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**Research Article**

# Environmental sensitivity of gifted children: a picture analysis based research [1]

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## Abstract

Picture analyses are a highly valid method used to understand students' emotions. There are many research findings indicating that gifted and talented students are highly sensitive to environmental problems. However, there is a need for more multidimensional and deeper analyses. In this study, picture analyses on environmental problems were conducted in order to understand the students' relationships with the environment and their feelings about these relationships. This research, which was conducted with case study, one of the qualitative research methods, was applied in the city of Malatya, which is at the middle level according to the development index in Turkey. A total of 24 primary school fourth grade students, 12 boys and 12 girls, who are gifted and intelligent, were studied. These students were also receiving support education in the science and arts centres in their region. As a data collection tool, the drawings of gifted students on environmental problems were used. These drawings were analysed by four teachers who are experts in their fields. Semi-structured interview forms were used to support the analyses of these drawings about environmental problems. The interviews were subjected to content analysis. According to the findings of the research, it was determined that there were feelings of desire for a clean and green environment, love and protection for living creatures in the natural environment, deep sadness for a degraded environment, constant discomfort in the face of visual, auditory and sound pollution, anger and anger against the inadequacy of the measures taken against environmental pollution, and high anxiety about the deterioration of the natural environment.

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## Introduction

Today, painting gains more importance as a powerful tool in recognizing the child and obtaining information about his personality structure.(Halmatov,2020). In painting, the technique of recognizing the individual with his pictures has a high operability and validity, since the cost of the equipment to be used is low or the way to obtain this equipment is easy. Pictures to be used in diagnosing personality and intelligence are accepted as a very effective method that gives clues about the individual's mental processes (Leontyev, 2000). Gudinaf asked for a human drawing with the "Draw a Human" test he developed in 1926, and he conducted rich clinical experiments to transform this test into a personality and intelligence diagnostic test with the necessary scales. Later, he published a book called “Psychological Test” with pictures

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and obtained data about the personality structures of the participants who were subjected to the test. These tests have been used in studies on personality and intelligence for many years. In 1948 (La Figura Humana) by Karen Mochover, a story was invented with a random picture drawing test, in which a human being was painted and another human being painted, and information about the psychic processes and the personality structure of the participant was obtained. In 1948, another researcher, John Buck, developed the first personality test through drawing with the "Draw House, Tree and Human" test in 1948, and its use is still very common today. The "Family Draw Test" was used for the first time in 1958, but the name of the scientist who developed it is unknown. The scientists, who were between Hunse Volfe and Reznikov as the creator of the test, tried to detect the emergence of domestic violence through children's pictures with this test.

It is seen that environmental education research and environmental awareness-raising research has increased in recent years and these studies are also inclusive of all students. Özdemir (2011) researched the effect of the natural education programme which is carried out based on the natural experience and concluded that there is an increase in environmental awareness of students at the end of the education programme. In the research which was conducted by Uzun (2007), it is stated that despite the presence of positive thoughts of secondary education students against the environment, their behavior towards the environment is still negative. It is stated that gifted students are more sensitive to global issues (Piechowski, 1997) and problems considering the environment (Clark, 1992; Cullingford, 1996). Özsoy (2012) observed that primary education students have expressed their environmental awareness via the pictures that they have drawn and emphasized the fact that the students' perception of the subject needed to be determined before determining their environmental awareness. Çal (2019) assesses, that the gifted students' visual awareness is more potent than their peers in his research on the gifted students' visual awareness of the environment. In the study examining the environmental perceptions of gifted students and their peers of Karakaya, Ünal, Çimen, and Yılmaz (2018), it has been determined that students perceive their environment holistically and their perceptions of environmental problems are multifaceted.

Children's awareness of their environment, perceiving the negativities experienced and expressing them with pictures other than words and writing is a more effective, simpler, and more sincere language than using the words they have learned before (Isabel and Shirley, 2003). This language reflects children's emotional, psychological and social nature and their affections, concerns, dreams, happiness, and many other moods (Schirrmacher, 2002, 74). The symbols used by children in these pictures provide important clues in understanding the process between their prior knowledge and their current knowledge. When these clues are interpreted correctly, the opportunity to get to know the child and his/her experiences better can be achieved (Yurtal & Artut, 2008). Furthermore, it is stated that while analyzing the thoughts that the students reflect on the pictures, it is necessary to have them explain the pictures they draw, considering the fact that the analysis of pictures with drawings alone may be insufficient (Ersoy and Türkkan, 2009; Ersoy and Türkkan, 2010).

**Gifted Students & Environmental Sensitivity**

Overexcitability domains, theorized by Dabrowsky (1972), enable us to understand the different behaviors and attitudes of gifted people compared to normal ones. Environment is one of the most important issues that concern humanity today and in the future. The sensitivity of gifted children to this issue has been examined in many studies. Saricam & Sahin, (2015)' study is a Structural Equation Modeling study was conducted for the variables that affect environmental awareness and attitude in highly gifted children. Highly gifted students' environmental awareness, environmental attitude, curiosity and exploration scores were higher than non-gifted. It has been found that gifted students have a very high level of environmental awareness (Tanık Önal, 2020). However, it can be said that all studies are quantitative and insufficient in terms of describing the environmental sensitivities of gifted children. This situation makes it necessary to conduct qualitative research in this field. A certain group of gifted students are forced to express their thoughts and feelings openly. It is seen that they use metaphors in relation to this. For example, the opinions and evaluations of gifted students about the Science and Art Centers they are enrolled in are taken with metaphors. Kunt & Tortop (2013)' study, the use of metaphor in understanding gifted students was suggested. Metaphors are a tool that provides an indirect

explanation about a concept. In this research, it was investigated to have information about the ideas, opinions and feelings of the students through the analysis of their pictures.

**Importance of the Research**

This research is significant in terms of understanding the environmental sensitivities of gifted students by bringing together the concepts that gifted students perceive about environmental problems through pictures and the events related to these concepts, seeing holistically, reflecting on what they see and think on the pictures creatively.

**Purpose of the Research**

In this research, it is aimed to determine the gifted students' environmental sensitivity with painting analysis. Following this purpose, the research questions below were sought.

- How is it that gifted students at the primary school level describe their sensitivity to environmental problems through painting?
- How do gifted primary school students describe their suggestions for environmental problems through pictures?
- What are the views of gifted students at the primary school level on environmental problems?

## Method

**Research Model**

This research was conducted with a case study, one of the qualitative research methods and techniques. Creswell (1998) defines qualitative research as a process of making sense of social life and human problems by questioning them with unique methods. The research is a descriptive study. Descriptive studies aim to explain the interaction between situations, considering the relationship of current events with previous events and conditions (Kaptan,1998). The pictures considering environmental sensitivities drawn by the 4th-grade gifted students who participated in the research were interpreted by four art teachers who were trained in picture analysis. In qualitative studies, in cases where more than one researcher works together in data analysis, a desired level of reliability is achieved in cases where the rapport between the researchers' evaluations is 70% or more (Yıldırım & Şimşek, 1999). Specific to this research, it was observed that the consensus in the common opinions of the experts participating in the research was 95%.

**Study Group**

Opinions were collected from 4th-grade students, 12 girls and 12 boys, attending Science and Art Centers in Malatya in the 2020-2021 academic year. The class level, gender and age codes of the participants are presented

**Table 1.** Structures of Participants and Codes

| Participant No | Grade | Gender | Age | Code |
|---|---|---|---|---|
| 1 | 4 | M | 10 | P1-M-10 |
| 2 | 4 | M | 10 | P2-M-10 |
| 3 | 4 | M | 10 | P3-M-10 |
| 4 | 4 | M | 10 | P4-M-10 |
| 5 | 4 | M | 10 | P5-M-10 |
| 6 | 4 | M | 9 | P6-M-9 |
| 7 | 4 | M | 9 | P7-M-9 |
| 8 | 4 | M | 9 | P8-M-9 |
| 9 | 4 | M | 9 | P9-M-9 |
| 10 | 4 | M | 9 | P10-M-9 |
| 11 | 4 | M | 9 | P11-M-9 |
| 12 | 4 | M | 9 | P12-M-9 |
| 13 | 4 | F | 9 | P13-F-10 |
| 14 | 4 | F | 9 | P14-F-10 |
| 15 | 4 | F | 10 | P15-F-10 |
| 16 | 4 | F | 10 | P16-F-10 |

| | | | | |
|---|---|---|---|---|
| 17 | 4 | F | 10 | P17-F-10 |
| 18 | 4 | F | 10 | P18-F-10 |
| 19 | 4 | F | 9 | P19-F-9 |
| 20 | 4 | F | 9 | P20-F-9 |
| 21 | 4 | F | 9 | P21-F-9 |
| 22 | 4 | F | 9 | P22-F-9 |
| 23 | 4 | F | 9 | P23-F-9 |
| 24 | 4 | F | 9 | P24-F-9 |

**Procedure**

The students participating in the study were asked to draw pictures about environmental problems and explain these pictures for 2 hours with each student in their classes during the class hours deemed appropriate by the class teachers. It was done by four art teachers and a classroom teacher in examining, interpreting, and categorizing the pictures of environmental problems taken from the students. In this study, which was conducted with a total of 24 students, the collected opinions and visuals were recorded.

**Data Collection and Analysis**

**Children's Picture Analysis**

As children tell the pictures they draw, they tell their own stories. These pictures bear the traces of important events in their personal inner worlds. Picture analyzes are accepted as a source of information in recognizing and making sense of the inner and outer world of children. Children use a unique visual language to reflect the events they experience and the way they perceive these events, according to their own thoughts and views. (Venger, 2011). The choice of painting subject, their attitude while painting, and the information they give about the painting contain important clues (Halmatov, 2016). Painting, which is one of the ways of expressing children's emotions, begins to be made with a unique look after the age of seven (Savaş, 2015). Painting can be thought of as a window that reflects children's feelings and thoughts (Malchiodi, 2013). The subject and figure choices in the paintings are used to determine the social, cultural, and psychological priorities of the child (Yavuzer, 1992). In this study, the pictures that will be used to determine the environmental sensitivity of the children were made by the students and their opinions were taken. These interviews were recorded and subjected to content analysis together with the pictures. The analyzed pictures were grouped into sub-themes and presented in tables.

**Semi-structured Interview Form**

In this study, the opinions of the participants were collected through a "semi-structured interview form". Semi-structured interviews provide both fixed-choice answering and to go in-depth in the relevant field (Büyüköztürk 2014). In the research, the pictures made by gifted primary school 4th-grade students to determine their environmental sensitivity were explained to the students under three headings, and data were obtained. These data The obtained data were firstly converted into codes, which is the smallest meaningful unit, and then by the induction method.

## Results

**Analysis of the pictures drawn by gifted 4$^{th}$-grade students regarding environmental sensitivities**

The concepts and figures used by gifted primary school students to describe their sensitivity to environmental problems through pictures are presented in Table 1.

**Theme 1. Perception of Environmental Problems**

**Table 1.** Figures and Concepts Used to Describe Environmental Problems

| **Theme 1. Perception of Environmental Problems** | | |
|---|---|---|
| **Sub-theme 1. Sources of Environmental Problems** | **f** | **%** |
| People | 19 | 79,1 |
| Factories | 7 | 29,1 |
| Cars | 2 | 8,3 |
| Cars | 1 | 2,4 |
| Disrupted environment | 19 | 79,1 |
| Clean Environment | 18 | 75,0 |
| Garbage and waste | 14 | 58,3 |
| Axe-Saw | 9 | 37,5 |
| Plastics | 6 | 25,0 |
| Roads | 3 | 12,5 |
| **Sub-theme 2. Consequences of Environmental Problems** | **f** | **%** |
| Polluted air and smoke | 10 | 41,6 |
| Desertification | 5 | 20.8 |
| Climate change | 5 | 20,8 |
| **Sub-theme 3. Clean Environment Indicators** | **f** | **%** |
| Sea, lake, river | 7 | 29,1 |
| Grass | 10 | 41,6 |
| Forest | 10 | 41,6 |
| House | 9 | 37,5 |
| Flower | 8 | 33,3 |
| Birds | 3 | 12,5 |
| Trees | 19 | 79,1 |
| Clouds | 7 | 29,1 |
| Sun | 12 | 50,0 |
| **Sub-theme 4. Solutions for Environmental Problems** | **f** | **%** |
| Recycling | 7 | 29,1 |

Looking at Table 1, it can be said that gifted students can be grouped under four sub-themes under the theme of perceptions of environmental problems. These are Sources Of Environmental Problems, Consequences Of Environmental Problems, Clean Environment Indicators, And Solutions For Environmental Problems. 79% of gifted students used human, tree, and degraded environment figures and concepts. In the paintings of these students for environmental awareness, the relationship between humans, trees, and the degraded environment was established in the paintings of 19 students. It was stated that they consider cutting trees as a priority in environmental degradation and they stated that the felled trees disrupt the balance of nature. The statements of people that they destroy the green areas and damage the environment by cutting the trees were also reflected in the students' opinions. Looking at the concepts and figures they used in their paintings in general, 18 students painted a clean environment, 14 students drew garbage, 12 students painted the sun, 10 students painted the forest, 10 students painted grass, 10 students painted dirty air and smoke, 9 students painted axes and saws, 9 students painted houses. 8 students reflected flowers, 7 students recycling, 7 students factory, 7 students cloud, 7 students stream, lake, and sea. There were 5 students each who used concepts in pictures about climate change and desertification. 2 students and 1 student used cars to describe their environmental perceptions in their pictures.

The rate of gifted students describing the clean environment in their pictures is 75%. It was determined that this rate reflected the students' desire to see a clean environment in their descriptions. Garbage and other wastes are expressed as

58%. It has been seen that garbage and other wastes are among the most used figures and concepts to describe environmental pollution.

Forest, grass, and polluted air depictions were reflected in the pictures at a rate of 41%. Figures and concepts were used in pictures with an ax, saw, and house figures in 37%, recycling, factory, cloud, lake, and stream depictions, and 29.1%. A group of students expressed in their pictures that pollution is caused by plastics at the rate of 25%. In order to describe climate change, gifted students divided the planet into two and depicted desertification and green space in 28% of the pictures. Birds are depicted as beings damaged by environmental pollution. The students who showed the roads as places dug on the earth to pollute the environment in case of environmental pollution used these figures and concepts at a rate of 12.5%, the students who described the exhausts of the cars caused environmental pollution at 8.3%, the students who described the sound pollution used these figures and concepts at a rate of 2.4%. In the pictures of gifted students, the statements that the garbage is not thrown into the trash are expressed with speech bubbles. The reflection of the comparison of the clean environment and the dirty environment in the pictures may be due to the efforts of the children to reveal the image difference between the clean environment and the dirty environment. Students, who expressed more than one environmental problem by using more than one visual in sections on the same page, reflected the visual realities according to their age. Visual reality is defined as the tendency to reflect the events and phenomena in their pictures, which is common in children's drawings (San, 1979, 40). In this study, gifted students tried to reveal nature as a whole by trying to reflect on the events as a whole in order to express visual reality. In some paintings, the effects of global climate change and desertification are depicted in the parts divided into two. The fact that these gifted students express global climate changes and desertification is an indication that these students are aware of the global dimensions of environmental problems, and the fact that they reflect light and sound pollution in their paintings is an indication that they perceive their environmental sensitivity in different dimensions. Students stated that excessive consumption will bring production and this situation causes environmental problems, they are aware of the fact that erosion is an environmental problem, and the rapid increase in plastics destroys living things and pollutes nature.

**Theme 2. Solution Suggestions for the Environmental Problems Perceived by Gifted Children**

The sub-headings of how gifted students describe their suggestions for environmental problems, which they reflect in their drawings, are presented below.

**Table 2.** Suggestions for Solutions for Environmental Problems of Gifted Students

| **Sub-themes** | **f** | **%** |
|---|---|---|
| Protection and growth of trees | 10 | 41,6 |
| Separating waste to keep the soil clean | 10 | 41,6 |
| Installing filters on chimneys for air cleaning, reducing solid fuels | 10 | 41,6 |
| Less production and shopping to protect the environment | 10 | 41,6 |
| Taking measures for global climate change and drought | 6 | 25,0 |
| Providing training to increase the number of people who protect the environment | 6 | 25,0 |
| Cleaning polluted water to prevent water contamination | 5 | 20,8 |
| Protection of living species by keeping the ecosystem clean | 4 | 16,6 |
| Punishment of people who pollute the environment | 4 | 16,6 |
| Taking measures for sound, visual and environmental pollution | 3 | 12,5 |
| Less use of chemical drugs | 2 | 8,3 |

When we look at Table 2, 10 students divided the picture papers into sections by 41% to ensure the trees to be protected and grown, to evaluate the wastes to keep the soil clean, to install filters on the factory chimneys to clean the air and to reduce solid fuels, to make less production and shopping for the protection of the environment. Suggestions for training to increase the number of people who protect the global climate change, drought and environment are reflected in the pictures of 6 students at a rate of 25%. 20.8% of 5 students described the establishment of a dirty water cleaning system in order to prevent water pollution. Ensuring the protection of living things by keeping the ecosystem clean and punishing people who pollute the environment were depicted by 16.6% of 4 students in their paintings, while

sound, visual and environmental pollution were included in the works of 12.5% of 3 students, and less use of chemical drugs by 8.3% by 2 students. has received.

In this research, it is seen that the 4th-grade gifted students describe the environmental event that they are most affected by, the cutting of trees, the pollution of the soil, and the pollution of the air. It is understood from the interviews that the reason why the water pollution is mentioned by fewer students is that the water coming to the house is clean and they see the pollution of the water flowing in a nearby area less. In this case, it can be concluded that the students produce more ideas about environmental pollution that they can observe in their close environment and reflect on the pictures. Suggestions that stand out in the views on reducing environmental problems; sorting and recycling waste, reducing production and consumption, segregating for water cleaning, installing filters in chimneys for air cleaning and reducing solid fuels, penalizing people who cause environmental pollution, reducing sound, light, and visual pollution, fewer chemicals for products grown in the environment drug use was determined in the interviews. These suggestions are generally memorized information about cutting trees, collecting garbage, and cleaning the air in 4th-grade primary school students (Pınar & Yakışan, 2016), but in this study, it is seen that gifted students' solution suggestions emerge in more detail in line with their advanced awareness. Theme 3. Opinions of gifted primary school students on environmental problems.

**Theme 3. Opinions of Gifted Primary School Students on Environmental Problems**

The views of gifted primary school students on environmental problems are presented in table 3 with subheadings.

**Table 3.** Opinions of Gifted Primary School Students on Environmental Problems

| **Sub-themes** | **f** | **%** |
|---|---|---|
| I want to live in a clean and green environment | 15 | 62,5 |
| The lack of protection of the trees makes me upset | 12 | 50,0 |
| I do not want to live in a polluted environment | 11 | 45,8 |
| I am worried that the planet will deteriorate more and more | 10 | 41,6 |
| I think too much production and shopping pollutes the environment. | 9 | 37,5 |
| I want those who create air pollution to be punished | 8 | 33,3 |
| Global climate change and desertification worry me | 6 | 25,0 |
| I want environmentally conscious people to be more | 5 | 20,8 |
| Light, sound, and visual pollution is too much and tiring in cities | 3 | 12,5 |

According to the opinions of the students forming the sub-headings presented in Table 3, the desire of gifted primary school students attending the 4th grade to see a clean and green environment was expressed by 15 students with 62.5%.

*"I want to live in a clean and green environment, but I don't know how to achieve it. Some people pollute the environment so much, that I can't protect it alone". (P15-F-10)*

*"When I go to our village, it relaxes me because it is green, it is a very calm and peaceful place." (P9-M-9)*

The unhappiness about not protecting the trees was expressed by 12 students at the rate of 50%.

*"Why do they cut down trees? They are both beautiful and very useful".(P5-M-10)*

*"I am very sad when a tree is cut down because I know that it is a creature that cleans our air and decorates our environment". (P11-M-9)*

*"We must protect forests, otherwise, air pollution will increase, we cannot breathe, we will get sick".( P21-F-9)*

Eleven students stated that they do not want to live in a polluted environment with a rate of 45.8%.

*"I don't want to live in a polluted environment". (P20-F-9)*

*"Environmental pollution harms the health of all living things. It spoils mine". (P14-F-10)*

Ten students who expressed their concerns about the increasing pollution of the planet constitute 41.6% of the students participating in the research

*"Our planet is getting more and more polluted. Concrete and garbage everywhere. Greenery is decreasing. Forests are being destroyed". (P13-F-10)*

*"I am worried that there will be more environmental pollution in the future. Because environmental pollution increases more with the increase of people".(P4-M-10)*

Nine students stated in their opinions that too much production and shopping cause environmental pollution at a rate of 37.5%.

*"They pollute the environment while making many products. Especially plastics This issue worries me". (P6-F-10)*

*"Too much shopping causes pollution because the more we buy, the more garbage we throw out. For example, I had a lot of toys, when they broke, I threw them away. Every child does this and the garbage is increasing more and more. I am sorry for that"( P14-F-10)*

Eight students who are disturbed by air pollution constitute 33.3% of the total students.

*"Those who pollute the air are destroying our clean air, I think they should be punished. I am angry with them".(P24-F-9)*

*"Gas from factories and cars pollutes the air, I am disturbed by this".(P2-M-10).*

Feeling anxiety about global climate change is 25% of the opinions of 6 students.

*"Our planet is getting warmer, the rains are decreasing and our environment is becoming a desert, we use a lot of electrical things in our house, so I think it would be better if we use electrical items less (P3-M-10)*

*"My father told me that climates change and I researched it. There are many floods and storms, the land flows into the seas and the ice melts, living things die. This issue worries me a lot". (P8-M-9)*

A total of 5 students, with 20.8%, expressed their opinions, who wanted to increase the number of environmentally sensitive people. The comparison of sensitive people and insensitive people was also depicted in the students' drawings.

*"Sensitive people protect their environment, but insensitive people do not. I get very angry with them. We need sensitive people very much". (P4-F-10)*

*"People need to see what they're doing. Most of them don't even realize they're polluting because the scavengers are sweeping before we wake up but throwing them in big dumps. Big dumps pollute". P5-F-10)*

The feeling of constant discomfort in the face of light, visual and sound pollution constitutes 12.5% of the total of 3 students.

*"There are posters and light boards in every corner around us. Our eyes are getting tired". (P12-M-9)*

*"Night lights on the beaches are killing turtles".( P13-F-10)*

*"The noises coming from the cars are excessively disturbing, I'm getting excessively tired". (P7-M-9)*

**Pictures of Gifted Students on Environmental Problems**

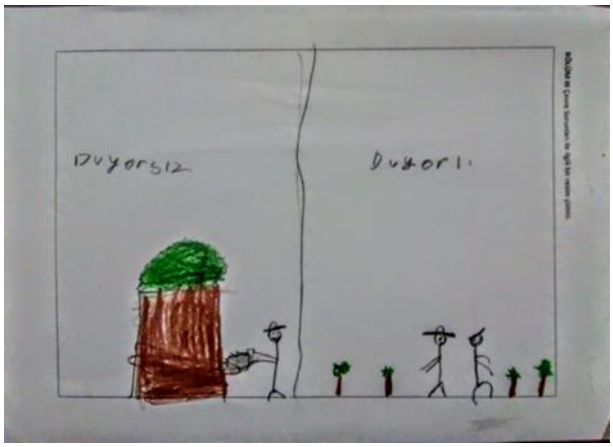
Examples of the pictures made by gifted 4th-grade students for the environment within the scope of this research are presented below.

**Picture 1.** Deterioration of The Ecosystem on a Global Extent (*P11-M-9)*

**Picture 2.** *Polluted Environment* (P7-M-9)

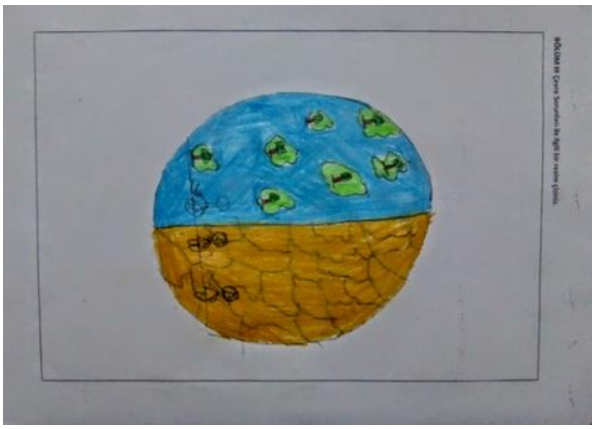
**Picture 3.** *Polluted Environment And Clean Environment (P17-F-10)*

**Picture 4.** *Clean Environment and Ruined Environment (P8-M-9)*




**Picture 5.** Sensitive and Insensitive People (P7-M-9)

**Picture 6.** Noise, Light, and Visual Pollution (P11-M-9)



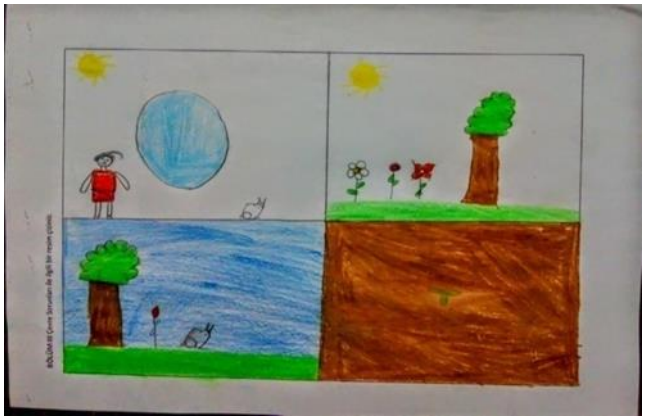
**Picture 7**. Global Climate Change and Desertification(P2-M-10)

**Picture 8.** An Environment Without Water and A Green (P15-F-10)

**Picture 9.** Over- consuming, Light, Air, Soil Pollution (P16-F-10)

**Picture 10.** Landslide and Erosion (P20-F-9)

**Picture 11.** Cutting of Trees and Air Pollution (P10-M-9)



**Picture 12.** Spoiling of the Ecosystem, Decreasing of the Species (P13-F-10)

**Picture 13.** Cutting of Trees and Water Waste (P10-M-9)

**Picture 14.** Environmental Pollution and The Last Tree (P24-F-9)

**Picture 15.** Causes of Water and Air Pollution (P8-M-9)


**Picture 16.** Water and Air Pollution (P19-F-9)

**Picture 17.** Air Pollution and Cutting of the Trees (P12-M-9)

## Conclusion and Discussion

In order for an individual to be aware of what is going on around him/her, he/she must be aware of the effect of everything he/she uses in her life on him/her environment. For this reason, it is of great importance for students to grow up with a sustainable environmental understanding (Tanriverdi, 2009) and to be sensitive individuals. According to Bowker (2007), Lindeman-Matthies (2002), and Wilson (1996), children learn about the environment better through activities that require active participation. Erten (2004), (Bakar, 2002) on the other hand, mentions that people who are interested in plants and animals in childhood or who have experiences intertwined with nature are more sensitive to environmental problems in their youth and adulthood. It was determined that 7 students, 3 girls, and 4 boys, who participated in the study, had a village life. These students, who benefited from environmental education at the school and science and art center, stated that they actively participated in tree planting activities, observed the apricot spraying activities in the village, observed that the natural areas around them were destroyed by the construction of buildings and mines, by trying to separate daily wastes (plastic, batteries, glass, oil) into recycling bins in their interviews.

In the researches on specific subjects in picture analysis, individuals are asked to paint and tell pictures about a particular subject. These pictures, which are used as findings in the research, give the painter clues about the functioning of that person's soul. In addition, the pictures that they randomly draw without being tied to a specific subject are good visual presentation tools to describe the moods of children (Furt, 1988). Gifted primary students described their views on environmental problems by reflecting on the environment in which they lived and its characteristics, the meanings, and emotions they created in this environment in their paintings. Hague (2001); Ring, (2006); Senemoğlu (2004) found that gifted students tend to design (Kopytin,2018) and rearrange their environment with strong creativity (Yavuzer, 1993). According to the visual narratives obtained from the pictures drawn by the students, it was seen that they used the skills of aesthetics in their perspective, architectural view, restructuring, creative thinking, searching for solutions to the problems in their environment, and presenting these solutions. This situation, which can be considered as a sign of high sensitivity toward protecting their environment (Uçar, 2015), is included in the descriptions of the gifted students who participated in this study. According to the data obtained from the interviews with the students, the cutting of trees and the garbage in nature disturb the visual perceptions of the students. Similar to their peers, they see treeless areas and garbage as a primary problem of environmental pollution. Their descriptions that they are uncomfortable with this situation arise from the effort to express these discomforts (Loyentyev, 2000). Their descriptions that they are uncomfortable with this situation stem from the effort to express these discomforts. Unlike their peers, these students stated that environmental pollution occurs as a result of production for excessive consumption, sound, visual and light pollution harm living things, chemical drugs cause environmental pollution, global climate change, and desertification

destroys living species. While describing the environmental problems of gifted primary school students, they established a relationship between humans, trees, and the degraded environment.

These students stated that environmental problems are caused by humans (Ayvaz, 1998) and that these problems can be solved by humans. Environmental sensitivities for children in this period develop primarily based on the experiences they observe in their immediate environment (Çobanoğlu, Er, Demirtaş, Özan and Bayrak (2006) Littledyke 2004). It has been observed that no matter how much the grade levels of the students increase in primary and secondary school, their perspectives on environmental problems do not change except for some stereotypes. According to these students, environmental pollution is stated as air, soil, and water pollution, garbage, and other wastes. However, global climate change and desertification, radioactive and chemical wastes, sound, light, and visual pollution, pollution caused by excessive production and consumption, and erosion are environmental problems that students in this age group should be aware of (Pınar and Yakışan, 2017). In the interviews with gifted primary school students, 18 of the 24 students described the sensitivities about the immediate environment in the pictures, while 6 students described the problems of the distant environment on a global scale. The fact that gifted students have higher environmental sensitivity than their peers (Uğulu, 2013) is similar to the results of this research. By dividing the drawing paper into two, the students also reflected on the conversations of the figures who protect the environment and those who do not. In environmental pollution, it is seen that environmental problems are depicted in their paintings with sub-themes such as the dumping of wastes into the soil and the sea, not into the garbage, the damages of floods and excessive precipitation, the pollution of the air by factory chimneys, global climate change and accordingly the spread of desertification, and the deterioration of the ecosystem. In some of the pictures, it was seen that the children expressed more than one environmental problem. These are included in the expressions such as pollution, global climate change, environmental awareness, soil, air pollution, water, visual, sound, and light pollution. The fact that excessive shopping consumption, increasing production, and raw material needs are also considered as environmental problems shows that these students have strong perceptions about their environment. In this study, the perception of the sun is reflected in the pictures both in a clean environment and in a polluted environment. The reason for this is that they think that the sun is a source of life for living things, but when they cut trees, it will cause climate change and desertification. In this case, it can be thought that gifted students look at events from multiple perspectives.

Suggestions of gifted primary school students about environmental problems; trees were not cut down, soil, air, and water were not polluted. It can be said that the reason why the water pollution is described by fewer students compared to the descriptions made on the subjects they observe with the perception of the immediate environment is because the students think that the water coming to the house is clean. According to Dienno and Hilton (2005), a person who knows and is aware of his environment can only be sensitive to his environment. In this case, it can be thought that the students produced more ideas about environmental pollution that they could observe and reflected on in the pictures. Allerby (2000), in his research with children and young people, determined that clean world perception drawings are more common in younger children. The clean environment perception of gifted primary school students is also reflected in their paintings.

Shepardson (2005) asked students to describe the environment and collected the data with drawn pictures. As a result of the research, most of the students stated that they see the environment as a source of food, water, and oxygen for living things. It has been observed that the environment descriptions in the pictures drawn by the gifted students participating in this study reflect the reality that the environment has an ecosystem and that living things need clean air, soil, and water in this ecosystem. It can be thought that gifted students approach environmental problems more realistically and can see events in a wider range. It is thought that being a citizen who grows up in a country, is sensitive to the environment, is aware of environmental problems and produces solutions, can raise future generations in this direction (Özdemir, 2011).

The fact that gifted primary school students participating in the research reflected the people living in the polluted environment as unhappy and the people living in the clean environment as happy is similar to the study of Özsoy and Ahi (2004) with primary school students, while people in clean environment drawings smile, people in dirty

environment drawings are reflected as sad. It is understood from the interviews and analysis of the pictures in this research that the sensitivity of the students towards environmental problems is also in emotional dimensions. It was determined that the students felt high anxiety about their desire to live in a natural environment, a sense of love and protection towards the living things around them, a feeling of deep sadness against a degraded environment, a sense of constant discomfort in the face of visual, auditory and sound pollution, the inadequacy of the measures taken against environmental pollution and the feeling of anger and anger against insensitive people and the deterioration of the natural environment.

## Recommendations

### Recommendations for Practitioners

Today, due to the global increase in environmental problems, more research is needed to determine the environmental sensitivity of these students, who are the adults of the future. The results to be obtained from such research aimed at determining students' perceptions of the environment and their views on environmental problems can help them raise sensitive individuals as the adults of the future. Tools such as picture analysis can be used more widely to determine the psycho-emotional characteristics of gifted students.

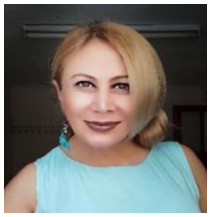
### Recommendations for Researchers

Due to the qualitative nature of this research, it may be recommended to use different data collection tools in future research.

## Limitations

This research is limited to 12 female and 12 male students who are determined to be gifted in the 4th grade attending Science and Art Centers in Malatya province of Turkey in the 2020-2021 academic year.

### Biodata of Author



Doctorate **Şengül Korkut** was a primary school teacher at the Turkish Ministry of National Education for 30 years. Besides, she worked as the primary school teacher of the gifted students for 15 years. Korkut got her master's degree in Malatya Inönü University and her doctorate in Bolu Abant Izzet Baysal University in Turkiye. Currently, she continues her doctoral studies at Friedrich-Alexander-University of Erlangen-Nürnberg as a visiting researcher under the supervision of Prof.Dr. Albert Ziegler. In addition to her academic researches on social studies education, she provided special training for the basic education of the gifted students and designed differentiated curriculum for the gifted students and applied them in the classes. She also currently conducts studies on the self-regulated skills of the students. Korkut's research areas, educational psychology, special education, basic education, gifted and talented education of students, classroom management education, social studies education, nature education, ecological literacy education.

## References

Alerby, E. (2000). A way of visualizing children's and young people's thoughts about the environment: A study of drawings. *Environmental Education Research, 6*(3), 205-222.

Ayvaz, Z. (1998). *Çevre Eğitiminde Temel Kavramlar El Kitabı (Handbook of Basic Concepts in Environmental Education ),* Çevre Koruma ve Araştırma Vakfı, Çevre Eğitim Merkezi Yayınları No:5, İzmir.

Bakar, F. , Avan, Ç. , Aydınlı, B. , Şeker, F. & Turgut, B. (2021). Okul Dışı Öğrenme Ortamı Olarak Doğa Eğitiminin Çevre Bilgisi ve Tutum Üzerine Etkisi (The Effect of Nature Education as an Out-of-School Learning Environment on Environmental Knowledge and Attitude), *Akademia Doğa ve İnsan Bilimleri Dergisi , 7*(1), 1-18.

Bowker, R. (2007). Childrens' perceptions and learning about tropical rainforests. An analysis of their drawings. *Environmental Education, 13*(1), 75–96.

Büyüköztürk, Ş., Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2014). *Bilimsel araştırma yöntemleri (Scientific research methods*. Ankara: Pegem Akademi.

Çobanoğlu, E.O., Er, D.E., Demirtaş, E., Özan, B., Bayrak, C. (2006). *İlköğretim öğrencilerinin çevre sorunlarını algılamaları (Primary school students' perception of environmental problems)* 15. Ulusal Eğitim Bilimleri Kongresi Bildiri Özetleri Kitabı, 44-445, Muğla.

Çokadar, H., Türkoğlu, A., & Gezer, K. (2009). Çevre sorunları. Çevre bilimi (Environmental problems. environmental science). Ankara: Anı

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. Thousand Oaks, CA: Sage Publications.

Dabrowski, K. (1964). *Positive disintegration*. Boston: Little, Brown.

Dienno, C. M., & Hilton, S. C. (2005). High school students' knowledge, attitudes, and levels of enjoyment of an environmental education unit on nonnative plants. *Journal of Environmental Education, 37*(1), 13-25.

Doğan, M. (1997). *Türkiye Ulusal Çevre Stratejisi ve Eylem Planı Eğitim ve Katılım Grubu Raporu (Turkey National Environmental Strategy and Action Plan Education and Participation Group Report)*. DPT Müsteşarlığı ve Türkiye Çevre Vakfı, Ankara.

Erol, A. (2016). *Proje yaklaşımına dayanan aile katılımlı çevre eğitimi programının 5-6 yaş çocuklarının çevreye yönelik farkındalık ve tutumlarına etkisinin incelenmesi. (Investigation of the effect of the environmental education program with family participation, based on the project approach, on the environmental awareness and attitudes of 5-6 year old children).* Master Thesis. Pamukkale University, Denizli, Turkiye

Erol, G. H. (2005). *Sınıf öğretmenliği ikinci sınıf öğrencilerinin çevre ve çevre sorunlarına yönelik tutumları (Attitudes of second year primary school teachers towards environment and environmental problems).* Master's thesis, Pamukkale University, Denizli, Turkiye.

Ersoy, A. F., & Türkkan, B. (2010). İlköğretim öğrencilerinin çizdikleri karikatürlere yansıttıkları sosyal ve çevresel sorunların incelenmesi *(Examining the social and environmental problems that primary school students reflect on the cartoons they draw). Eğitim ve Bilim, 35*(156), 96-109.

Ertürk, R. (2017). İlkokul öğrencilerinin çevre sorunları ve çevre eğitimine yönelik algıları *(Primary school students' perceptions of environmental problems and environmental education). İnönü Üniversitesi Eğitim Fakültesi Dergisi, 18*(3), 12-24. DOI: 10.17679/inuefd.354142, Malatya.

Geray, C. (1997). Çevre İçin Eğitim, İnsan Çevre Toplum, (Education for the Environment, Human Environment Society). Trans: Ruşen Keleş, Ankara: İmge

Hague, E. (2001). Nationalty and childrens' drawings – pictures 'about Scotland' by primary school children in Edinburg, Scotland and Syracuse, New York State. *Scottish Geographical Journal, 17*(2), 2001, 72-95.

Halmatov, S. (2016). *Çocuk Resimleri Analizi ve Psikolojik Resim Testleri (Child Picture Analysis and Psychological Picture Tests).* Ankara: Pegem Akademi.

Isbel, T. R., & Shirley, C. R. (2003). *Creativity and the arts with young children*. Delmar Learning, Canada.

Kaptan, S. (1998). Bilimsel araştırma ve istatistik teknikleri (Scientific research and statistical techniques). Ankara: Tekışık

Karakaya, F, Ünal, A, Çimen, O, Yılmaz, M. (2018). Üstün yetenekli öğrenciler ve akranlarının çevre algılarının incelenmesi (Examining the environmental perceptions of gifted students and their peers) *Online Fen Eğitimi Dergisi*, 3(1) , 25-32.

Kopytin, AI (2018). 'Yeşil' Mandala: Doğu Bilgeliğinin Ekopsikoloji ile buluştuğu yer. Eğitim ve Terapide Yaratıcı Sanatlar. ("The 'Green' Mandala: Where Eastern Wisdom meets Ecopsychology." Creative Arts in Education and Therapy").

Kunt, K., & Tortop, H.S. (2013). Türkiye'deki Üstün Yetenekli Öğrencilerin Bilim Ve Sanat Merkezlerine İlişkin Metaforik Algıları (The Metaphoric Perceptions of Gifted Students about Science and Art Centers in Turkey). *Journal of Gifted Education Research, 1*(2), Special Issue, 117-127

Malchiodi. (2013). *Çocuk Resimlerini Anlamak. (Understanding Children's Pictures).* İstanbul: Nobel Yayınları.

Malchiodi. (2013). Çocuk Resimlerini Anlamak. (Understanding Children's Pictures).İstanbul: Nobel Yayınları.

Özdemir Ö. D. (2011). *İlköğretim okullarında cevresel vatandaşlık eğitimi (Environmental citizenship in primary schools).* Doctoral Thesis. Marmara University, Istanbul, Turkey.

Özdemir Özden, D. (2011). *İlköğretim okullarında cevresel vatandaşlık eğitimi (Environmental citizenship education in primary schools).* Doctoral Thesis. Marmara University, Istanbul, Turkey.

Özdemir, İ. (2004). Çevre ahlak ilişkisi. İçinde Çevre eğitimi: ders notları (çevre sorunları, çevre felsefesi, çevre eğitimi) Environmental ethics. In Environmental education: lecture notes (environmental issues, environmental philosophy, environmental education) (270-281), Bursa.

Özsoy, S., & Ahi, B. (2014). İlkokul Öğrencilerinin Geleceğe Yönelik Çevre Algılarının Çizdikleri Resimler Aracılığı ile Belirlenmesi. (Determination of Primary School Students' Perceptions of the Future of the Environment Through the Pictures They Draw). *Kuram ve Uygulamada Eğitim Bilimleri, 14*(4), 1-26.

Özsoy, S., & Ahi, B. (2014). İlkokul Öğrencilerinin Geleceğe Yönelik Çevre Algılarının Çizdikleri Resimler Aracılığı ile Belirlenmesi (Determination of Primary School Students' Perceptions of the Future of the Environment Through the Pictures They Draw ). *Kuram ve Uygulamada Eğitim Bilimleri*, 14(4), 1-26.

Pınar, E. & Yakışan, M. (2018). *İlkokul Öğrencilerinin Çevre Kavramları İle İlgili Çizimlerinin Analizi (Analysis of Primary School Students' Drawings Related to Environmental Concepts).* XV. Uluslararası Sınıf Öğretmenliği Eğitimi Sempozyumu (11-14 Mayıs 2016) USOS 2016 Özel Sayısı , 97-113 . DOI: 10.24315/trkefd.366693

San, I. (1979). *Sanatsal yaratma, çocukta yaratıcılık (Artistic creation, creativity in child).* Ankara: Türkiye İş Bankası Kültür Yayınları.

Saricam, H., & Sahin, S. H. (2015). The Relationship between the Environmental Awareness, Environmental Attitude, Curiosity and Exploration in Highly Gifted Students: Structural Equation Modelling. *Educational Process: International Journal, 4*(1-2), 7-17.

Savaş, I. (2015). Çocuğunuzun Resimleri Size Ne Anlatır? (What Do Your Child's Pictures Tell You?) İstanbul: Nesil Yayınları .

Schirrmacher, R. (2002). *Art and creative development for young children* (4th Edition). Delmar Thomson Learning.

Schneller, A., J., Johnson, B., & Bogner, F.X. (2015). Measuring children's environmental attitudes and values in northwest Mexico: Validating a modified version of measures to test the model of ecological values. *Environmental Education Research, 21*(1), 61–75.

Senemoğlu, N. (2004). *Gelişim öğrenme ve öğretim: kuramdan uygulamaya. (Developmental learning and teaching: from theory to practice).* Ankara: Gazi Kitabevi

Shepardson, D. P. (2005). Student's ideas: What is an environment? *Journal of Environmental Education, 36*(4), 49-58.

Stone, M. K. & Barlow, Z. (2009). *Smart by nature: Schooling for sustainability*. Watershed Media, Healdsburg, CA.

Tanık Önal, N. (2020). Investigation of gifted students' environmental awareness.

Tanrıverdi, B.(2009).Sürdürülebilir çevre eğitimi açısından ilköğretim programlarının değerlendirilmesi (Evaluation of primary education programs in terms of sustainable environmental education). *Eğitim ve Bilim, 34*(151), 89-103.

Uçar, A. (2015). Üstün yetenekli bireylerin görsel yeti ve farkındalığı (Visual ability and awareness of gifted individuals). *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 15*(Özel Sayı), 1-8.

Uğulu, İ. (2013). Üstün zekâlı yetenekli öğrenciler ile normal gelişim gösteren öğrencilerin çevreye yönelik tutumlarının karşılaştırılması [ Comparison of gifted / talented students and normal-oriented students'attitudes towards the environment]. *Journal of Buca Education Faculty, 35*, 1-14.

Uzun, N., & Sağlam, N. (2005). Sosyo-ekonomik durumun çevre bilinci ve çevre akademik başarısı üzerine etkisi. The effect of socio-economic status on environmental awareness and environmental academic achievement). *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 29*, 194-202.

Venger, A. (2007). *Psychological picture tests: İllustrated guide*. Vlados Publishing.

Yavuzer, H. (1993). *Resimleriyle Çocuğu Tanıma. Remzi Kitabevi ( Getting to Know the Child with Pictures),* 4th Ed. İstanbul: 143-144.

Yurtal, F., & Artut, K. (2008). Çocuklarda şiddeti algılama biçimlerinin çizdikleri resimlerine yansımaları (Reflections of children's perception of violence on their drawings). *Çocuk ve Gençlik Ruh Dergisi*, 15(3), 149-155.