not collected. In the selection of the working group; In terms of the validity and reliability of the data obtained, care was taken to select an equal number of students for each grade level and gender, and the applicability of the research was taken into account.

Data Collection and Analysis

The education levels of the students participating in the research were determined with the personal information form. Within the scope of the research, with 3 science education specialists and 2 environmental engineers; considering that it is clear and understandable by students at all levels of education; 5 main themes were determined as environment, climate, energy, sustainability, views and ethical understandings. The first question of the interview form applied to the students within the scope of these themes was prepared for them to write the words they associate with the concepts of Environment, Climate, Global Warming, Renewable Energy and Sustainability. The 2nd, 3rd, 4th and 5th questions of the interview form are aimed at determining the opinions of the students participating in the research about the environment; Questions 6, 7, 8 and 9 were prepared to determine their ethical perceptions towards the environment.

For the interview form, a pilot application was carried out with 2 science education specialists who teach environmental courses. There were no items added or removed in line with the pilot application carried out with expert opinions. The interview form, the final version of which was determined as 9 items, was applied to the study group of the research by giving direct information to the participants about the importance, content, scope and how it should be filled. The application process of the interview form was prepared to take an average of 25 minutes. Attention was paid to ensure that the answers to the interview form and the findings to be obtained were expressions that would reflect the qualified, sincere and true thoughts of the participants. thus, the effect of some limiting factors was tried to be reduced and the collection of data that did not reflect the truth was tried to be prevented. In this regard, short breaks were given after each question in the interview form with the data collected online with the participants. The interview form, which is the data collection tool of the research, was collected online with the participants. No tools such as paper or pencil were used within the scope of the research.

As the first step in the analysis of the data, the answers given by the students participating in the research to the first question of the interview form; It has been analyzed under the headings of Environment, Climate, Global Warming, Renewable Energy and Sustainability. Within the scope of the first question of the interview form, students were asked to write the words they associated with these concepts and then to answer the interview form questions. The answers of the students participating in the research are stated in the findings section in the form of frequency and percentage according to the education level of the students. The answers of the students participating in the research to the other questions of the interview form were analyzed by descriptive analysis method. Some of the answers given by the students to the interview form are included in the findings section of the study with the codes (ML, HL, UL) given to the students within the scope of the confidentiality of personal data.

Results

The data obtained from the interview form prepared by the researchers were given as percentage/frequency and some of the students' answers were given respectively.

The answers of the students to the question of the interview form “ Write the words you associate with the concept of environment”; It was determined that the answers (f=244) of the students studying at the middle school level constituting the ML group constitute 23.0% of all answers, the answers of the students studying at the high school level forming the HL group (f=354) accounted for 33.4% of all answers and the answers (f=461) of the students studying at the university level forming the UL group accounted for 43.5% of all answers (Table 1).

The most frequently repeated words in students' answers were determined; “Animals” (19.7%), “People” (16.8%), “Tree” (14.3%), “Waste/Garbage” (13.1%) were among the answers of the ML group; “People” (13.6%), “Nature” (13.6%), “Waste/Garbage” (13.3%), “Animals” (12.1%), “Plants” (12.1%) , “Sea/Ocean” (10.7%), “Environmental Pollution” (10.5%) and “Recycling” (10.5%) were among the answers of the HL group and People (10.8%), “Nature” (10.8%), “Environmental Pollution” (10.2%), “Crisis” (9.8%), “Recycling” (9.5%), “Climate” (8.9%), “Waste/Garbage” (8.2%), “Animals” (8.0%), “Plants” (8.0%) and “Protection” (5.4%) were among the answers of the UL group (Table 1).

Table 1. Frequency and percentage values of the answers given by the students to the question “Write the words you associate with the concept of environment” of the interview form.

ML			HL			UL		
	f	%		f	%		f	%
Animals	48	19,7	People	48	13,6	People	50	10,8
People	41	16,8	Nature	48	13,6	Nature	50	10,8
Tree	35	14,3	Waste/Garbage	47	13,3	Environmental Pollution	47	10,2
Waste/Garbage	32	13,1	Animals	43	12,1	Crisis	45	9,8
Sea/Ocean	25	10,2	Plants	43	12,1	Recycle	44	9,5
School	18	7,4	Sea/Ocean	38	10,7	Climate	41	8,9
Recycle	14	5,7	Environmental Pollution	37	10,5	Waste/Garbage	38	8,2
Environmental Pollution	13	5,3	Recycle	37	10,5	Animals	37	8,0
Park	6	2,5	Biology	9	2,5	Plants	37	8,0
Friends	5	2,0	Economy	2	0,6	Protection	25	5,4
Teacher	5	2,0	Communication	2	0,6	Planet	24	5,2
Car	1	0,4				Culture	19	4,1
Bus	1	0,4				Demolition	4	0,9
						Noisy	1	0,2
Total	244	100,0		354	100,0		461	100,0

The answers of the students to the question of the interview form “ Write the words you associate with the concept of climate “; It was determined that the answers (f=327) of the students studying at the middle school level constituting the ML group constitute 27.9% of all answers, the answers of the students studying at the high school level forming the HL group (f=293) accounted for 25.0% of all answers and the answers (f=552) of the students studying at the university level forming the UL group accounted for 47.1% of all answers (Table 2).

The most frequently repeated words in students' answers were determined; “Atmosphere” (14.4%), “Animals” (13.8%), “Drought” (13.5%), “Plants” (13.5%), “Temperature” (12.2%), “Rain” (9.8%), “Greenhouse Gases” (8.9%) and “Environmental Pollution” (8.6%) were among the answers of the ML group; “Drought” (17.1%), “Temperature” (16.7%), “Natural Disasters” (14.0%), “Extinction of Species” (13.7%), “Greenhouse Gases” (13.7%) ,0), “Atmosphere” (10.6%) and “Oceans” (8.9%) were among the answers of the HL group and “People” (9.1%), “Change” (9.1%), “Drought” (9.1%), “Greenhouse Gases” (8.9%), “Global Warming” (8.9%) , “Temperature” (8.5%), “Oceans” (8.3%), “Agriculture” (7.6%), “Extinction” (7.1%), “Glaciers” (5%) .8), “Atmosphere” (5.1%) and “Balance” (4.5%) were among the answers of the UL group (Table 2).

Table 2. Frequency and percentage values of the answers given by the students to the question “Write the words you associate with the concept of climate” of the interview form

	ML		HL		UL			
	f	%	f	%	f	%		
Atmosphere	47	14.4	Drought	50	17.1	People	50	9.1
Animals	45	13.8	Heat	49	16.7	Change	50	9.1
Drought	44	13.5	Natural disasters	41	14.0	Drought	50	9.1
Plants	44	13.5	Extinction of Species	40	13.7	Greenhouse Gases	49	8.9
Heat	40	12.2	Greenhouse Gases	38	13.0	Global warming	49	8.9
Rain	32	9.8	Atmosphere	31	10.6	Heat	47	8.5
Greenhouse Gases	29	8.9	Oceans	26	8.9	Oceans	46	8.3
Environmental pollution	28	8.6	Energy Resources	12	4.1	Agriculture	42	7.6
Technology	16	4.9	Carbon dioxide	2	0.7	Extinction of Species	39	7.1
Age	1	0.3	Moisture	1	0.3	Glaciers	32	5.8
Seasons	1	0.3	Rain	1	0.3	Atmosphere	28	5.1
			Oil/Natural Gas/Coal	1	0.3	Balance	25	4.5
			Pressure	1	0.3	Acid rains	18	3.3
						Oil/Natural Gas/Coal	14	2,5
						Natural disasters	6	1.1
						Carbon dioxide	2	0.4
						Variation	2	0.4
						Energy Resources	1	0.2
						Skepticism	1	0.2
						Weather events	1	0.2
Total	327	100,0		293	100,0		552	100,0

The answers of the students to the question of the interview form “ Write the words you associate with the concept of global warming”; It was determined that the answers (f=209) of the students studying at the middle school level constituting the ML group constitute 22.1% of all answers, the answers of the students studying at the high school level forming the HL group (f=290) accounted for 30.6% of all answers and the answers (f=448) of the students studying at the university level forming the UL group accounted for 47.3% of all answers (Table 3).

The most frequently repeated words in students' answers were determined; “Animals” (23.9%), “Plants” (23.9%), “Temperature” (23.9%) and “People” (22.5%) were among the answers of the ML group; Animals” (16.6%), “People” (16.2%), “Glaciers” (14.5%), “Plants” (13.1%), “Temperature” (12.1%), “ Oceans” (10.0%) and “Technology” (9.0%) were among the answers of the HL group and “People” (11.2%), “Danger” (10.9%), “Greenhouse Gases” (10.9%), “Glaciers” (10.7%), “Environmental Pollution” (10.7%)), “Extinction” (10.3%), “Desertification” (10.0%), “Oceans” (10.0%) and “Death” (8.3%) were among the answers of the UL group (Table 3).

Table 3. Frequency and percentage values of the answers given by the students to the question “Write the words you associate with the concept of global warming” of the interview form.

ML			HL			UL		
	f	%		f	%		f	%
Animals	50	23.9	Animals	48	16.6	People	50	11.2
Plants	50	23.9	People	47	16.2	Danger	49	10.9
Heat	50	23.9	Glaciers	42	14.5	Greenhouse Gases	49	10.9
People	47	22.5	Plants	38	13.1	Glaciers	48	10.7
Glaciers	12	5.7	Heat	35	12.1	Environmental pollution	48	10.7
			Oceans	29	10.0	Extinction of Species	46	10.3
			Technology	26	9.0	Desertification	45	10.0
			Energy Resources	17	5.9	Oceans	45	10.0
			Death	6	2.1	Death	37	8.3
			Danger	2	0.7	Energy Resources	24	5.4
						Skepticism	1	0.2
						Reality	1	0.2
						Acid rains	1	0.2
						Atmosphere	1	0.2
						Balance	1	0.2
						Panic	1	0.2
						Oxygen	1	0.2
Total	209	100,0		290	100,0		448	100,0

The answers of the students to the question of the interview form “Write the words you associate with the concept of renewable energy”; It was determined that the answers (f=138) of the students studying at the middle school level constituting the ML group constitute 25.4% of all answers, the answers of the students studying at the high school level forming the HL group (f=158) accounted for 29.1% of all answers and the answers (f=247) of the students studying at the university level forming the UL group accounted for 45.5% of all answers (Table 4).

The most frequently repeated words in students' answers were determined; “Electricity” (36.2%), “Environmental Pollution” (29.7%) and “Consumption” (25.4%) were among the answers of the ML group; “Solar/Wind/Hydroelectric/Wave Energy” (30.4%), “Oil/Natural Gas/Coal” (28.5%) and “Environmental Pollution”. (26.6%) were among the answers of the HL group and “Future” (19.8%), “Solar/Wind/Hydroelectric/Wave Energy” (19.8%), “Technology” (17.0%), “Environmental Pollution” (15.4%), “Nuclear Energy” (14.2%) and “Oil/Natural Gas/Coal” (10.9%) were among the answers of the UL group (Table 4).

Table 4. Frequency and percentage values of the answers given by the students to the question “Write the words you associate with the concept of renewable energy” of the interview form.

ML			HL			UL		
	f	%		f	%		f	%
Electricity	50	36.2	Sun/Wind/Hydroelectric/Wave Energy	48	30.4	Future	49	19.8
Environmental pollution	41	29.7	Oil/Natural Gas/Coal	45	28.5	Sun/Wind/Hydroelectric/Wave Energy	49	19.8
Consumption	35	25.4	Environmental pollution	42	26.6	Technology	42	17.0
Technology	12	8.7	Nuclear energy	23	14.6	Environmental pollution	38	15.4
						Nuclear energy	35	14.2
						Oil/Natural Gas/Coal	27	10.9
						Consumption	5	2.0
						Limits	2	0.8
Total	138	100,0		158	100,0		247	100,0

The answers of the students to the question of the interview form “ Write the words you associate with the concept of sustainability “; It was determined that the answers (f=66) of the students studying at the middle school level constituting the ML group constitute 15.6% of all answers, the answers of the students studying at the high school level forming the HL group (f=126) accounted for 29.9% of all answers and the answers (f=230) of the students studying at the university level forming the UL group accounted for 54.5% of all answers. It was determined that some students in the ML and HL groups did not answer this question (Table 5).

The most frequently repeated words in students' answers were determined; “Environmental Pollution” (48.5%) and “Recycling” (45.5%) were among the answers of the ML group; “Continuity” (34.1%), “Environmental Pollution” (27.8%) and “Recycling” (25.4%) were among the answers of the HL group and “Continuity” (20.0%), “Future” (18.3%), “Environmental Pollution” (17.0%), “Recycle “ (14.8%) and “Natural Resources” (10.9%) were among the answers of the UL group (Table 5).

Table 5. Frequency and percentage values of the answers given by the students to the question “Write the words you associate with the concept of sustainability” of the interview form.

	ML		HL		UL			
	f	%	f	%	f	%		
Environmental pollution	32	48.5	Continuity	43	34.1	Continuity	46	20.0
Recycle	30	45.5	Environmental pollution	35	27.8	Future	42	18.3
Technology	4	6.1	Recycle	32	25.4	Environmental pollution	39	17.0
			Natural resources	14	11.1	Recycle	34	14.8
			Technology	2	1.6	Natural resources	25	10.9
						Extinction of Species	21	9.1
						Energy Resources	16	7.0
						Technology	7	3.0
Total	66	100,0		126	100,0		230	100,0

The interview form's “What is environmental pollution? What causes environmental pollution? What are your feelings and thoughts on this subject?” Some of the answers of the students who participated in the research to the question; “*The garbage and wastes found in our streets, seas and nature are pollution, the reason is also human*” (ML19), “*They are factors that make humans and nature different from what they should be, and they can only be deteriorated with humans and corrected with humans*” (HL4), “*Garbage, waste In addition to things like light and noise, I think pollution is caused by uneducated and unconscious people*” (HL35), “*All behaviors that are disrespectful to nature, people and animals are environmental pollution and all causes are human interventions*” (UL12), “*It is an environmental problem caused by inorganic materials that people leave to nature, it is an almost inevitable fact that we will leave a more polluted world to future generations, so I'm sorry, but it can be fixed with education*” (UL25), “*The pollution that disrupts the ecosystem we live in is an event that must be solved, generally caused by human beings and affecting all living things, wrong policies and lack of education are the leading causes of pollution*” (UL43) and “*All the bad things caused by man” ü actions are pollution*” (UL46).

The interview form's “What are your feelings and thoughts about global warming?” Some of the answers given by the students in the ML group to this question; “*It is the worst danger that has ever happened to the world*” (ML2), “*As we continue to destroy forests and pollute the seas, nature will destroy us. I don't know how to prevent global warming, but I think we should reduce the damage we do to nature*” (ML11), “*I think global warming is the most dangerous thing that will bring the end of humanity*” (ML15), “*I don't even know what will happen to us and the end of all living things*” (ML29), “*I constantly see the effects of global warming on the internet and on TV and worry about my future*” (ML41) and “*The event that will destroy us in the future*” (ML48). Some of the answers given by the students in the HL group to this question are; “*I think global warming has irreversible effects, the world will end anyway, but we are shortening this period by damaging nature*” (HL6), “*I have heard of the word ecoanxiety, since I started doing research on global warming, I think I have this type of anxiety myself, because I think that global warming is a disaster that requires urgent panic and action*” (HL19), “*Chain of disasters that befall us as a result of the destruction of nature by human hands*” (HL22) and “*Global warming is a concept I learned only from the internet, I don't think I have a full knowledge of the subject yet*” (HL41). Some of the answers given by the students in the UL group to this question are; “*I think that if measures are not taken against global warming, all living things will come to an end, and the changing seasons and the fact that living things are affected by this situation show how bad the results are*” (UL10), “*Glaciers are melting, bodies of water are evaporating into the atmosphere, strong winds are*

occurring, sea level is rising, and while all these are not the only effects, we still do not take precautions, we are preparing our end with our own hands” (UL13), “The creatures that live in the glaciers, or rather, try to live and have lost their homes... After some photos I saw, I understood the dimensions of global warming better, I think we can still do our best while there is a planet we can live on” (UL24), “I see global warming as a dangerous event caused by humans and I think it will bring the end of humans again” (UL38), “Due to global warming, we cannot even live the seasons as they are and at the right time, our food and habits have changed, but I doubt that individual interventions will be sufficient in this regard” (UL45) and “In addition to taking individual measures, we must ensure the necessary control in our consumption, but I think that this will not be enough to prevent global warming, I believe that governments or non-governmental organizations have more sanction power in this regard and our individual efforts will be insufficient” (UL49).

“What are your feelings and thoughts about the use of energy resources (renewable/non-renewable)?” Some of the answers of the students who participated in the research to the question; “Unfortunately, big mistakes are made in our country about the use of energy resources, I think renewable energy is much more beneficial” (ML1), “I think the use of non-renewable energy resources should be prevented” (ML38), “I think that important problems such as the deterioration of our ecosystem arising from the ineffective use of renewable energy solutions will be very difficult” (HL7), “I think that the use of fossil fuels should be limited and investments in renewable energy should be increased” (HL26), “The ineffective use of renewable energy sources and dependence on non-renewable energy sources will create difficult conditions in the future and it will take a long time to recover” (UL21) and “The difficulties experienced by the countries that have not gained their economic and technological independence in accessing renewable energy sources inevitably increase the tendency to non-renewable resources, this situation pollutes the environment more and can cause biological damage to the people living in the region” (UL29).

In the interview form, “What do you think is sustainability? What are your feelings and thoughts about this concept?” Some of the answers given by the students in the ML group to this question; “It may be using an item for a long time” (ML21), “I think of any work, phenomenon or thought as continuing” (ML32) and “The continuation of a work or action that is desired to be done” (ML44) answered, but all of the other students said “I don't know”, “I have no idea” or “I don't know”. It is not a word I have heard before”. Some of the answers given by the students in the HL and UL groups to this question are; “Sustainability, in my opinion, is to ensure continuity” (HL15), “It is the capacity to benefit from all the opportunities of the environment endlessly” (HL24), “To live without consuming natural resources” (HL50), “To live today by thinking about our future” (UL1), “To use resources correctly and appropriately” is to ensure its continuity by doing this” (UL27) and “To secure our future by acquiring behaviors that do not harm nature” (UL42).

In the interview form, “If you were the authorized person for the developments in technology, what would you do about the damage caused by the companies to the environment?” Some of the answers of the students who participated in the research to the question; “I would give heavy penalties to those who polluted the environment” (ML16), “I would have companies and factories that cause pollution shut down and have their owners and employees teach environmental lessons” (ML43), “I would definitely ensure that every segment of society is taught about the environment because right actions can only be achieved through education” (HL30), “Suspension of licenses and activities of companies and businesses that cause environmental pollution due to insufficient inspections and bias in their inspections, and large amounts of fines will be a deterrent” (UL2), “I think that the right behavior and actions will only be realized through education, so my first step is to would be to increase the necessary trainings” (UL15), “First of all, I would ensure that environmental education is given to every age and professional group in order to raise the awareness of the society, as well as I would take initiatives to impose deterrent penalties on institutions and organizations that harm the environment” (UL21) and “The use of renewable energy sources and recycling conversions I would work to raise awareness about the stigma and increase the controls” (UL48).

In the interview form, “How do you react when you see someone throwing garbage on the road?” Some of the answers of the students who participated in the research to the question; “I would share it with my family or teachers and I would warn the person who threw the garbage on the ground” (ML14), “I would go to him immediately and tell him how bad it was” (F23), “I came across a man who was throwing garbage on the floor while I was with my friends. We warned them and they apologized to us and took their garbage from the ground and threw it in the trash” (ML50), “Honestly, I don't know if I could go and warn you, but I would try to explain it as much as I could” (HL6), “I wanted to warn someone before and I got a very adverse reaction, but still, what you did was bad” (HL31), “I calmly tell him that what he did is harming the environment and he should not do it again” (HL48), “I try to warn him, but if he reacts badly, I prefer to throw the garbage he throws in the appropriate trash can myself” (UL20), “I guess I can't warn him. but I try to throw away the trash so that the person can see it” (UL26), “It happened to me before when I was in high school and it was a very wrong behavior. I told him about it, he apologized and threw his trash away, but

I don't think I can warn you about the reaction I'm getting right now” (UL32) and “I won't say anything because I'm sure I will get a bad reaction” (UL41).

In the interview form, “Do humans have a life advantage over other living things? What are your feelings and thoughts on this subject?” Some of the answers of the students who participated in the research to the question; “*All souls have equal rights*” (ML5), “*All living things are special and all have equal right to life*” (ML28), “*Humans have some skills that differ from other living things, but this does not give them superiority in the right to life*” (HL46), “*I feel very sad about the superiority of life, especially when I think of extinct species*” (HL49), “*I think that the damage we have done to nature and living things will take away our right to life one day. When that day comes, we will understand that nature is superior*” (UL17) and “*The real superiority is as a whole. is to live by observing the rights and freedoms of all living things*” (UL34).

In the interview form, “Do people have the right to use the opportunities offered by nature for their own well-being in any amount they want?” The answers given by the students who participated in the research focused on future generations and concerns about the future. Some of the answers of the students participating in the research; “*Absolutely not, all living things can equally benefit from the opportunities that nature offers us*” (ML9), “*If we use the possibilities offered by nature uncontrollably today, we will endanger our future*” (ML45), “*If we do not control our consumption today, we will not find anything to consume tomorrow*” (ML47) , “*Unfortunately, if we continue to consume natural resources in this way and uncontrolled today, we will realize that we are actually consuming from our own lives*” (HL1), “*Everything we use uncontrollably today is diminishing from our future*” (HL12), “*The results of all the actions we take for our freedom and well-being today will affect future generations, including us*” (UL8), “*Our freedom ends where the freedom of other living things begins, and the same is true for future generations*” (UL10), “*This question brought to my mind the use of natural resources; The natural resources that we freely use today will be destroyed in the future and will greatly affect the lives of future generations, in addition, if we continue to behave like this, we will witness this situation*” (UL29), “*If we act like this, we will destroy both ourselves and future generations by disrupting the ecological balance*” (UL36) and “*The only requirement for us to live is a balanced nature and while using all the resources that nature offers us today, we must take our actions by considering our future and future generations*” (UL40).

Discussion and Conclusion

In this study, where we want to emphasize the importance of environment and sustainability for today and future generations, the importance of concepts such as climate crisis, global warming and environmental pollution has been understood; The study was conducted with students studying at secondary, high school and university levels. It is aimed to determine the opinions of the students who make up the study group about the environment and sustainability, and their ethical perceptions about these concepts, only according to the variable of education level they are included in, with the opinion form prepared by the researcher.

When the interview form was examined in general, it was determined that the students participating in the research developed positive attitudes towards the environment and sustainability. As in many similar studies, views, attitudes, knowledge and awareness levels towards the environment or sustainability were examined (Yılmaz, Morgil, Aktuğ & Göbekli, 2002; Erdoğan, 2003; Coyle, 2005; Efe, Gönen, & Baran, 2006; Kahyaoğlu, Daban & Yangın, 2008; Kayalı, 2010; Timur & Yılmaz, 2011; Kahyaoğlu & Özgen, 2012; Özgen, 2012; Yıldırım, Bacanak & Özsoy, 2012; Öcal, 2013; Polat & Kirpik, 2013; Akyol, 2014; Tunç, 2015; Özmen & Özdemir, 2016; Uyanık, 2016; Akçay & Pekel, 2017; Arık & Yılmaz, 2017; Bozdemir & Melike, 2018; Şahin & Doğu, 2018; Nousheen, Zai, Waseem & Khan, 2020; Debrah, Vidal & Dinis, 2021; Uyanık, 2021; Cirit Gül, Tağrikulu, Çobanoğlu & Çobanoğlu, 2022, Mongar, 2023). It has been determined that in some of the studies that constitute the sample or study group, there is more focus on the level of attitudes towards the environment and sustainability. In this study, it was determined that the students gave answers with sentences sensitive to nature and they were aware of concepts such as environmental pollution, global warming, climate crisis, living rights of living things, respect and love for nature, or they developed a positive attitude towards the environment.

In addition to the determination of the working group participating in the research to be sensitive to environmental issues; In the interviews held during the study, it was learned that the students also followed the new developments regarding the environment through many different channels such as news, magazine publications, and the internet. Students verbally stated that they are doing research on issues related to nature and living things such as “Recycling”, “Global Warming” and “Biological Diversity” and that they are trying to raise awareness of their environment, especially their families, on this issue. In Ertürk's (2017) article with students, similar to the study, he concluded that students are very sensitive to the environment and environmental problems.

“Write the words you associate with the concept of environment.” to the question; It was determined that the highest number of answers, which constituted 43.5% of all answers, were given by the students in the UL group who

were studying at the university level. It was determined that the most diverse response was given by the students in the UL group. All the students participating in the research found that the words most associated with the concept of environment by the students in the ML group were “Animals”, “People”, “Tree”, “Waste/Garbage” and “Sea/Ocean”; In addition to these words, it was determined that they stated the living (friend, teacher) and inanimate objects (school, park, bus, car) they saw in their environment among the words they associated with the environment. In the study of Uyanık (2017) that he carried out with students living in the village and the central city for the environment; It has been determined that the majority of the students studying in the village define the environment as “living beings”, while the students studying at the central school define the environment as “living and inanimate beings”. The words that the students in the HL group most associate with the concept of environment are “People”, “Nature”, “Waste/Garbage”, “Animals”, “Plants”, “Sea/Ocean”, “Environmental Pollution” and “Recycling”. ; In addition to these words, it was determined that they associated the words “Biology”, “Economy” and “Communication” with the environment. Among the words most associated with the concept of environment by the students in the UL group are “People”, “Nature”, “Environmental Pollution”, “Crisis”, “Recycling”, “Climate”, “Waste/Garbage”, “Animals”, “ It has been determined that there are “Plants” and “Protection”. In addition to these words, students in the UL group also associated the concept of environment with the words “Planet”, “Culture”, “Destruction” and “Noise”. “Write the words you associate with the concept of environment.” Among the answers given to the question, it was determined that the words “Animals”, “People”, “Waste/Garbage”, “Recycling” and “Environmental Pollution” were common answers in all student groups. In the study of Sağsöz and Doğanay (2019) with primary school students on environment and environmental problems; It has been determined that the common views of the students regarding the important problems related to the environment are “garbage and waste”.

“Write the words you associate with the concept of climate.” to the question; It was determined that the students in the UL group, who were studying at university level, gave the highest number of answers, which constituted 47.1% of all answers. The most frequently repeated words among the answers of the students who are studying at the middle school level constituting the MV group are “Atmosphere”, “Animals”, “Drought”, “Plants”, “Temperature”, “Rain”, “Greenhouse Gases” and “Environmental Pollution”; In addition to these words, it was determined that they associated the words “Technology”, “Age” and “Seasons” with climate. The most frequently repeated words among the answers of the students who are studying at the high school level constituting the HL group are “Drought”, “Temperature”, “Natural Disasters”, “Extinction of Species”, “Greenhouse Gases”, “Atmosphere” and “Oceans”; In addition to these words, it has been determined that they associate the words “Energy Resources”, “Carbon Dioxide”, “Moisture”, “Rain”, “Oil/Natural Gas/Coal” and “Pressure” with climate. The most frequently repeated words among the answers of the students who are studying at the university level forming the UL group are “People”, “Change”, “Drought”, “Greenhouse Gases”, “Global Warming”, “Temperature”, “Oceans”, “Agriculture”, “Extinction”, “Glaciers”, “Atmosphere” and “Equilibrium”; In addition to these words, it has been determined that they associate the words “Acid Rain”, “Oil/Natural Gas/Coal”, “Natural Disasters”, “Carbon Dioxide”, “Diversity”, “Energy Sources”, “Skepticism” and “Weather Events” with climate. “Write the words you associate with the concept of climate.” Among the answers given to the question, it was determined that the words “Drought”, “Temperature”, “Rain / Acid Rain” and “Greenhouse Gases” were common answers in all student groups. In the studies of Gürbüz and Aydın (2022), which aimed to examine the views of teacher candidates on global problems; It was determined that pre-service teachers stated that the source of the problem related to global problems is human.

“Write the words you associate with the concept of global warming.” to the question; It was determined that the highest number of answers, which constituted 47.3% of all answers, were given by the students in the UL group studying at the university level. The most frequently repeated words among the answers of the students who are studying at the middle school level constituting the ML group are “Animals”, “Plants”, “Temperature” and “People”; In addition to these words, it was determined that they associated the word “Glaciers” with global warming. The most frequently repeated words among the answers of the students who are studying at the high school level constituting the HL group are “Animals”, “People”, “Glaciers”, “Plants”, “Temperature”, “Oceans” and “Technology”; In addition to these words, it was determined that they associated the words “Energy Resources”, “Death” and “Danger” with global warming. “People”, “Danger”, “Greenhouse Gases”, “Glaciers”, “Environmental Pollution”, “Extinction of Species”, “Desertification”, “Oceans” are the most frequently repeated words among the answers of the students studying at the university level that make up the UL group. “ and “Death”; In addition to these words, it was determined that they associated the words “Energy Resources”, “Skepticism”, “Reality”, “Acid Rain”, “Atmosphere”, “Balance”, “Panic” and “Oxygen” with global warming. “Write the words you associate with the concept of global warming.” It was determined that the words “People” and “Glaciers” among the answers given to the question were common answers in all student groups. In the study of Uymaz (2021) with social studies teacher candidates on today's world problems; It has been determined that the first concept that teacher candidates see as a current world problem is global warming and they put forward the concept of human evacuation as the first solution in their views on current world problems.

In the interview form, “Write the words you associate with the concept of renewable energy.” to the question; It was determined that the highest number of answers, which constituted 45.5% of all answers, were given by the students in the UL group who were studying at the university level. The most frequently repeated words among the answers of the students who are studying at the middle school level constituting the ML group are “Electricity”, “Environmental Pollution” and “Consumption”; In addition to these words, it has been determined that they associate the word “Technology” with renewable energy. The most frequently repeated words among the answers of the students who are studying at the high school level constituting the HL group are “Solar/Wind/Hydroelectric/Wave Energy”, “Oil/Natural Gas/Coal” and “Environmental Pollution”; In addition to these words, it has been determined that they associate the word “Nuclear Energy” with renewable energy. “Future”, “Solar/Wind/Hydroelectric/Wave Energy”, “Technology”, “Environmental Pollution”, “Nuclear Energy” and “Petroleum/Natural Gas/ is “coal”; In addition to these words, it has been determined that the words “Consumption” and “Limits” are associated with renewable energy. “Write the words you associate with the concept of renewable energy.” It was determined that the word “Environmental Pollution” among the answers given to the question was common answers in all student groups. In the studies of Saraç and Bedir (2014) on renewable energy sources with classroom teachers; It has been determined that they have developed a positive attitude towards renewable energy, and that they have associated non-renewable energy sources with the concepts of global warming and environmental pollution and evaluated them in terms of their negative effects.

In the interview form, “Write the words you associate with the concept of sustainability.” to the question; The highest number of answers, which constitute 54.5% of all answers, were given by the students in the UL group studying at the university level; It was determined that some students in the ML and HL groups did not answer this question. “Environmental Pollution” and “Recycling” are the most frequently repeated words among the answers of the students who are studying at the middle school level forming the ML group; In addition to these words, it has been determined that they associate the word “Technology” with sustainability. The most frequently repeated words among the answers of the students who are studying at the high school level constituting the HL group are “Continuity”, “Environmental Pollution” and “Recycling”; In addition to these words, it has been determined that the words “Natural Resources” and “Technology” are associated with sustainability. The most frequently repeated words among the answers of the students who are studying at the university level forming the UL group are “Continuity”, “Future”, “Environmental Pollution”, “Recycling” and “Natural Resources”; In addition to these words, it has been determined that the words “Extinction of Species”, “Energy Resources” and “Technology” are associated with sustainability. “Write the words you associate with the concept of sustainability.” It has been determined that the words “Environmental Pollution” and “Technology” are common answers among the answers given to the question. In Yüksel's (2020) study, in which he examined the views of pre-service science teachers and the efficient use of resources; It has been determined that they associate sustainability and sustainable development with concepts such as recycling, meeting the needs of future generations, contributing to the economy, and protecting the environment.

It was determined that most of the answers given to the first question of the interview form were given by the students in the UL group, which consisted of students at the university education level. In the answers given to the first question of the interview form, which was prepared under the titles of Environment, Climate, Global Warming, Renewable Energy and Sustainability, it was determined that the most repeated words were “People” and “Environmental Pollution”. In Yiğittir and Öcal's (2010) work with middle school students on value orientations; It has been determined that the concepts of environmental protection and love of nature are among the most repeated values. “People”, which is among the concepts most associated with concepts such as environment and environmental pollution, has been associated with the same subjects in similar studies. In Ünal's (2011) study with students; It was determined that the students emphasized the human factor on issues such as environmental problems, pollution, global warming.

The interview form's “What is environmental pollution? What causes environmental pollution? What are your feelings and thoughts on this subject?” students' answers to the question; It has been determined that they understand the importance of environmental pollution and see environmental pollution as a factor caused by humans. In the study conducted by Yılmaz, Morgil, Aktuğ, and Göbekli (2002) with students; It was determined that the students defined their environmental problems as “air pollution, water pollution, soil pollution, food pollution, solid waste pollution, noise pollution”. In the studies of Yılmaz, Bedür and Uysal (2014) in which students studying at secondary and high school levels and their perceptions and views on the environment are examined; It has been determined that students consider environmental problems as “garbage problem”. In Ertürk's (2017) article with students, it was concluded that the students participating in the research combined environmental problems with human-induced phenomena.

The participants, who stated that people do not have sufficient knowledge and equipment about the environment, offered suggestions on environmental awareness and education. Studies supporting these views and suggestions of students are also available in the literature. In studies conducted with all educational levels on subjects

such as the environment, environmental pollution and environmental education, there are studies that reveal that being conscious about the importance of concepts such as environmental problems and pollution is related to environmental education (Groves & Pough, 1999; Summers, Kruger & Childs, 2000; Yılmaz, Morgil, Aktuğ & Göbekli, 2002; Çabuk & Karacaoğlu, 2003; Wong, 2003; Erten, 2005; Erdoğan, 2003; Coyle, 2005; Efe, Gönen, & Baran, 2006; Gökçe, Kaya, Aktay & Özden 2007; Selvi, 2007; Kahyaoglu, Daban & Yangın, 2008; Aydın, 2010; Kayalı, 2010; Öztürk, 2013; Çimen & Yılmaz, 2014; Özdemir & Civelek, 2015; Güzelyurt & Özkan, 2018; Özkan, 2017; Tokur, 2019; Durel, 2019; Arabacı & Dönel Akgül, 2020; Demir, 2020; Şafak, 2020; Şahin & Bulut, 2021; Mutlu Karanfil, 2022).

The interview form's "What are your feelings and thoughts about global warming?" The answers given by the students to the question; It was determined that the general views of the students in all groups on the concept of global warming were pessimistic and sad, and they stated that this concept was dangerous. While most of the students in the ML group stated that they felt helpless about global warming, some students argued that the effects of global warming were irreversible and destructive. It was determined that most of the students in the HL group had serious concerns about global warming and defined this concept as "danger". Most of the students in the HL group stated that they were afraid of global warming, that the effects of global warming were irreversible and that its causes were human-induced. Some students answered that they do not have enough information about global warming. The students in the UL group stated that they constantly researched the issue of global warming, followed the news about this issue and had concerns. It was determined that the students in the UL group frequently used the concepts of "dangerous", "extinction" and "end of life" for global warming. Most of the students in the UL group stated that global warming is human-induced, they are afraid of its consequences, but the effects of global warming are not irreversible and that individual or larger action should be taken as soon as possible. In addition to the intensity of the feeling of anxiety and fear against global warming in general, the students stated that they thought that the factors causing global warming were human-induced. In Gedik's (2010) study to determine the views of middle school students on current events, it was determined that similar views emerged. He concluded that almost one-fourth (23.0%) of the students participating in the study saw the events related to drought (global warming, water shortage) as the most important current event in Turkey. In the study of Kılıçoğlu and Akkaya Yılmaz (2021), which aimed to determine the views of middle school students on global warming; It was determined that the students participating in the research expressed the concept of global warming as the increase in temperatures and carbon dioxide in the world, the melting of glaciers, and they saw the smoke and waste from the factories, the deodorants used, and people as the most important cause of global warming. In addition, the students participating in the study stated that people should be educated about global warming.

The interview form's "What are your feelings and thoughts about the use of energy resources (renewable/non-renewable)?" students' answers to the question; It has been determined that renewable energy sources are beneficial and there is general consensus on the dangers of using non-renewable energy sources or fossil fuels. The students participating in the research generally argued that there should be government-sourced solutions and that there should be an orientation to renewable resources for economic recovery and development. In the studies of Çolak, Kaymakçı and Akpınar (2015) on renewable energy with pre-service teachers; It has been concluded that the pre-service teachers participating in the research have positive opinions about renewable energy, that these energy sources should be supported and that renewable energy sources are necessary in many respects. As a result of Boz's (2020) research, which aims to get the knowledge and thoughts of middle school students about energy resources; It was concluded that the students had moderate knowledge about energy resources and the harms of energy resources, and that the students mostly had knowledge about the damage caused by the widespread use of fossil fuels to the environment and living things.

In the interview form, "What do you think is sustainability? What are your feelings and thoughts about this concept?" students' answers to the question; It was determined that the students in the ML group stated that they did not have knowledge about sustainability. It was determined that most of the students in the HL and UL groups did not know the concept of sustainability exactly, they defined this concept as "continuity" and they only associated the concept of sustainability with the use of environment or natural resources. The answers given by the students to the question about sustainability in the opinion form prepared within the scope of the study, it was concluded that the students only associate the concept of sustainability with the environment and they did not know all the areas covered by sustainability. In the light of the collected data, although comprehensive and sufficient information was not collected about the level of knowledge of the students on the concept of sustainability, according to the answers given; It has been determined that the students participating in the research have a low level of knowledge about this concept. It was determined that the students stated that they were sensitive to concepts such as the environment and natural resources, as well as having a low level of knowledge. In this context, it was determined that the students participating in the research had insufficient knowledge levels, but they developed a positive attitude towards sustainability due to

their sensitivity to the environment. Similarly, in the study of Şahin et al. (2009) in which they examined the attitudes of teacher candidates towards sustainable development; determined that pre-service teachers' attitudes are positive and they have intrinsic values for sustainable development. In Yıldız's (2011) study with pre-service science teachers on sustainable environment; It has been determined that the attitudes of pre-service science teachers are at a good level and in a positive direction. In Alpak Tunç's (2015) study with pre-service science teachers on sustainable environment; It has been determined that their attitudes towards sustainable environment are high and positive. Similarly, in the study conducted by Güzelyurt and Özkan (2018) with pre-service teachers; It has been concluded that environmental concepts and environmental education are not sufficient.

In the interview form, "If you were the authorized person for the developments in technology, what would you do about the damage caused by the companies to the environment?" students' answers to the question; the majority of the students stated that they emphasized the lack of education regarding the environment and that they would attempt to raise awareness of the whole society for which they were responsible within the scope of their authority. İbiş (2009) emphasized the need to raise awareness of people in his study in which he stated the importance of environmental education. In Yalçınkaya's (2013) research on the solution of environmental problems; According to the working group within the scope of the research, it was determined that various actions should be taken such as that people should be made aware of the environment. In Alpak Tunç's (2015) study with pre-service science teachers; It has been determined that pre-service teachers have views on the damage caused by economic development and technological developments to the environment and their elimination. Similar results were obtained in Gedik and Öztürk Demirbaş's (2018) studies on global warming with middle school students; It was determined that the students participating in the research expressed their views on the importance of new laws regarding the environment, the abolition of fossil fuel use, tree planting, recycling and renewable energy.

In the interview form, "How do you react when you see someone throwing garbage on the road?" Some of the answers of the students who participated in the research to the question; It has been determined that ML students, who make up the middle school group, give more positive answers about warning someone who throws garbage on the ground. However, it was determined that some of the students in the HL and UL groups gave more abstaining answers than the students in the ML group. It was determined that especially the students in the UL group stated that they would not warn about this issue. Similarly, in the study of Alpak Tunç (2015) with pre-service science teachers; It was concluded that the pre-service teachers who participated in the research had a positive perspective on the protection of the environment, but remained in dilemma within the scope of human and nature rights.

In the interview form, "Do humans have a life advantage over other living things? What are your feelings and thoughts on this subject?" When the answers given by the students to the question are examined; In the answers given by all students, it was determined that there was a consensus on the equal rights and freedoms of all living things, and that they had positive views on the need for the entire ecosystem to work as a whole for the continuation of life. In the study of Karakaya (2010) in which he examined the perspectives of teacher candidates towards the environment; Within the scope of the increasing human population problem, more than 70% of the students exhibited a positive nature-centered perspective, however, one of the second year teacher candidates did not support this view and on the contrary thought that the rights of individuals were superior to everything else. It has been determined that very few of the pre-service teachers who are studying at the fourth grade level argue that the rights of human beings and other living things can be protected equally. In Alpak Tunç's (2015) study with pre-service science teachers; It has been determined that teacher candidates have the idea that harming nature will negatively affect people's lives.

In the interview form, "Do people have the right to use the opportunities offered by nature for their own well-being in any amount they want?" When the answers given by the students to the question are examined; It has been determined that students at all education levels have expressed a common opinion on the need for humans to have equal rights with all living things and to live in harmony with nature. The answers given by the students participating in the research focused on future generations and concerns about the future. Although there are no courses for the efficient use of resources in primary and middle school programs, there is an achievement related to sustainable development for the economical use of natural resources in the Science curriculum in 2013 (Ünal, 2011; MEB, 2013; Eskicumalı, Demirtaş, Gür Erdoğan & Arslan, 2014). In the Science curriculum updated in 2018, with the concept of sustainability giving more place to the 8th grade curriculum; Sustainable life, efficient use of resources and recycling issues were emphasized (MEB, 2018). In undergraduate education, there are compulsory or elective courses on environmental education, sustainable development, sustainable development and education, such as the efficient use of resources or sustainability with a more comprehensive course (Haigh, 2005). In the Science curriculum updated in 2018, with the concept of sustainability giving more place to the 8th grade curriculum; Sustainable life, efficient use of resources and recycling issues were emphasized (MEB, 2018). In undergraduate education, on the other hand, there are compulsory or elective courses on environmental education, sustainable development, sustainable development and education, or on sustainability with a more comprehensive course, according to the departments. (2009) in his

study with pre-service teachers on environmental problems; According to the students participating in the research, it was determined that the most important environmental problem in the world is the use of natural resources. In the study of Bülbül (2013) with pre-service science teachers; It was concluded that the students participating in the research put nature above their own interests.

Recommendations

Middle school, high school and university students selected as the study group within the scope of the research include 50 people in each group in terms of number. Increasing this number and working with a wider student population will help to diversify the data and find more reliable answers. Since the concepts of “environment” and “sustainability”, which are the basic concepts of the research, are interdisciplinary subjects and concepts, interview forms, questionnaires, etc. according to different branches or education levels are used. It is thought that more meaningful results can be obtained with the help of data.

It has been determined that most of the studies on environment and sustainability are about attitude. The study group of most studies supports the development of positive attitudes towards these concepts, but the low number of studies on knowledge level or misconceptions is another remarkable issue. Carrying out studies with individuals who are fundamental in the field of education, such as students, teachers, teacher candidates, lecturers, with more and various characteristics, on the concepts of environment and sustainability, which are concepts that concern the global society; will raise awareness of these issues. When the studies done so far are examined; Expanding the limiting factors for choosing the most common working group will provide a correct and positive perspective on this and similar social issues. With certain and limiting variables such as age group and education level, it should be aimed to carry out studies on individuals more comprehensively and to create the right awareness.

The first step targeted at the end of the research will be an environmental or sustainability-oriented activity on a voluntary basis. In terms of the inadequacies presented to us by the research data; It is aimed to create the right consciousness and awareness for the environment and sustainability, to implement the activity for the environment and sustainability with the students, and to set an example for all public and private institutions and organizations.

Contributions of the Researchers

All authors contributed to the manuscript equally.

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Conflict of Interest

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