

How is the Environment in the Mind of the Gifted Elementary School Student? A Phenomenology Study

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Abstract

The purpose of this phenomenology study is to elicit and understand the gifted elementary school students' opinions about environment. A total of three gifted elementary school students selected by means of the homogenous sampling technique participated in the current study conducted in line with the phenomenology design of quantitative research. The data were collected through the Draw-An-Environment Test and Rubric and one-to-one interviews conducted with the students. In the analysis of the collected data, textural and structural descriptions were used. In light of the findings of the current study, it can be said that the gifted students mainly used biotic elements in their drawings. In addition to this, the findings obtained from the drawings and interviews have revealed that the gifted students have a limited and anthropocentric perception of the environment. On the basis of the findings of the current study, it can be suggested that the number of environment-centred studies including gifted students as their participants should be increased and the environmental education to be given to gifted students should be focused on the inculcation of ecocentric conception of the environment in these students.

Keywords: Giftedness, gifted student, environment, phenomenology

Introduction

“Now we're almost at the end of my talk, and this is where people usually start talking about hope, solar panels, wind power, circular economy, and so on, but I'm not going to do that. We've had 30 years of pep-talking and selling positive ideas. And I'm sorry, but it doesn't work. Because if it would have, the emissions would have gone down by now. They haven't. And yes, we do need hope, of course we do. But the one thing we need more than hope is action. Once we start to act, hope is everywhere.”

(15 years old environmentalist)

Gifted students represent a group of students who are at least as important as the other groups of students needing special education. Being gifted has been difficult for researchers and scientists to define. Thus, according to Anderson (2000) stating that the concept has more than 300 definitions, these definitions can be examined within two groups; traditional and innovative. Traditional definitions focus on a single criterion, such as the intelligence quotient (IQ) score (Terman, 1925) or placement in the upper percentile, but limit the giftedness to small percentiles. Innovative definitions on the other hand adopt a comprehensive approach to giftedness and associate it with different criteria such as exceptional field-specific performance (Matthews and Foster, 2005; Witty, 1958), leadership (Marland, 1971), creativity and productivity (Marland, 1971; Renzulli, 1986; Sternberg and Zhang, 1995), positive self-thinking and motivation for success (Feldhusen, 2005), exceptional field-specific reasoning (Brody

and Stanley, 2005) and commitment to the task (Renzulli, 1986). As it can be understood from this, being able to look at giftedness from different dimensions and on the basis of a number of characteristics that are specific to such individuals makes it easier to see this type of diagnosis from a wider perspective and understand it.

The characteristics of gifted students are addressed from the prominent dimensions which are widely agreed on compared to their definitions and supported by research findings. It is possible to list these dimensions as general intellectual, specific to a particular domain, creativity, artistic, leadership and affective domain (Johnsen, 2018). From the general intellectual dimension, the characteristics of gifted individuals include long-term and detailed memory, early developed advanced vocabulary, fast learning, advanced communication skills, making connections by observing relationships, finding and solving unusual problems, curiosity, desire to learn, and so on. In the other dimensions, many different characteristics such as preferring complexity and open-endedness, taking risks, emotional and sensory sensitivity, being intuitive, being able to exhibit his / her ability for a long time, self-confidence, sense of humour, adapting to new situations, persuasiveness, understanding abstract ideas and concepts and so on are emphasized. Characteristics particularly emphasized in the affective domain such as attention to adult problems, perfectionism, interest in ethical situations (right and wrong), showing empathy, hypersensitivity, performing critical evaluation and decision-making more clearly show the differences of these students from others.

In addition to the characteristics they possess, gifted students are also considered to be good thinkers of future, and therefore have a very sharp awareness of the impact of negative changes in the environment on their own future and on the lives of future generations (Hartsell, 2006). Because gifted individuals are often characterized as having strong sensitivities; they develop very deep sensitivities at an early age against world problems and injustices (Piechowski, 1997; Silverman, 1993). Greta Thunberg's words on climate problems can be given as an example of possessing such sensitivity at an early age:

What happens next? The year 2078, I will celebrate my 75th birthday. If I have children or grandchildren, maybe they will spend that day with me. Maybe they will ask me about you, the people who were around, back in 2018. Maybe they will ask why you didn't do anything while there still was time to act. What we do or don't do right now will affect my entire life and the lives of my children and grandchildren. What we do or don't do right now, me and my generation can't undo in the future. (Greta Thunberg, 2019)

Such sensitivities, which can be developed not only by gifted individuals but also by everyone, are treated under the dimensions of psychomotor, sensory, intellectual, fantastic and hypothetical which are among the domains of overexcitabilities established on the Theory of Positive Disintegration, which Dabrowski (1964) put forward as a developmental personality theory. These overexcitabilities also provide a good framework of support to facilitate characterization of giftedness (Ackerman, 1997). In studies conducted with gifted individuals in relation to the domains of overexcitabilities, it has been pointed out that when compared to average people, gifted people exhibit considerably different performances in different domains (Ackerman, 1997; Bouchard, 2004; Bouchet and Falk, 2001; Gallagher, 1986; Piechowski and Miller, 1994; Piechowski, Silverman and Falk, 1985; Piechowski and Colangelo, 1984; Miller, Silverman and Falk, 1995; Yakmacı-Güzel and Akarsu, 2006) and particularly very strong evidence has been provided about the differences in the intellectual, fantastic and affective (The Big Three) domains (Mendaglio and Tillier, 2006). Under the heading of capacity to establish strong ties and deep relationships,

which is particularly addressed within the affective domain, one of the domains of overexcitabilities, it is indicated that individuals have strong emotional ties to people, living things and places (Falk, Piechowski and Lind, 1994). Thus, it would not be wrong to expect that gifted people will have strong ties to the environment and have different effects on the environment.

In order to meet this expectation, it is necessary to understand and define the concept of environment from a correct and scientific point of view. Environment is a concept that is difficult to define due to its many different layers. Defining the environment correctly will also be an indication that we understand it correctly (Alerby, 2000). Research on this subject shows that children, students or adults have too much limitation and lack of knowledge in terms of defining the environment correctly (Ahi, Özsoy and Alisinanoğlu, 2014; Alerby, 2000; Barraza and Cauron, 2004; Özsoy, 2012; Özsoy and Ahi, 2014; Shepardson, Wee, Priddy and Harbor, 2007). There is also limited research in the literature about how gifted students define their knowledge of the environment or the environment as a concept. Samuelsson and Kaga (2008) emphasized the importance of understanding the environment as a concept in environmental education, and pointed to the importance of teaching the concept of environment from an early age. According to them, inclusion of gifted students in environmental education issues will enable them to use their talents to contribute to the environment; thus, to humanity. Findings obtained in research focusing on the gifted and the environment has yielded evidence indicating that this group is different. Gifted students' level of environmental awareness and attitudes to the environment were found to be significantly higher than those of their non-gifted peers and that with increasing scores of curiosity and inquiry of gifted students, their environmental awareness also increased (Sarıçam and Şahin, 2015). In addition, gifted students are more sensitive in terms of exhibiting environmentally positive behaviours than their non-gifted peers (Sontay, Gökdere and Usta, 2014). Gifted students' knowledge about and attitudes towards the environment are high; their knowledge and attitudes do not vary significantly depending on gender and the family's socio-economic status (Esen, 2011); yet their attitudes vary significantly depending on gender and grade level (Aydın, Coşkun, Kaya and Erdönmez, 2011).

The focus and findings of the research compiled and shared above have shaped the problem that is the subject of the current study because understanding and eliciting gifted students' opinions about the environment are as important as determining and understanding their knowledge about and attitudes towards the environment. Only in this way, proper attitudes, values and respect can be developed in relation to the environment. In this regard, the main problem of the current study is "What are the opinions of gifted students about the environment?"

Methodology

Research Design

The main purpose of this phenomenology study is to understand the opinions of gifted elementary school students about the concept of environment. The environment which is the focal phenomenon in this stage of the study is accepted as "*All of the natural, economic and cultural values*" by researchers (Türkiye Çevre Vakfı [TÇV], 2001).

Phenomenological research is conducted to understand the experiences of one person or persons about any phenomenon (Creswell, 2013). Van Manen (1990) states that the main concern of phenomenological research is to reduce the definition based on personal experiences to universal quality. Husserl (1931) emphasizes that the main

obstacle against the understanding of ideas is biases. Therefore, it is important for the credibility and honesty of the study that the biases of both the researcher and the participant are accepted as a disruptive variable. From this point of view, the concept of transcendental phenomenology has emerged. Moustakas (1994) contends that the basic understanding of transcendental phenomenology is to perceive everything about the phenomenon as something new encountered for the first time. As in the current research, it will be attempted to understand how gifted elementary school students experience the environment as a concept and what meaning they assign to it. To do so, the current study was designed as a quantitative study based on transcendental phenomenology.

Setting

The elementary school in which the current research was conducted is known as a historical and well-established school in the province where it is located. The administrative and teaching staff of the school located in the centre of the city are experienced people. There are 17 classrooms, 20 teachers and 610 students in the school. The foundation of the main building of the school was laid in 1928 and the school started its educational activities in 1932. It has carried out this activity uninterruptedly until today. The school has 504 m² main building, 125 m² annexed building and 20 m² canteen building. The remaining area is used as a garden area and the total land area of the school is 4116 m².

According to the information obtained from the school guidance service, there are a total of 10 students identified as gifted in the school. These students are identified as gifted students and educational activities are given to them through individualized programs according to their development and academic levels. One of the researchers was invited to the school to contribute to the educational support works for gifted children. On this invitation, the researcher expressed his opinions to teachers on the programs applied to the gifted children and created a work plan. The procedures carried out within the scope of the current research constitute a certain part of this process.

Study Group

The study group of the current research is comprised of 3 students defined as gifted and receiving their education in an elementary school in the city of Kastamonu located in the north-west part of Turkey. In the formation of the study group, the homogenous sampling technique was used. This method used in quantitative studies reduces the difference among participants, it was preferred in the current study as it would facilitate focusing on the phenomenon and simplify the analysis process (Miles and Huberman, 1994). Although the reduction of diversity is a limitation, it is considered that this limitation does not have a negative effect on the credibility of the study since the research focuses only on the gifted students in line with the general purpose of the study.

The children in the study group come from the families of middle and upper-middle socio-economic status. In addition, Kastamonu is a Turkey's medium-sized city with limited industrial activity and having an economy based on domestic tourism, agriculture and animal husbandry. According to data issued by Turkish Institute of Statistics (2019), the city of Kastamonu is located slightly below the average of Turkey in terms of education, health, culture and economy. Therefore, the children constituting the study group are thought to close to the average of their peers in Turkey in terms of social, humanitarian, health and educational opportunities. This understanding is also

important for researchers as it is thought to directly affect children's experiences about the phenomenon.

Data Collection and Ethics

The data of the current study were collected from the drawings produced by the students about the concept of environment and one-to-one interviews conducted with the students about their drawings. In the data collection process, first meeting was organized with the parents of the students and they were explained that their children would make drawings and interviews would be conducted with their children for a scientific study. The families wanting their children to participate were asked to inform the researcher. From the families allowing their children to participate, content forms were obtained. At the beginning of the interviews with the children, they were asked whether they would like to participate in the interview and they were told that they could leave the interview whenever they wanted. The same procedure was administered in the session in which the children produced their drawings. The children were frequently reminded that they would not be assigned any grade and that they would not be assessed on what they did in the study.

A ready-to-use document was developed for the children to draw their pictures on. This document consists of two sections. The first section is for the drawings of the children. The second section is for the indication of all the codes and for the interviewer to take notes. This procedure was applied collectively to all three children. Various measures were taken for the children not to be affected from each other while producing their drawings. The related instructions were explained to each child individually. The children used the drawing techniques they wanted while drawing. All the students used dry paint. The drawings lasted for about 40 minutes. After the completion of the drawings, one of the researchers talked to the children to determine the codes involved in each drawing and noted the related codes. The themes involved in the current study were developed by means of DAET-R, developed by Moseley, Desjean-Perrotta and Utley (2010) and used in different studies (Ahi, Özsoy & Alisinanoğlu, 2017). DAET-R consists of four sub-dimensions, being biotic element, abiotic element, human and artificial environment. In each sub-dimension, a score ranging from 0 to 3 is obtained. From the rubric on the other hand, a score ranging from 0 to 12 is obtained. A higher the score taken from the rubric indicates a stronger perception of the environment as a unity of systems. When the score taken from DAET-R is between 0 and 4, it means that either the sub-dimensions of the environment have not been drawn at all or they have been drawn in isolation without connections with the others. If this score is in the range of 5-8 points, then it means that only one of the codes belonging to these sub-dimensions has been drawn related to the code in another sub-dimension. Both of these score ranges may serve as evidence that the scientific understanding of the ecosystem has not occurred; yet, a total score ranging from 9 to 12 indicates that all the sub-dimensions of the environment have been depicted in an interrelated manner within an understanding of a system (Moseley, Desjean-Perrotta and Utley, 2010).

Another data set of the current study consists of the texts generated from the interviews conducted with the children separately. Each interview lasted for about seven minutes. For the interviews, the children were invited to a suitable place in their school. This is a place where the required conditions for a healthy interview to be conducted were met and with which the children were familiar. The interviews with the children were conducted by one of the researchers. One of the researchers was a person known by the children as he had conducted educational and instructional activities with the children in this school before. In this way, the likelihood for the children to experience anxiety arising from being interviewed by a stranger or from

being alone with a stranger was minimized and thus any potential effect that would somehow harm the process could be eliminated. The other researchers were only together with the children to talk about the drawings.

Data Analysis

The data collected in the current study were analyzed on the basis of the transcendental phenomenology. In this regard, both textural and structural descriptions of the data were made. According to Creswell (2013), textural description is made to understand what the participant is experiencing about the phenomenon and structural description is made to understand how he/she experiences it in terms of the situation and content. Through the drawings, it was intended to determine the structures (codes) in the children's minds about the concept of environment. More precisely, the drawing makes up the textural description by enabling us to understand what they have experienced about the phenomenon of the environment and, as a result of this experience, the construction of the concept of the environment in their minds.

The interview texts were used for the structural description. Through the data collected from the interviews, it was intended to reveal how they viewed and experienced the phenomenon of the environment in terms of the conditions and situations in which they were. By means of both the textural and structural descriptions, it was attempted to understand how the phenomenon existed in the children's minds and how they understood and internalized the phenomenon. All these analyses were conducted according to the analysis method developed by Colaizzi (1978). In accordance with this analysis technique, important sentences in the interview texts were determined, certain meanings were developed in the light of these and themes were created in the light of these meanings.

Credibility and Honesty

One of the most important problems of qualitative research is the credibility of the results derived from the collected data. There are many methods to ensure this credibility. In the current study, the triangulation technique based on the researcher centred post-positivist paradigm was used. With triangulation, researchers bring multiple and different sources together and then interpret them to provide evidence to support the phenomenon (Creswell, 2013). In addition, Creswell and Miller (2000) stated that triangulation is a popular credibility technique and that this method allows the collection of data in different ways and in-depth data analysis.

In the current study, data were collected both through visual and interview techniques. In order to complete triangulation, a person who is an expert in the field of preschool education was appointed as an external observer during the analysis. After the researchers completed their analyses, the ideas of the external observer about the process were obtained and the external observer was also asked to analyze the findings. The consistency between the researchers' themes and those of the external observer was checked by calculating Kappa coefficient and it was found to be .86. Thus, it was concluded that there is a high consistency between the external observer and the researchers.

Findings

Within the context of the current study, first the codes derived from the drawings of the talented students are presented. These codes are shown in Table 1.

Table 1
Codes derived for each DAET-R sub-dimensions

DAET-R Sub-dimensions	Codes
Biotic Element	Bee, Tree, Cat, Grass, Flower and Squirrel
Abiotic Element	Sun, Star and Cloud
Artificial Environment	Road, Street Lamp and Car
Human	Human

As can be seen in Table 1, a total of 13 codes were derived from the drawings of the participating three students. From among these 13 codes, sun, human and tree are the codes found in all the drawings. The cat and flower codes were depicted twice in the drawings. The remaining eight codes were only drawn once. It is a remarkable finding that there are biotic, abiotic, artificial environment and human elements in all the drawings of the children. The scores taken by the drawings from DAET-R are presented in Table 2.

Table 2
Scores taken from DAET-R by the students

	Abiotic	Biotic	Art. Env.	Human	Total
Student 1	2	2	1	2	7
Student 2	2	2	0	2	6
Student 3	2	2	2	2	8

As can be seen in Table 2, the students took 2 points from the biotic element, abiotic element and human sub-dimensions. Thus, it can be argued that the students drew these three sub-dimensions related in themselves or to another sub-dimension. As the total scores of the students are in the range 5-8 points, it can be said that in general the students do not perceive the environment as a unity of system rather they have a perception of environment in which different structures come together and there are a limited number of relationships. With the data collected from the interviews conducted with the students after they had completed their drawings, it became possible to attain a more in-depth understanding of the structure of the perception of environment in their minds. The meaning developed by all the 3 participating students towards the environment can be handled within the conception of "the unity of systems". During the interviews, the students mentioned both the relations in each sub-dimension and its connections with the other sub-dimensions. In Table 3, examples of the relationships mentioned by the students during the interviews are shown.

Table 3
Students' examples of relationships for each DAET-R sub-dimensions

Sub-dimensions	Examples
Biotic-Biotic relationship	"For example, some animals make their nests in trees." Student 1 "Some animals feed on the leaves of flowers and trees." Student 1 "For example, there is a plant. It has teeth. It eats insects." Student 2 "Trees emit oxygen, which makes it possible for animals to live." Student 2

	<p><i>"Bees make use of flowers to make honey and to make hives."</i> Student 3</p> <p><i>"If there were no trees, where would owls nest?"</i> Student 3</p>
Human-Biotic relationship	<p><i>"Humans give water to street animals to help them."</i> Student 1</p> <p><i>"If there were no trees, there wouldn't be humans because there would be very little oxygen. As trees emit oxygen, we might die without trees."</i> Student 1</p> <p><i>"Sometimes humans feed animals and thus help them survive. Sometimes humans find food thanks to animals."</i> Student 3</p> <p><i>"For example, the dog is a friend to humans. Dogs can find people from their smell."</i> Student 3</p>
Abiotic-Human relationship	<p><i>"If there wasn't the Sun, everywhere would be very cold. If there were no clouds, there wouldn't be rain."</i> Student 1</p> <p><i>"Humans built their houses close to nature because they can find a lot of stones and woods. There are also more foods, if there are fruit trees..."</i> Student 1</p> <p><i>"Because of the Sun, there is life on earth."</i> Student 3</p>
Abiotic-Abiotic relationship	<p><i>"Through the Sun, we can see the Moon because the Sun emits light and it is reflected by the Moon."</i> Student 3</p>

As can be seen in Table 3, in their explanations about the concept of environment, the gifted students created connections between biotic elements. On the other hand, human-biotic relationships were also frequently established and many examples of relationships were given. Another group of relationships were between abiotic elements and humans. In addition to all these, only one student defined relationships between abiotic elements. On the basis of these findings, it can be argued that children can establish relationship networks about the environment on the basis of the human element. It is remarkable that the artificial environment was not mentioned in the relationships.

Table 4
Examples of gifted students' drawings

Student 1 Drawing



Student 2 Drawing



Student 3 Drawing



Discussion

From the findings of the current study, it was concluded that the gifted students frequently included biotic elements in their drawings of the concept of environment. In the related literature (Alerby, 2000; Özsoy, 2012), similar results have been reported. In addition, in a study conducted on university students (Ahi, Özsoy and Alisinanoğlu, 2014), it was found that biotic elements were frequently used. The researchers are of the opinion that the reason why the gifted students used biotic elements more while

describing the environment might be that the students equate the environment to nature. Shepardson, Wee, Priddy and Harbor (2007) found that there is a cognitive permeability between the students' concepts of environment and nature and that this is a misconception that should be corrected. Though the current study did not focus on misconceptions, it can be thought that the gifted students use the concept of environment interchangeably with the concept of nature or that they describe the environment as nature.

Another important and remarkable finding of the current study is that all the students included human elements in their drawings. In similar studies in the relevant literature (Ahi, Özsoy and Alisinanoğlu, 2014; Özsoy, 2012, Shepardson et al., 2007), it has been pointed out that human is an element frequently depicted. Thus, the researchers believe that the children tend to adopt the anthropocentric approach to the description or understanding of the environment (Shepardson et al., 2007). This is open to debate. However, in the current study some other evidence supporting this belief came from the interviews conducted with the students. As can be seen in Table 3, the gifted students established relationships between human and biotic elements and human and abiotic elements. When the content of the opinions expressed by the students is examined, it is seen that the elements beneficial to human beings were frequently emphasized. In light of all these findings, it can be argued that the 3 gifted students constructed a human-centred structure while defining the environment. Given the age of the students and the fact that they are in the basic education, these students' this conception of the environment can be converted into the ecocentric conception of the environment through correct training. Boutler and Buckley (2009) emphasize that an effective science education to be conducted through correct models in the cognitive dimension can result in the desired outcomes.

The scores taken from DAET-R by the students are in the range 6-8 points (see Table 2). Thus, it can be argued that they do not perceive the environment as a unity of system rather they have a perception of environment in which different structures come together and there are a limited number of relationships (Moseley, Desjean-Perrotta ve Utley, 2010). Though this perception of environment does not thoroughly match with the modern conception of environmental education, it is not considered to be a bad starting point given both the age and skills of the participants. In the explanations given in Table 3, it is seen that remarkable relationships were established between some sub-dimensions.

Suggestions

In light of the findings of the current study, the researchers think that more studies should be conducted with the participation of gifted students in this field. In the current study, there is a limitation in terms of the number of participants. Further studies to be conducted on gifted students will allow more active participation of these students in the process of environmental education. The researchers are of the opinion that the use of the skills of gifted students to make contributions to environment-based sciences can make significant contributions to humanity.

It was concluded that the participating students have the anthropocentric view of environment. Thus, the environmental education programs to be developed should be based on the ecocentric view of environment.

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Özel Yetenekli İlkokul Öğrencisinin Aklında Nasıl Bir Çevre Vardır? Bir Fenomenoloji Araştırması

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Özet (Turkish Abstract of Paper)

Bu fenomenoloji araştırmasının amacı özel yetenekli ilkokul öğrencilerinin çevreye yönelik görüşlerini ortaya çıkarmak ve anlamaktır. Nitel yaklaşımın fenomenoloji deseninde yürütülmüş olan bu araştırmaya homojen örnekleme tekniği ile seçilmiş olan özel yetenekli üç ilkokul öğrencisi katılmıştır. Verilerin toplanması Bir Çevre Çiz Testi ve Rubriği (DAET-R) ile öğrencilerle yapılan birebir görüşmelerle gerçekleştirilmiştir. Verilerin analizinde dokusal ve yapısal betimlemelerden yararlanılmıştır. Araştırmadan elde edilen bulgulara göre üstün yetenekli öğrencilerin çizimlerinde biyotik öğelere ağırlık verdikleri söylenebilir. Buna ek olarak çizimlerden ve yapılan görüşmelerden elde edilen bulgular özel yetenekli çocukların çevreyi sınırlı bir yapıda ve insan merkezli algıladıkları sonucuna ulaşılmıştır. Elde edilen sonuçlardan hareketle özel yetenekli öğrencileri katılımcı olarak alan çevre eğitimi odaklı araştırmaların sayısının artırılmasının ve özel yetenekli çocuklara verilecek eğitimlerde çevre merkezli bir eğitim anlayışının ortaya konmasının önemi vurgulanmıştır.

Anahtar Kelimeler: Özel yetenek, özel yetenekli öğrenci, çevre, fenomenoloji.