ANALYSIS OF MIDDLE SCHOOL STUDENTS' VISIONS OF NATURE

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ABSTRACT

ANALYSIS OF MIDDLE SCHOOL STUDENTS' VISIONS OF NATURE

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The present study aims to determine middle school students' visions of nature consisting of images of nature (1), values of nature (2), and their image of human-nature relationship (3).

The data of the study were obtained by the administration of Turkish version of Visions of Nature scales (Van den Born, Lenders, De Groot, & Huijsman, 2001) and drawings about how human-nature relationship should be as a measuring instrument to 903 students from selected four middle schools throughout Hassa district of Hatay, Türkiye in spring 2021-2022 semester.

The study was designed as survey research. According to the results of descriptive statistics, most participants' image of nature was wild nature, including wildlife, and forests. Besides, majority of participants believed that nature is important because it is God's entrustment to humans. For image of human-nature relationship, the most common image of human-nature relationship was found as family with nature, implying that students believed that nature needs to be protected, and respected as a family member.

Keywords: Visions of Nature, Image of Nature, Values of Nature, Image of Human-Nature Relationship

ÖZ

ORTAOKUL ÖĞRENCİLERİNİN DOĞA VİZYONLARININ ANALİZİ

Varlıoğlu, Gül Sena
Yüksek Lisans, Fen Bilimleri Eğitimi, Matematik ve Fen Bilimleri Eğitimi
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Bu araştırma, ortaokul öğrencilerinin doğa imgeleri (1), doğa değerleri (2) ve insan-doğa ilişkisi imgelerinden (3) oluşan doğa vizyonlarını belirlemeyi amaçlamaktadır.

Çalışmanın verileri 2021-2022 bahar dönemi, Hatay'ın Hassa ilçesinde seçilen dört ortaokuldan 903 öğrenciye Doğa Vizyonları ölçeklerinin Türkçe versiyonunun (Van Den Born vd., 2001) ve insan-doğa ilişkisinin nasıl olması gerektiğine dair çizimlerinin toplanmasıyla elde edilmiştir.

Araştırma tarama olarak tasarlanmıştır. Tanımlayıcı istatistiklerin sonuçlarına göre, çoğu katılımcının doğa imgesi, yaban hayatı ve ormanlar da dahil olmak üzere vahşi doğa olarak bulunmuştur. Ayrıca katılımcıların büyük çoğunluğu doğanın Allah'ın insana emaneti olduğu için önemli olduğuna inanmışlardır. İnsan-doğa ilişkisi imgeleri için en yaygın insan-doğa ilişkisi imgesi, öğrencilerin doğanın korunması ve bir aile üyesi olarak saygı duyulması gerektiğine inandıklarını içeren ‘doğa ile aile’ olarak bulunmuştur.

Anahtar Kelimeler: Doğa Vizyonları, Doğa İmgesi, Doğa Değerleri, İnsan-Doğa İlişkisi İmgeleri

To My Family

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TABLE OF CONTENTS

LIST OF TABLES

TABLES

LIST OF FIGURES

FIGURES

CHAPTER 1

INTRODUCTION

> "... nature is not a physical place to which one can go, nor a treasure to fence in or bank, nor as essence to be saved or violated. Nature is not hidden and so does not need to be unveiled. Nature is not a text to be read in the codes of mathematics and biomedicine. It is not the "other" who offers origin, replenishment, and service. Neither mother, nurse, nor slave, nature is not matrix, resource, or tool for the reproduction of man." (Haraway, 1992, pp 296.)

The industrial revolution brought with it an increase in human activities. There is a widely growing idea that environmental problems are caused by human activities that are driving the most important debates of our time (Schultz, Gouveia, Cameron, Tankha, Schmuck, & Franek, 2005). To illustrate, previously, many scientists focused on explaining the cause of climate change with natural causes. Today, however, climate change has become incomprehensible for natural reasons. In fact, it has been revealed that the main reason for these changes in the world is human activities (National Academy of Sciences. 2020).

With an increase in population growth, human activities have caused diverse effects on nature which can take centuries to be repaired. Some reasons, such as the destruction of natural habitats for the construction of high-rise buildings, and the irreversible damage caused by increased individual motor vehicles, increased the concerns of the countries for the future. This concern led them to the decision to

come together at conferences where global environmental problems and their consequences are discussed. In these conferences, it was concluded that citizens and future generations should be environmentally conscious. According to Orr (1992), the only way to overcome recent problems is that this consciousness can only be achieved through environmental education.

While these are the effects of the industrial revolution on the environment, there are also effects on individuals and their relations with nature. In western and developed countries, people tend to see themselves as separate from nature (Vining, Merrick, & Price, 2008). It is even thought that this situation is partly due to industrialization and urbanization. Looking at similar studies in different countries, it is possible to come across many indicators that show that young people move away from nature both physically and psychologically. Looking at the results of their research, Vining, Merrick, and Price (2008) argued that the lack of contact with nature and increased contact with built environments lead to a feeling of being apart from nature. Furthermore, the results of the study suggested that personal feelings of separation from nature may be retained, as well as the belief that humans are inherently a part of nature.

Citizens' views of nature have a clear relevance to environmental conservation (van den Born, Lender, De Groot, & Huijsman, 2001). To illustrate, the level of people's "environmental friendliness" can provide a democratic basis for nature conservation. Understanding people's images of the relationship between man and nature is a key condition for effective communication among government, non-governmental nature conservation organizations and the public (van den Born et al., 2001). With the help of this communication, governments and non-governmental nature protection institutions and organizations can plan and carry out their work according to the needs and benefits of the country and the people.

In this context, it can be argued that it is necessary to determine the vision of nature of individuals, especially students who are adults of the future. The present study set out from this perspective. Identifying students' visions of nature including perceptions of nature, understanding the value they attach to nature, determining the reasons for this value, and explaining how they see the relationship between nature and human will guide experimental studies in environmental education. In this context, creating an environmental awareness in the first stage will be able to mobilize citizens to solve environmental problems.

1.1 Purpose of the Study

The purpose of the study is to determine middle school students' visions of nature consisting of images of nature, values of nature, and their image of human-nature relationship. Individuals' understanding of nature has been framed by van den Born (2001) in the ways in which people distinguish natural elements, which they regard as nature. According to van den Born (2001), image of human-nature relationship, which are also called worldviews on the environment, include the bond that people should establish with nature.

1.2 Purpose and Research Questions of the Study

The present study aims to determine middle school students' visions of nature consisting of images of nature (1), values of nature (2), and their image of human-nature relationship (3). Thus, the following research questions guided the present study:

1. What are middle school students’ images of nature?
2. What are middle school students’ values of nature?
3. What are middle school students’ image of the human-nature relationship?

1.3 Definitions of Important Terms

Visions of Nature:

"Visions of nature" is defined as a three-component umbrella term which are images of nature, values of nature, and images of human-nature relationship described below (van den Born et al, 2001):

Image of Nature; consists of the types of nature that people distinguish and the degrees of finding these species more or less natural.

Keulartz, Van der Windt, and Swart (2004) also described the image of nature as a three-dimensional concept consisting of:

(1) cognitive beliefs about what nature is and how natural processes work,

(2) normative values for how nature are judged, and

(3) impressive aesthetic experiences about the beauty of nature.

Values of Nature; includes the reasons why people think about nature important and how much the situation is.

Value is described as a desirable, inter-situational goal that employed as a leading principle in the life of an individual or other social being (Schwartz, 1992).

Values influence environmental behavior by helping individuals to decide which preferences, choices or behaviors to prioritize (Dietz, Fitzgerald, & Shwom, 2005).

Images of the human-nature relationship (Value orientations toward human-nature relationship); is described as the way people perceive it as the right way to relate to nature (Duong, & Van Den Born, 2019).

It is also called value orientations toward human-nature relationship. Value orientations are clusters of interrelated core beliefs within a particular area of interest; they serve to reinforce more general values and provide contextual meanings (Li & Ernst, 2015).

1.4 Significance of the Study

One of the aims of environmental education stemming from Tbilisi Declaration is to help people value and concern for the environment (UNESCO, 1978). The current study has intended to understand middle school students' visions of nature.

According to Maloney, Ward, and Braucht (1975), it is important to know what a population thinks, feels, and believes in environmental terms to influence environmental behavior, as environmental issues are suggested to be embedded in a society's traditional values, beliefs, and attitudes. According to Stern, Dietz, and Kalof (1993), individuals' formative experiences can affect their beliefs. Then, their beliefs have an influence on environmental concern, and ultimately their behavior.

Conducting research with young people is critically important because it is young people who will be influenced and responsible for providing solutions to environmental problems arising from the current actions of society (Li & Ernst, 2015). This study was desired to explain how middle school students perceive “nature”, the importance they attach to it, their value orientations towards the relationship between nature and human, from a sample in Türkiye, and how they see this relationship. In addition, since values and value orientations tend to remain

stable over time (Dietz, Fitzgerald, & Shwom, 2005), various long-term experimental studies can be conducted to improve their vision of nature in the future. In this way, it can be ensured that these individuals, who will form a society in the future, become conscious citizens who have developed perspectives on nature and people, and who can look at environmental problems from multiple perspectives.

Being citizens who can look at environmental problems from multiple perspectives can make them individuals who can develop the most appropriate ways to solve these problems. In this context, the first step is to determine students' visions of nature. Therefore, this study would guide subsequent experimental studies.

One of the special aims of the Turkish Science Curriculum (2018) is "to find solutions to the problems encountered in these fields by adopting scientific process skills and scientific research approach in the process of discovering nature and understanding the relationship between human and environment" (pp 9.). To achieve this goal, students must be in direct contact with nature. In addition, there was a positive relationship between experiences of nature and psychological health and well-being found by research studies on human-nature relationship (Ulrich et al., 1991; Kaplan, 1995; Korpela et al., 2001, 2014). Various behavioral problems can be seen in children who have insufficient contact with nature. This situation can negatively affect both the mental health and cognitive skills of the student. On the contrary, establishing close bonds with nature at an early age can help individuals develop a value for nature. Since values and value orientations are likely to be relatively stable over time (Dietz et al., 2005), it is important for individuals to establish strong bonds with nature at an early age for countries and also for the future of the planet (Li & Ernst, 2015).

In this context, increasing the contact of students with nature and analyzing how they see the relationship between nature and human will ensure that future generations are both sophisticated in terms of science education and healthy and good individuals in terms of psychology.

CHAPTER 2

LITERATURE REVIEW

The present chapter aims to show a brief review of related literature on visions of nature consisting of environmental values and value orientations toward human nature relationship. It is comprised of three sections as: related studies on values and environmental behaviors, related studies on values and value orientations, and theoretical framework.

2.1 Related Studies on Values and Environmental Behaviors

The relationship between nature and human has been influenced by attitudes, values, and behaviors. Therefore, to correctly analyze 'visions of nature' that constitute the framework of the study, it will be useful to explain the studies on relations with nature (nature relatedness), environmental values, attitudes, and behaviors.

Schwartz (1992) defined the concept of "value" as a desirable inter-state goal that a person or a social being has as a guiding principle in his life. What makes the concept of value remarkable is that values, by their very nature, are applied in general and different contexts, and thus can influence a person's various beliefs and behaviors (as cited in Li, & Ernst, 2015). Besides, since values are relatively resistant to change over time, they can be used as predictors of attitudes and behavioral intentions (Stern, 2000). In other words, an individual's values can have many other operational counterparts.

When the previous studies are examined, it is possible to find many studies on the relationship between values and environmental behaviors (Dunlap, Grieneeks, &

Rokeach, 1983; McCarty, & Shrum, 1994; Karp, 1996; Stern et al., 1999; Nordlund & Garvell, 2003).

Dietz, Firzgerald, and Swom (2005) stated that values affect a person's behavior towards the environment by primarily helping to decide on one's preferences, choices or behaviors. However, value should not be thought of as the only influence on decisions and behavior.

Corraliza and Berenguer (2000) conducted a study to examine the effect of environmental behaviors on the predictive power of personal and situational variables and values and beliefs. The sample of the study consisted of 125 randomly selected undergraduate students. The instrument of the study includes Likert type survey questions consisting of three different types of parts. In the first part, there are 16 items containing Berenguer's four factors of environmental beliefs, alarm, comfort, domestic control, and economy, to determine students' beliefs. In the second part, Stern et al.'s scale (1998) consisting of 18 items which cover four areas altruism, openness to change, egoism, and conservatism. was used to assess students' values towards the environment (as cited in Corraliza, & Berenguer, 2000). The final part of the measuring instrument consists of 16 questions to assess participants' environmental actions. This study shows that environmental behavior is interactively dependent on the relative values of personal variables and the situation, rather than the value of each. In other words, from the results of the study, Corraliza and Berenguer (2000) found that environmental behaviors depend on individual and situational variables. Besides, it has been shown that this interaction is maintained in the attitude-behavior relationship, so that when there is a high level of conflict between the tendency to perform an individual behavior and situational (physical-environmental) conditions, attitudes have predictive power. Thus, in the attitude-behavior relationship, environmental conditions set limits on attitude theories; behaviors depend on external factors that limit their decisions, not on the free decisions of those dictated by resources and skills.

Studies have shown that values indirectly influence environmental behavior through certain beliefs, attitudes, and norms (Gärling et al., 2003). At this point, Stern et al. (1999) proposed the Values-Beliefs-Norms (VBN) theory that values influence one's overall environmental worldview, which in turn influences beliefs about environmental consequences for valuable objects and the perceived ability to reduce threats to those valuable objects. And collectively, these beliefs trigger a sense of necessity to take pro-environmental action. In other words, the sum of these values creates an impulse to act against pro-environmental actions. Values are often the cause of pro-environmental actions before beliefs and norms. This is due to the relative stability of the values over time. However, there is a strong relationship between these concepts rather than a causal order (Dietz, Fitzgerald, & Shwom, 2005).

Bahar (2015) conducted a study to examine participants' connections with nature, motive concerns, and environmentally responsible behavior, and to investigate the relationship among these three concepts. The sample of the study, identified via convenience sampling method, included 1774 students (859 seventh graders, and 802 eighth graders, rest was unknown) in Samsun, Türkiye. Data of the study collected by using three measuring tools. Nature Relatedness Scale (NR) by Nisbet, Zelenski, and Murphy in 2009, Children's Responsible Environmental Behavior Scale (CREBS) by Erdogan et al. in 2012, and Environmental Motive Concern Scale by Schultz in 2001 were used to gather data of the study. According to the results of her study, it was concluded that the environmental perspectives of primary school students are at a high level and that the students attach importance to the individual contributions of people to the environment. In addition, it was concluded that students' self-experiences are considered important depending on nature. Results of students' environmental behavior revealed that students' participation in political activities such as communicating with administrators and seeking solutions to environmental problems was low. However, it was observed that students' participation in physical and economic activities was high. When the environmental concerns of the students were examined, it was concluded that the

students were more worried about themselves (egoistic motives), and then they were worried about other people and other living things. Finally, results of the study showed that students' environmental behaviors could be predicted via their nature relatedness and motive concerns.

Özdemir (2019) conducted a similar study to explore middle school students' nature relatedness, responsible environmental behaviors, and their attitudes toward the environment, and to examine the relationships among these variables. The sample of the study consisting of 908 public middle school students in the city Iğdır, Türkiye was selected by using convenience sampling. The data gathered from three scales. Nature Relatedness Scale adapted by Çakır, Karaarslan, Şahin, and Ertepınar, in 2015 was implemented to assess students' level of nature relatedness. The scale included 21 five-point Likert type items with respect to self, perspective, and experience factors. Attitudes toward Environment Scale adapted by Eryiğit in 2010 was applied to assess students' attitudes toward the environment. The scale included 21 five-point Likert items in which 13 of them with respect to ecocentrism, and 8 of them related to anthropocentrism. Children's Responsible Environmental Behavior Scale (CREBS) adapted by Erdoğan et al. in 2012 was implemented to assess students' environmentally responsible behaviors. The scale consisted of 19 five-point items to rate student how often they do these behaviors. As a result of data analysis, Özdemir (2019) found that primary school students have a high relationship with nature. The perspective factor results showed that the students were concerned about the effects of human actions on all living things, while the self-factor results showed that the students developed an ecological identity for nature. In addition, the experience factor results showed that the students' physical experience in nature was relatively low. In addition, it has been shown that students physically take part in the solution of environmental problems, but they are insufficient in convincing and informing other people about the solution of environmental problems. Considering the participants' attitudes towards the environment, it was shown that students value the environment more for its own sake and less for its own benefit. Finally, it was found that the participants' relationship with nature and their attitudes towards the

environment were in a statistically significant relationship with their environmentally responsible behavior.

To summarize the studies, significant relationships were found between the values that individuals have and their environmental behaviors. It has been observed that students with a high interest and connection with nature show a tendency towards environmental behaviors. In this context, it can be argued that values of nature, which are a sub-dimension of visions of nature in the present study, are related to one's behaviors.

2.2 Related Studies on Values and Value Orientations

Buijs (2009) conducted a study to investigate the frameworks of values, beliefs, and value orientations containing various image of nature of individuals comprehensively. The sample of the study included in total 59 individuals. Data were collected from two qualitative research studies about individual's cognition of nature and nature management measures. The data gathered from semi structured interviews including several questions on participants' definitions and appreciations, environmental behavior, and the views on how nature should be managed were applied to 30 individuals. Besides, there were twenty-five pictures of nature and the processes of nature (e.g., forests, parks, grain fields) revealed during the semi-structured interviews. For the second part, it was aimed to broaden the interviews with respect to nature conservation in floodplains across individual's neighborhood. The interviews with 29 participants living in two floodplains along the Rhine River, Netherlands. To analyze the data, substantive and theoretical coding were applied. After that, "ideal types" of images of nature were created. As a result of data analysis, five ideal images of nature were constructed as "wilderness image", "autonomy image", "inclusive image", "aesthetic image", and "functional image". Image of wilderness included nature perceived as somewhere lack of the influence of human.

In other words, the respondents believed that number of humanmade constructs increases, level of naturalness of the environment decreases. Image of autonomy consisted of the responses in which seen nature as focusing on natural processes. Image of inclusive nature included the responses in which people and living organisms interdependent and also nature consisting of humans. In aesthetic image, the respondents focused on the beauty of nature. Finally in the functional image of nature consisted of the responses focusing on utilization from the nature.

Onur, Şahin and Tekkaya (2012) performed a quantitative research study to examine primary school students' eco-centric and anthropocentric attitudes and environmental apathy, analyze their egoistic, altruistic and bio spheric value orientations as well as their environmental concerns; to determine relationships among environment-related attributes and to indicate the effect of gender to these attributes. The sample of the study (Onur et al., 2012) included 952 (as 492 females and 448 males) students studying at public schools in rural areas of north-eastern Türkiye. The measuring instrument of the study consisted of three sections; Environmental Attitudes and Apathy Scales by Thompson and Barton (1994), Environmental Motive Concern Scale by Schultz (2001), and Environmental Concern Scale which are 5-point Likert scales. The students were asked to complete the questionnaires on their own. After analyzing their data, they determined that the participants have high concerns about the environment and have positive environment-centered attitudes. Besides, it has been found that students with high anthropocentric attitudes tend to show higher levels of environmental apathy. On the other hand, it was concluded that students with bio spheric concerns had lower levels of egoistic concerns. Another result of the study is that girls tend to value their concerns about environmental problems and the well-being of nature significantly more than boys (Onur et al., 2012).

Li and Ernst (2015) conducted a cross-cultural study to examine similarities and differences in value orientations toward the human-nature relationship between

students from Minnesota (USA) and Guangdong (China). The sample included 110 students (59 from the USA, and 51 from China). The research consisted of both quantitative and qualitative ways of data collection. To design their human-nature relationship task, they used a concurrent triangulation strategy approach included in collecting both qualitative and quantitative data concurrently and analyzing their differences, and similarities. The instrument of their study consists of three sections. First, the participants drew a picture to show how they thought the relationship between human and nature should be. Then, in the second part, they were asked to explain these pictures. These two parts consist of qualitative data collection stages. In the last part of the quantitative data, the participants were asked to choose one of the four answers given to the question of how the relationship between nature and human should be. The students' drawings used as representations of their value orientations towards the relationship of human-nature. Li, and Ernst used Kluckhohn and Strodtbeck's (1961) classification of value orientations towards the human and nature relationship which are submissive, harmonious, and mastery (2015). From quantitative findings of the study, it is found that most subjects in both countries had a similar value orientation which is harmony with nature. On the other hand, qualitative findings of the study showed that the groups had somehow different value orientations toward the human and nature relationship (Li, & Ernst, 2015). In fact, students from China showed mostly interdependence while students from the USA showed stewardship. They also concluded that the kind of inconsistency between quantitative and qualitative findings of the study might warn the researchers about conducting more qualitative studies on the topic value orientations toward the human-nature relationship to understand their values in depth (Li, & Ernst, 2015).

To summarize the studies, when the nature values and value orientations of individuals are examined, certain images of nature that individuals have are determined (Buijs, 2009). The five ideal images of nature which are "wilderness image", "autonomy image", "inclusive image", "aesthetic image", and "functional image" found in Buijs's study (2009). In the study of Onur, Şahin, and Tekkaya (2012), it was concluded that students had high environmental concerns and positive

environment-centered attitudes. In addition, it has been determined that students with high human-centered attitudes tend to show higher levels of environmental indifference. The study also concluded that girls tend to value their concerns about environmental problems and the well-being of nature more than boys. In the study of Lie and Ernst, which examined whether there is a cross cultural (American and Chinese) difference in the value orientations of individuals towards the nature and human relationship, three value orientations were found as submissive, harmonious, and mastery. As a result of the study, harmony with nature was found to have a common value orientation of both cultures.

2.3 Theoretical Framework

Kluckhohn and Strodtbeck (1961) examined value orientations towards the human-nature relationship. They proposed a general categorization of three main value orientations regarding beliefs about what the human-nature relationship should be, arguing that all cultural belief systems contain one of these three basic definitions of the human-nature relationship.

1- Subordinate to nature (submissive) is the belief that individuals and groups cannot and should not exercise control over forces, but that they are subject to the higher power of these forces and must submit to nature.

2- Harmony with nature (harmonious) is the belief that individuals and groups should work with nature to maintain harmony and balance.

3- Mastery of nature (mastery) is a belief that individuals and groups should attempt to control nature.

Kellert and Wilson, on the other hand, put forward the 'biophilia hypothesis' and examine the values of nature from a biological perspective (1993). This hypothesis claims that humans are innately inclined to connect with nature and other living organisms. The biophilia hypothesis can be briefly defined as the inherited attachment of humans to all other living organisms (Kellert & Wilson, 1993).

Kellert proposed another set of relational values as follows (as cited in Ross, Witt, & Jones, 2018):

1- Moralistic values; include one's ethical concern for nature
2- Humanistic values; cover strong emotional attachment to nature, and love for nature
3- Utilitarian values; include practical and material exploitation of nature itself
4- Scientific-Eco logistic values; are consisted of systematic study of functions, relationships, and structure of nature
5- Naturalistic values; included in experiencing and exploring nature directly
6- Aesthetic values; are related to physical appearance and beauty of nature
7- Negativistic values; consist of one's alienation, aversion, and fear of nature
8- Spiritual values; are spiritual respect for nature
9- Dominionistic values; include one's physical control, and dominance over nature
10- Symbolic values; covers the use of nature in thought and language.

Figure 2.1 shows the evolution of Kellert's set of relational values, and their connections with related research topics (Ross, Witt, & Jones, 2018).

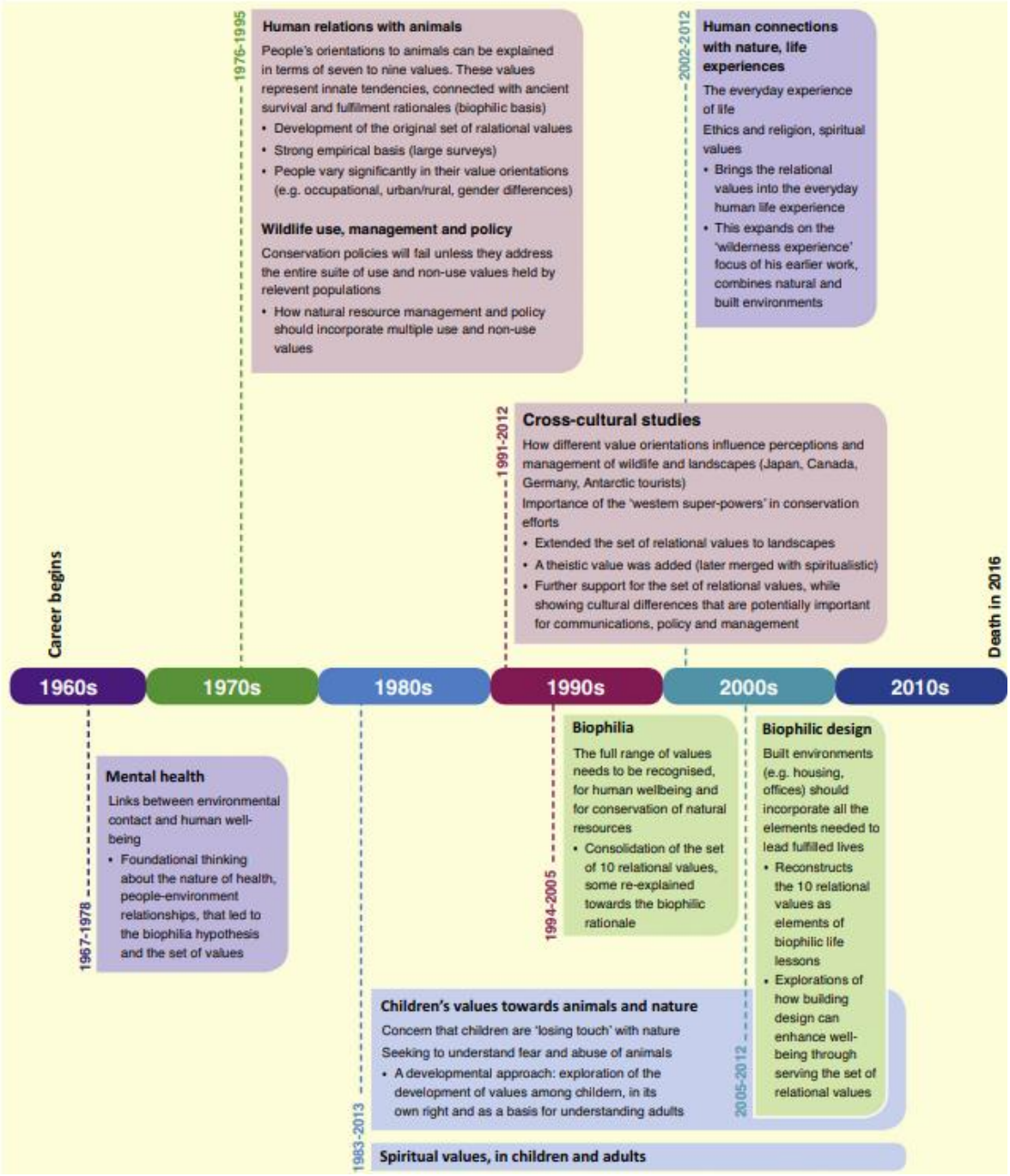

Figure 2.1 : Current Opinion in Environmental Sustainability (2018)

Fliervoet, Van den Born, Smits, and Knippenberg (2013) described the four classifications of human-nature relationship based on the following studies Van den Born (2007), De Groot (2012), and Verburgge et al. (2012).

According to Fliervoet et al. (2013), the human-nature relationship has the following four categorizations:

1- Mastery over nature:

   People keep themselves above nature. They are allowed to maximize the exploitation of nature for benefits for human society, as they think the harmful effects of human actions can be easily overcome by economic growth and technology.

2- Stewardship of nature:

   People keep themselves above nature. But they have a responsibility to take care of nature towards higher powers (for example) God or future generations.

3- Partnership with nature:

   There is a dynamic interaction between humans and nature, and they work together in the process of mutual development. Therefore, there is an equal relationship between them.

4- Participant in nature:

   People see themselves as part of nature, not only biologically, but also with a (spiritual) sense of belonging.

The concept "visions of nature" is an interdisciplinary framework consisting of environmental sociology, psychology, and philosophy. Visions of nature includes the sub-dimensions which are image of nature, values of nature, and image of human-nature relationship (Van Den Born et al., 2001).

The pioneers of the concept of ‘visions of nature’ are van den Born et al. (2001), Dutch researchers. Although the studies on the "nature visions" framework are mostly encountered in the Dutch literature, the studies had samples from not only Dutch people but also many different cultures. It is possible to come across various qualitative and quantitative studies on the concept of "visions of nature". These studies carried out with the 'visions of nature' are compiled and explained below.

Van den Born, Lenders, De Groot, and Huijsman (2001) conducted a study of 200 lay people in the Netherlands. Mixed methodology was used in the study. Van Den Born et al. (2001) investigated the participants' real-world views on nature, its relationship with nature and the values attributed to it, within the framework of 'Visions of Nature'. The quantitative data of the study gathered from questionnaires distributed to the participants to examine the public's images, values and views on nature. After that, using quantitative images of the participants' relationships with nature, eight participants were selected to conduct interviews to explore people's experiences in nature during their childhood. As a result of the data analysis, the participants categorized nature as more or less natural things for the images of the nature element. According to the result of factor analysis, images for nature were categorized under six images, namely arctic nature, wild nature, penetrating nature, domesticated nature, beneficial nature, and rainforest. Considering the values of nature, the most emphasized values and showing the importance of nature were found to be value for human health, intrinsic value, and value for future generations. According to the results of the images of the third dimension, the human-nature relationship, most of the participants expressed human as a part of nature and therefore they have the responsibility to protect it, which is considered anthropocentric and generally overlaps with the 'stewardship' category. In addition, according to the qualitative results of the study, two types of past nature experiences were found: admiration for nature and utilitarian perspective towards nature. The first category included experiences such as enjoying bird sounds and touching living things. In the second category, the participants stated the functions of nature with experiences such as going on a picnic and picking fruit. As a result of the study, despite it is accepted that Western cultures are superior to nature, it has been revealed that a new 'biophilia' might be developed for the Dutch, which accepts the intrinsic value of nature. Furthermore, Van Den Born et al. (2001) emphasized the need for more research designs to make the results more comparable for different cultures.

Duong, and Van den Born (2019) conducted a study using 'nature visions' as a framework to explore people's views on nature and their relationship with nature in Vietnam. To explore their vision of Vietnamese nature, the researchers used different questionnaires for its three different dimensions. A total of 229 participants, especially from urban, rural and forest environments, participated in the study. The results of the research revealed the Vietnamese people's image of nature, their appreciation of nature and the relationship between human and nature, and the similarities and differences between Eastern and Western cultures. When the relevant factor analyzes were made, the participants' image of nature were determined in two categories as domesticated nature and pure nature. In domesticated nature, exemplified by gardens, parks, and wooded streets, its naturalness is simply relatively low; pure nature was also seen by the participants as a place free of human artifacts and untouched by humans. When the results regarding the 'values of nature' were analyzed, it was seen that all participants rated the importance of nature as 'important' and 'very important'. The most important reasons for seeing nature as important are listed as health, future generations, and intrinsic value. In addition, reasons such as agriculture, rest, scientific research, and the beauty of nature are listed as additional reasons. When the participants' images of nature and human relations are examined, according to the results of the factor analysis, the image of human-nature relationship has been reduced to three categories as 'domination over nature', 'nature and family', and 'environment-centered relationship'. In addition, the 'Family with Nature' image, which includes ideas about protecting and respecting nature, was determined as the most agreed-upon human-nature relationship image. According to Duong and Van den Born's study (2019), 'Visions of Nature' has been accepted as a universal framework and has been successfully adapted in Eastern countries.

Başer (2021) performed a qualitative research study to examine visions of nature consisting of three components as images of nature, values of nature, and images of human-nature relationship. The study was implemented as the case study

design. The participants of the study included 13 secondary school students (as 7 of them fifth graders, and 6 of them eight graders) from the capital city of Türkiye, Ankara. The participants of the study were selected via using purposive sampling method. Başer (2021) used semi-structured interviews as the main data collection tool. Besides, the data of the study were gathered by employing guided imagery technique, draw and explain technique, and cards for images of relationship. The first of these is the 'guided-imagery technique', which was applied to enable students to share their views on nature more easily and to make the interview more enjoyable for them. During the interview, the participants were asked to close their eyes and imagine themselves in nature. In this way, it is aimed to reveal the concept of nature in the minds of the students and their perspectives towards nature. In draw and explain technique, students were asked what they thought about other people's relationships with nature, and they were asked to draw this relationship. In addition, during the data collection process, the students were asked to share the drawings with the researcher and explain their drawings. To examine the participants' human and nature images of relationship, two questions were asked by showing the cards containing seven different relationship types to the students. While the first question was about finding answers to the students' views on how the human-nature relationship should be, the second question was asked to try to understand how the students saw other people's relationships with nature. The result of images of nature revealed that the participants perceived nature as greenery and trees. That is, participants of the study envisioned nature as a place away from city life, crowds of people and technology in their minds. When the participants' values of nature were examined, it was determined that all students perceived nature as important. While most of the participants explained the reason for the importance of nature with instrumental values, only a few participants presented the importance of nature by talking about intrinsic values of nature. For participants' images of human-nature relationship, the participants preferred 'steward' category emphasizing the protection of nature while reflecting their own ideas about the relationship that should be between human and nature, and 'partner' category describing mutual

commitment. On the other hand, when it was examined how the students viewed other people's relationship with nature, it was revealed that students described other people with the categories of 'master' and 'apathy'.

In summary, the value orientations of individuals towards the human-nature relationship (image of human-nature relationship) have been tried to be explained by many categorizations (Kluckhohn, & Strodtbeck, 1961; Kellert & Wilson, 1993; Fliervoet et al., 2013). Then, with the terminology "visions of nature" put forward by van den Born (2001), it is explained that individuals' visions of nature can be determined by three sub-dimensions. These three sub-dimensions are individuals' image of nature, values of nature, and image of human-nature relationship. Some quantitative and qualitative studies examining individuals' visions of nature are given (Van Den Born et al., 2001; Duong, & Van den Born, 2019; Başer, 2021). Judging by the results of these studies, the concepts that individuals mostly describe as pure nature are 'forests', 'gardens', and 'wildlife' (Van Den Born et al., 2001, Duong, & Van den Born, 2019). When the nature values of individuals are examined, 'human health' constitutes most of the value given to nature. Finally, when the image of human-nature relationship of individuals was examined, family with nature (stewardship) was found to be a common image of human-nature relationship (Van Den Born et al., 2001, Duong, & Van den Born, 2019).

CHAPTER 3

METHODOLOGY

The present chapter is devoted to information about the design of the research, population and sampling, measuring instruments, data collection, data analysis, assumptions and limitations of the research.

3.1 Research Design

This research was carried out using the survey method under the umbrella of the quantitative research design. The study aimed to make generalizations about middle school students' visions of nature. Survey method is research carried out to determine the current situation (Fraenkel, Wallen, & Hyun, 2011). The cross-sectional survey, which constitutes the methodology of the study, can be defined as a type of observational research that analyzes the data of variables collected at a given time across a sample population or a predefined subset (Fraenkel, Wallen, & Hyun, 2011).

3.2 Sample

This study was desired to be a national study with the target population designated as all public middle school students in Türkiye. However, an accessible population was determined since it was not feasible to reach with this target population. The accessible population of the present study was identified as all middle school students in Hassa, Hatay. By using convenience sampling strategy, the students of four public middle schools were selected as the participants of the present study. The sample of the study consists of 903 students from four middle schools in Hassa district of Hatay shown in Table 3.1.

Table 3.1 The number of schools and students participated in the current study.

	Number of Participants
School I	423
School II	252
School III	132
School IV	96

The students are 5th, 6th, 7th, and 8th grade middle school students living in the rural areas of Hatay and studying in public schools. In addition, the sample of the study includes middle school students between the ages of 10-14. The socioeconomic status of most of the students participating in the study is moderate. It is worth explaining the local context in which the present study was carried out.

3.3 The Context of the Study

The region where Hassa district is established BC. It has been used as a residential area for 3000 years. Akkadians, Babylonians, Assyrians, Hittites, Scythians, Persians, Seleucids, Kingdom of Cilicia, Romans, Umayyads, Abbasids, Tolunoğlus, İhşids, Seljuks, Ayyubids, Mamluks dominated the region (Municipality of Hassa, 2022). Its population is 57,361 people. It is located on the east-facing foothills of the Amanos Mountains, on the provincial border of Hatay-Gaziantep. Agriculture and animal husbandry constitute an important source of income in the economy of Hassa district. Fresh vegetables and fruits (grapes, pomegranates, etc.) have an important place in agricultural production. As livestock activities, sheep and goat breeding are at the forefront (Municipality of Hassa, 2022).

The sample of the study includes 48.1% girls and 51.9% boys. The sample of the present study consisted of fifth grade (24.1%), sixth grade (26.2%), seventh grade (26.9%), and eighth grade (22.7%) students.

3.4 Instrument

In the present study, Visions of Nature scales by van den Born et al. (2001) were implemented to gather the data of the study. Visions of Nature has three scales, images of nature scale, values of nature scale, and image of human-nature relationship scale explained below. The English version of Visions of Nature scales were translated into Turkish.

Reliability and Validity Issues

Exploratory factor analysis was performed to address the issues of construct validity. Besides, construct validity was investigated by analyzing the Kaiser Meyer Olkin Value and Barlet sphericity of each dimension. On the other hand, the internal consistency of each scale was examined by calculating Cronbach's Alpha values. Bartlett sphericity should be supported when $p<0.05$ is calculated (Barlett, 1954). In addition, Kaiser Meyer Olkin value is acceptable when calculated greater than 0.6 (Tabachnick & Fidell, 2001). With all these criteria, a pilot study was conducted to examine the validity and reliability of each scale. A pilot study was conducted to analyze the relevance of each questionnaire and to make necessary revisions with respect to the usability of the instrument. Visions of Nature scales were administered to a sample of 219 Turkish 6^{th} and 8^{th} grade students in pilot administration. The students were from a state school in Hassa district of Hatay, Türkiye.

In addition, varimax rotation was used, the eigenvalues were greater than one and the scree plot graph revealed how many factors the scale contained, and factor loadings were also identified for each scale. The results of the pilot test indicated the instrument was useful in generating the data needed to address middle school students' image of nature, values of nature, and image of human-nature relationship, and all parts of the scale worked well together.

Image of nature scale

Images of nature was evaluated with the 19-item measurement tool used in the studies. The scale includes five-point Likert-type items which asked students to evaluate how much the items represent nature (1 representing "not nature at all", and 5 representing "pure nature"). The scale was also administered in the following studies by van den Born et al. (2001), Hunka et al. (2009), and Duong & van den Born (2019).

Image of nature scale showed acceptable levels of reliability, a=0.70. The value of the pilot study of Kaiser-Mayer-Olkin and Barlett was determined to ensure construct validity of the current research. The Barlett Sphericity value of Image of nature scale was found to be significant (p=.000) and Kaiser Meyer Olkin calculated as .757, which is at an acceptable level. Factor analysis was also carried out in order to examine the construct validity of the scale. The results of both pilot and main study showed that items in the Turkish-adapted scale loaded on four factors that overlapped with the factors in the original scale.

Factor analysis generated four images of nature explained as follows:

'*Arcadian nature'* includes peaceful, harmony of human-nature relations like in traditional arcadia of Western culture (as cited in van den Born, 2001).

'*Wild nature'* consists of the items wind, earthquakes, gravity, forests, wildlife, and poles.

'*Domesticated nature'* involves potted plants and aquarium.

'*Utility nature'* includes scale items from which humans derive various benefits from nature.

The factor analysis results of the Image of nature scale are given in Table 4.2 below. According to Hair (2006), for sample sizes above 350, factor loading scores 0.30 or above are significant (p.128). Hence, none of the items is deleted. The most common

image of nature among participants was found to be “wild nature”. The highest mean score was observed in the item “forests” (*M*=4.63, *SD*=0.94) seen as “pure nature”. According to the participants’ responses, the lowest mean score was found in the item ‘aquarium’ (*M*=2.01, *SD*=1.30), implying that aquarium was not seen ‘pure nature’ for most of the participants.

Table 3.2 Factor Analysis of Image of Nature Scale

Image of Nature	Item	Factor Loadings	*M*	*SD*
Arcadian	A farmer working in the field	0.581	2.81	1.50
	A cow grazing on the lawn	0.557	3.60	1.46
	Grain field	0.670	3.45	1.39
	A bird flying over the river	0.636	3.58	1.56
Wild nature	Gravity	0.460	2.74	1.65
	Earthquake	0.656	3.10	1.67
	Wind	0.544	3.42	1.53
	Poles	0.551	3.32	1.67
	Wildlife	0.482	3.81	1.58
	Forests	0.527	4.63	0.94
Domesticated nature	Potted plants	0.463	3.14	1.13
	Aquarium	0.525	2.01	1.30
Utility nature	Grass football field	0.462	2.07	1.34
	Agricultural fields	0.670	3.45	1.39
	Picnic areas	0.573	3.67	1.40
	Campsites	0.678	3.54	1.42
	Gardens			

Values of nature scale

Values of nature was evaluated with 14 items prepared by van den Born et al. (2001). Values of nature scale includes five-point Likert-type items which asked students to evaluate the reasons why nature is important. "1" represents that it is not an important reason whereas "5" shows that it is a very important reason why nature is important.

Values of nature scale showed acceptable levels of reliability, a = 0.73. The Barlett Sphericity value of values of nature subscale was found to be significant (p=.000) and Kaiser Meyer Olkin calculated as .778, which is at an acceptable level.

Van den Born et al. (2001) explained that factor analysis of Values of Nature Scale was not performed since the items in the scale were not produced by the underlying concepts. Hence, factor analysis of Values of Nature Scale was not performed in the present study.

Image of human-nature relationship scale

Image of human-nature relationship scale consists of 19 five-point Likert type items (strongly disagree, disagree, undecided, agree, strongly agree). Besides, students' value orientations towards human-nature relationship were evaluated with the drawings used by Li & Ernst (2011), about how the relationship between nature and human should be, and their explanations for these drawings. Drawing is a data collection method that can be used to give participants who have difficulties in expressing their ideas verbally and in writing an opportunity to explain themselves (Rennie, & Jarnis, 1995). According to Yuen (2004), drawing should not be used as the sole source of data collection from students, but in conjunction with other methods, in order to avoid misunderstandings in picture interpretations. From this point of view, it was preferred to use drawing in addition to scales in this study. The measurement tool used was given in Appendix C.

Image of human-nature relationship scale showed acceptable levels of reliability, a=0.64. The Barlett Spherity value of image of human-nature relationship scale was found to be significant (p=.000) and Kaiser Meyer Olkin calculated as .841, which is at an acceptable level.

Factor analysis was also carried out in order to examine the construct validity of the scale. The results of both pilot and main study showed that items in the Turkish-adapted scale loaded on three factors that overlapped with the factors in the original scale.

The factor analysis results of image of human-nature relationship scale are given in Table 4.5. For the sample size above 350, factor loading scores 0.30 or above are significant (Hair, 2006). Hence, factor loadings are acceptable, and none of the items needs to be deleted. The most common image of human-nature relationship category among participants was found to be ‘family with nature’. The highest mean score was observed in this category ‘It is people's responsibility to protect the natural environment.’ (M=4.30, SD=1.10). Lowest mean score was observed the item ‘People have the right to change the natural environment as they wish.’ (M=1.78, SD=1.20).

The content of the instrument of the present study is given in Figure 3.1.

Table 3.3 Factor Analysis of Image of Human-Nature Relationship Scale

Item	Factor Loading	*M*	*SD*
Mastery over nature / Dominion / Use			
Humans are thinking creatures, so they are more important than nature.	0.431	2.72	1.26
Technological developments will enable us to overcome all environmental problems in the future.	0.362	2.86	1.30
People have the right to change the natural environment as they wish.	0.468	1.78	1.20
We do not depend on nature for survival.	0.487	2.16	1.30

Family with nature / Stewardship / Humanistic			
We should not make ourselves more important than nature, we should live and develop with it.	0.539	4.06	1.23
Humans are a part of nature.	0.499	4.08	1.18
It is people's responsibility to protect the natural environment.	0.512	4.30	1.10
Even if we consider ourselves more important than nature, we need to take good care of nature.	0.530	4.08	1.10
The physical and emotional bond between humans and nature is important.	0.521	4.11	1.19
Eco-centric image of relationship / Interdependence			
People and the natural environment are of equal value.	0.642	3.41	1.26
Sometimes I feel myself blending (integrated) with the natural environment.	0.361	3.67	1.18
I feel relieved when I am in touch with nature.	0.490	4.31	1.09

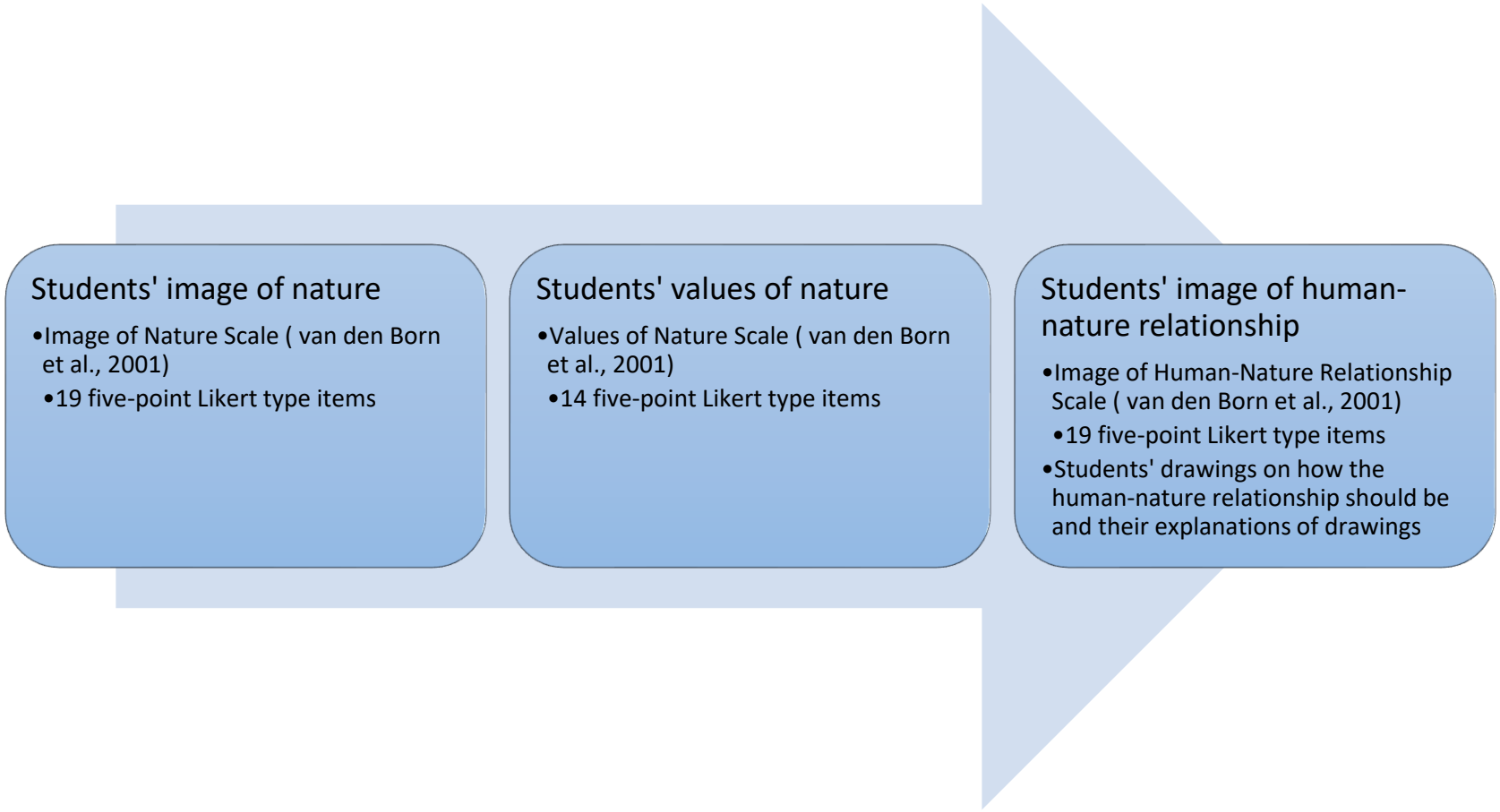

Figure 3.1 The Instrument of Visions of Nature

3.3 Procedure

In this research study middle school students' visions of nature were examined. Firstly, the study began with the literature review with the scope of its aim. By Ebscohost, Science Direct, and Google scholar, the studies on values towards nature were examined. The instruments developed by some researchers to assess values towards nature were also analyzed.

Afterwards, the permission was obtained by the ethical committee of Middle East Technical University given in Appendix A. Then, the schools participated in the study and subjects of this study were identified. The permission also was granted for the study from Ministry of National Education presented in Appendix B. All the principals of the selected schools were communicated with and asked for the administration of the instrument.

The measuring tool was piloted to modify if necessary and try out, which is for providing content-related evidence of validity of the research. For the actual study, the instrument was administered by the researcher to middle school students May of 2022. Before administering the instrument, subjects of the study were informed about the aim of the research study. Besides, the subjects were informed that their identity was be kept unknown and the results of the scale would not have an influence on students' science grades in their schools.

The data of the study were collected by completing Visions of Nature scales which are Image of Nature Scale, Values of Nature Scale and Human-Nature Relationship Scale -developed by Van Den Born et al. in 2001- in the classroom environment. At the same time, students were asked to draw a picture showing how the relationship between nature and human should be and to explain this drawing. The measuring tool used is given in the Appendix C.

3.4 Data Analysis

After collecting the data, responses for the parts of the instrument were entered in Statistical Package for the Social Sciences (SPSS) 26.0 to analyze the data. Female students were coded as 1, and male students were coded as 2. Fifth grade students were coded as 5, sixth grade students were coded as 6, seventh grade students were coded as 7, and eighth grade students were coded as 8. Data file consisting of age, grade level, gender, and responses of participants to the measuring tool were prepared by using SPSS in which columns represent variables and rows represent the participants by the researcher. The data obtained from the present study were analyzed via descriptive statistics.

Students' image of nature

To analyze middle school students' image of nature, the data gathered from the students' responses to Image of Nature Scale (van den Born et al., 2001). For the image of nature scale, the responses of students for "not nature at all" coded as 1, for "pure nature" coded as 5. The mean, and standard deviation, and frequency distributions were presented for the scale.

Students' values of nature

To analyze middle school students' values of nature, the data gathered from the students' responses to Values of Nature Scale (van den Born et al., 2001). For values of nature scale, the responses of the students for "not an important reason" coded as 1, for "a very important reason" coded as 5. The mean, and standard deviation, and frequency distributions were presented for the scale.

Students' image of human-nature relationship

To analyze middle school students' image of human-nature relationship, both quantitative and qualitative data were used. Quantitative data gathered from the students' responses to Image of Human-Nature Relationship Scale (van den Born et al., 2001). On the other hand, qualitative data gathered from the students' drawings

on how the relationship between nature and human should be and explanations of their drawings. For image of human-nature relationship scale, “strongly agree” was coded as 5, “agree” was coded as 4, “undecided” was coded as 3, “disagree” was coded as 2, and “strongly disagree” was coded as 1. The mean, and standard deviation, and frequency distributions were presented for the scale.

To analyze the participants’ drawings, content analysis was applied. The procedures of the analysis of qualitative data were followed:

- To get a general view of the data, all responses from the subjects were reviewed.
- Data were extracted from the drawings by transforming students’ drawings into written descriptions created by the researcher. Students were wanted to add tags to their drawings. If they added tags, their tags were included in the researcher-generated written descriptions of the drawings.
- Written explanations created by the researcher based on the drawings and written explanations accompanying the drawings of the participants were matched with the codes and explanations created in Li and Ernst's study (2015). These codes were then conceptually categorized.
- The answers selected from the quantitative part of the human-nature relationship drawing task were summarized using frequencies.
- Then, the categories and explanations were interpreted based on the research questions of the study and compared with the findings obtained from Image of human-nature relationship scale.

3.5 ASSUMPTIONS AND LIMITATIONS OF THE STUDY

Assumptions and limitations of the study are presented below.

3.5.1 Assumptions

1- Visions of Nature scales should be standardized depending on the situation.

2- Subjects of the study responded sincerely to the measuring instrument (Visions of Nature scales).

3.5.2 Limitations

1- Since the convenience sampling method was used in the research, the research may be devoid of randomization.

CHAPTER 4

RESULTS

The present chapter is comprised of the descriptive statistics of quantitative data, and content analysis of qualitative data. Descriptive statistics reveal middle school students' image of nature, values of nature, and image of human-nature relationship. For descriptive statistics, mean scores, standard deviations and frequency distributions of each scale were presented. Besides, the students' image of human-nature relationship was determined by their drawings. The results of content analysis were presented.

4.1 Students' Image of Nature

In the first part of the questionnaire, students are asked 19 items to make them evaluate how much each item represents the nature. The results were presented in Table 4.1. The scale includes five-point Likert-type items which '1' represents 'not nature at all', and '5' represents 'pure nature'.

Results revealed that respondents thought that 'forests' (83.7%), 'wildlife' (58.1%), 'a bird flying over the river' (45.5%), 'agricultural fields' (42.1%), 'picnic areas' (41.7%), 'poles' (41.5%), 'a cow grazing on the lawn' (41.1%), 'wind' (39%), 'garden' (38.5%), 'campsites' (38.4%), 'earthquakes' (35.4%) and 'grain field' (33.7%), represent pure nature. On the other hand, according to the respondents, 'aquarium' (53.6%), 'grass football field' (50.4%), and 'gravity' (37.8%) does not represent nature at all.

Furthermore, 25.9 % of students think that potted plants represent pure nature. 30 percent of participants think that the farmer working in the field does not represent

nature at all. However, about 20 percent of them the farmer working in the field shows pure nature. 26 % of participants think that beach does not represent nature at all. However, about 25 percent of participants see beach as pure nature. 22 percent of subjects think that planted street trees represent pure nature. However, 17% of subjects indicated that planted street trees do not show nature at all.

Table 4.1 Frequency Distribution of Image of Nature Scale

	Items	Not Nature 1	2	3	4	Pure Nature 5	*M*	*SD*
Arcadian	The farmer working in the field	30.3	12.7	23.3	13.3	20.4	2.81	1.50
	Grain Field	11.3	16.4	21.6	17.1	33.7	3.45	1.39
	A cow grazing on the lawn	13.8	11.8	16.2	17.1	41.1	3.60	1.46
	A bird flying over the river	17.7	10.0	14.3	12.5	45.5	3.58	1.56
Wild nature	Gravity	37.8	11.7	16.7	6.2	27.6	2.74	1.65
	Earthquakes	28.8	12.3	14.3	9.2	35.4	3.10	1.67
	The Wind	17.2	14.5	16.3	13.1	39.0	3.42	1.53
	Poles	27.1	6.2	15.6	9.5	41.5	3.32	1.67

	Forests	3.0	2.9	6.2	4.2	83.7	4.63	0.94
	Wildlife	16.6	8.5	10.3	6.4	58.1	3.81	1.58
Domesticated nature	Potted plants	16.8	19.2	23.0	15.1	25.9	3.14	1.42
	Aquarium	53.6	14.8	16.2	7.4	8.0	2.01	1.31
Utility nature	Grass Football field	50.4	18.8	14.2	6.6	10.0	2.07	1.34
	Agricultural fields	7.5	13.7	20.6	16.7	42.1	3.71	1.33
	Planted Street Trees	17.5	16.6	25.4	17.5	23.0	3.12	1.40
	Picnic areas	10.7	12.4	17.8	17.3	41.7	3.67	1.40
	Campsites	12.5	12.7	21.2	15.2	38.4	3.54	1.42
	Gardens	8.0	12.8	20.3	20.4	38.5	3.69	1.31
	Beach	25.7	15.7	19.6	13.4	25.6	2.97	1.53

4.2 Students' Values of Nature

In the second scale, the participants were given 14 five-point Likert type items to evaluate what nature is important for. They evaluated the reasons of the importance of nature where 1 'not an important reason', 2 'very little important reason', 3 'quite important reason', 4 'important reason', and 5 'very important reason'. Mean scores, standard deviations, and frequencies in percentages of each item were presented in Table 4.2.

Results revealed that 76.0% of subjects indicated that God's entrustment to humans is a very important reason for the importance of nature. However, 2.4% of them think that God's entrustment to human is not an important reason for the importance of nature. The most common value of nature among respondents was found 'God's entrustment to humans' which belongs to religion (M=4.53, SD=0.95). 66.2% of participants, majority of them, think that nature is very important for human health. However, 5.1% of participants indicated that human health is not an important reason for the importance of nature. 58.5% of participants think that human survival is a very important reason for the importance of nature. However, according to 3.0% of participants, nature is not important for human survival. 56.6% of participants stated that the future of our planet is a very important reason why nature is important. Whereas 5.2% of them indicated that the future of our planet is not an important reason why nature is important. 55.5% of participants think that nature's own goodness is a very important reason why nature is important. Whereas 3.2% of them stated that nature's own goodness is not an important reason why nature is important. 55.4% of participants think that creatures other than humans are a very important reason why nature is important. However, only 1.9% of them think that creatures other than humans are not an important reason why nature is important. 47.1% of participants think that nature is very important for future generations. On the other hand, 5.4% of them think that future generations are not an important reason

for the importance of nature. 34.0% of participants think that wildlife is a very important reason why nature is important. On the other hand, 13.0 percent of participants stated that wildlife is not an important reason why nature is important. 31.3% of participants think that development of drugs is a very important reason why nature is important. However, according to 11.6% of participants, development of drugs is not an important reason why nature is important. 26.0% of participants think that beautiful view is a very important reason why nature is important. Whereas 14.5% of participants think that beautiful view is not an important reason why nature is important.

In addition, 33.4% of subjects think that scientific research is an important reason for the importance of nature. Whereas 6.3% of subjects think that nature is not important for scientific research. 32.2% of participants think that agriculture is an important reason for the importance of nature. Whereas only 3.9% of participants stated that agriculture is not an important reason for the importance of nature.

Finally, 30.3% of participants think that tourism is a very little important reason why nature is important. On the other hand, 9.1% of them stated that tourism is a very important reason why nature is important. Participants gave the least importance on tourism (M=2.63, SD=1.28). 26.1% of subjects stated that having fun is a very little important reason why nature is important. On the other hand, 14.6% of them think that having fun is a very important reason why nature is important.

Table 4.2 Frequency Distribution of Values of Nature Scale

Natural Environment important for:	Not Imp. 1	Very Little Imp. 2	Quite Imp. 3	Imp. 4	Very Imp. 5	*M*	*SD*
Human Health	5.1	2.5	11.5	14.6	66.2	4.34	1.11
Scientific Research	6.3	15.1	27.0	33.4	18.2	3.42	1.15
God's entrustment to humans	2.4	2.2	11.6	7.8	76.0	4.53	0.95
Agriculture	3.9	8.9	26.4	32.2	28.7	3.73	1.09
Human Survival	3.0	5.9	15.3	17.4	58.5	4.22	1.09
Future Generations	5.4	6.1	15.5	25.9	47.1	4.03	1.17
Creatures other than humans	1.9	4.9	13.6	24.3	55.4	4.26	0.99
Wildlife	13.0	17.7	16.4	18.9	34.0	3.43	1.44
The future of our planet	5.2	6.9	14.8	16.5	56.6	4.12	1.20
Development of drugs	11.6	11.2	22.8	23.0	31.3	3.51	1.34
Having fun	15.8	26.1	22.7	20.7	14.6	2.92	1.30
Nature's own goodness	3.2	5.4	18.1	17.8	55.5	4.17	1.10
Tourism	22.5	30.3	17.9	20.2	9.1	2.63	1.28
Beautiful view	14.5	19.6	21.6	18.3	26.0	3.22	1.40

4.3 Students' Image of Human-Nature Relationship

4.3.1 Results from the Quantitative Analysis

Image of human-nature relationship scale consists of 19 five-point Likert type items (1 for 'strongly disagree', 2 for 'disagree', 3 for 'undecided', 4 for 'agree', and 5 for 'strongly agree'). Nineteen items related to the relationship between humans and nature were given to the participants. Then, students are asked to mark the alternatives with respect to their ideas on the relationship between humans and nature. While analysing data, 'strongly agree' and 'agree' categories were collapsed into one category. The same procedure was done for 'disagree' and 'strongly disagree'. According to the results, participants had a higher level of value orientation on 'stewardship' category. Table 4.4 represents the mean scores, standard deviations and frequencies in percentages of each item.

Results showed that 82.9% of the participants agreed that they feel relieved when they are in touch with nature. Nevertheless, 8.8% of them disagreed that they feel relieved when they are in touch with nature. 80.5% of the participants strongly agreed that it is people's responsibility to protect the natural environment. However, 9.1% of them disagreed that it is people's responsibility to protect the natural environment. Results showed that 76.5% of the participants agreed that the physical and emotional bond between humans and nature is important. Whereas 9.8 percent of them disagreed that the physical and emotional bond between humans and nature is important. Results showed that 75.9% of the participants agreed that even if they consider themselves more important than nature, they need to take good care of nature. Whereas 12 percent of them disagreed that even if they consider themselves more important than nature, they need to take good care of nature. According to the results of the study, 75 percent of the participants agreed that humans are a part of nature as shown. However, 10.9% of them disagreed that humans are a part of nature.

Results revealed that 73% of the participants, majority of them, agreed that we should not make ourselves more important than nature, we should live and develop with it. However, 13.1% of them disagreed that we should not make ourselves more important than nature, we should live and develop with it. Results showed that 32% of the subjects agreed that sometimes they feel themselves blending (integrated) with the natural environment. Whereas 7 percent of them strongly disagreed that sometimes they feel themselves blending (integrated) with the natural environment. Results of the study showed that 60.9% of the participants agreed that people can protect nature without leaving city life. However, 15.5% of them disagreed that people could protect nature without leaving city life. 54.6% of the participants agreed that technological developments will enable us to overcome all environmental problems in the future. However, 16.5% of them disagreed that technological developments would enable us to overcome all environmental problems in the future. Results showed that 49.7% of the participants agreed that people and the natural environment are of equal value. However, 24.2% of the participants disagreed that people and the natural environment are of equal value. Results revealed that 46 percent of the participants agreed that nature is primarily a provider of products and services. Nevertheless, 27.2% of them disagreed that nature is primarily a provider of products and services. 42.7% of the participants agreed that natural processes increase economic well-being. However, 17.8% of the participants disagreed that natural processes increase economic well-being

According to the results, 77.5% of the subjects disagreed that people have the right to change the natural environment as they wish. However, 12.7% of them agreed that people have the right to change the natural environment as they wish. Results revealed that 73.7% of the participants disagreed that human behavior has no effect on nature. On the other hand, 12.3% of them agreed that human behavior has no effect on nature. Results presented that 63.7% of the subjects disagreed that they do not depend on nature for survival. However, 15.6% of them agreed that they do not depend on nature for survival. 47.6% of participants disagreed that

participating in the protection of nature through the media is enough to connect with nature. However, 27.3% of them agreed that participating in the protection of nature through the media is enough to connect with nature. Results revealed that 41.4% of participants disagreed that humans are thinking creatures, so they are more important than nature. Whereas 25.6% of them agreed that humans are thinking creatures, so they are more important than nature. 41.4% of the participants disagreed that technological developments should be arranged in a way that minimizes the negative effects on nature. On the other hand, 31.1% of them agreed that technological developments should be arranged in a way that minimizes the negative effects on nature.

33.4% of the subjects were undecided on that keeping pets or city gardening can replace direct experience in nature. 36.1% of the participants agreed whereas 30.5% of them disagreed that keeping pets or city gardening can replace direct experience in nature.

Table 4.3 Frequency Distribution of Image of Human-Nature Relationship Scale

Items	St. D	D	U	A	St. A	*M*	*SD*
1. Humans are thinking creatures, so they are more important than nature.	22.7	18.7	33.0	15.0	10.6	2.72	1.26
2. Participating in the protection of nature through the media is enough to connect with nature.	19.6	28.0	25.0	16.8	10.5	2.71	1.25
3. People and the natural environment are of equal value.	9.1	15.1	26.1	24.9	24.8	3.41	1.26
4. Technological developments will enable us to overcome all environmental problems in the future.	18.5	22.9	27.5	16.4	14.7	2.86	1.31
5. People can protect nature without leaving city life.	9.9	11.0	24.1	25.9	29.1	3.53	1.28
6. Keeping pets or city gardening can replace direct experience in nature.	13.1	17.4	33.4	23.3	12.8	3.05	1.20
7. We should not make ourselves more important than nature, we should live and develop with it.	6.6	6.5	13.8	19.6	53.4	4.07	1.24
8. Natural processes increase economic well-being.	7.9	9.9	39.5	22.9	19.8	3.37	1.14
9. The physical and emotional bond between humans and nature is important.	4.5	5.3	13.6	30.7	45.8	4.08	1.10

10. People have the right to change the natural environment as they wish.	61.8	15.7	9.7	7.5	5.2	1.79	1.20
11. Nature is primarily a provider of products and services.	11.0	16.2	27.9	22.7	22.3	3.29	1.28
12. It is people's responsibility to protect the natural environment.	4.1	5.0	10.4	17.8	62.7	4.30	1.10
13. Sometimes I feel myself blending (integrated) with the natural environment.	7.0	8.5	23.6	31.8	29.1	3.68	1.18
14. Humans are a part of nature.	6.4	4.5	14.0	25.1	49.9	4.08	1.18
15. Even if we consider ourselves more important than nature, we need to take good care of nature.	5.9	6.1	12.2	22.4	53.5	4.12	1.19
16. Human behavior has no effect on nature.	58.7	15.0	14.1	5.4	6.9	1.87	1.24
17. Technological developments should be arranged in a way that minimizes the negative effects on nature.	8.0	8.5	28.9	22.8	31.8	3.62	1.23
18. We do not depend on nature for survival.	44.7	19.0	20.6	6.6	9.0	2.16	1.30
19. I feel relieved when I am in touch with nature.	4.8	4.0	8.3	20.9	62.0	4.31	1.09

4.3.2 Results from the Qualitative Analysis

For the final part, the participants were asked to draw how the relationship between nature and human should be and make their explanations for these drawings. Participants' responses were categorized into following five categories as proposed by Li, and Ernst (2015), namely humanistic, stewardship, interdependence, use, and dominion.

Table 4.4 Relationship among categories, codes, phrases, and the number of responses from participants of the study

Categories	Codes	Phrases	Number of participants
Humanistic	Humans should love nature	Hug a tree	31
		Think of nature as our lovely friend	62
Stewardship	Humans should take care of	Keep world clean	62
		Water plants	53
		Plant trees	41
		Take care of animals	36
		Collect trash	67
		Recycle	41
		Do not harm	39
		Do not pollute	48
	Human should respect nature	Treat nature with respect	27
		Both are God's creation and need to be respected	11
Interdependence	Humans and nature are independent	Mutual relationship	47
		Like mother and son	5
		Share common environment	14

Use	Humans are supported by nature	Support oxygen	28
		Support water	24
		Cut down trees	13
		Build houses	10
		Supply food (e.g., fish, apple)	12
	Human should use nature for enjoyment	Play outside	14
Dominion	Humans should dominate over nature	Enjoy the beauty of nature	61
	Nature can be hurt by humans	Overpower animals	25
		Control trees/animals	14

Humanistic:

In this category, people should love nature with a deep love. As seen in Table 4.7, humanistic image of human-nature relationship was found by 11.8 %. Examples of the answers of the participants belonging to the humanistic image of human-nature relationship and their explanations were shown in Figure 4.1, Figure 4.2, and Figure 4.3 below.

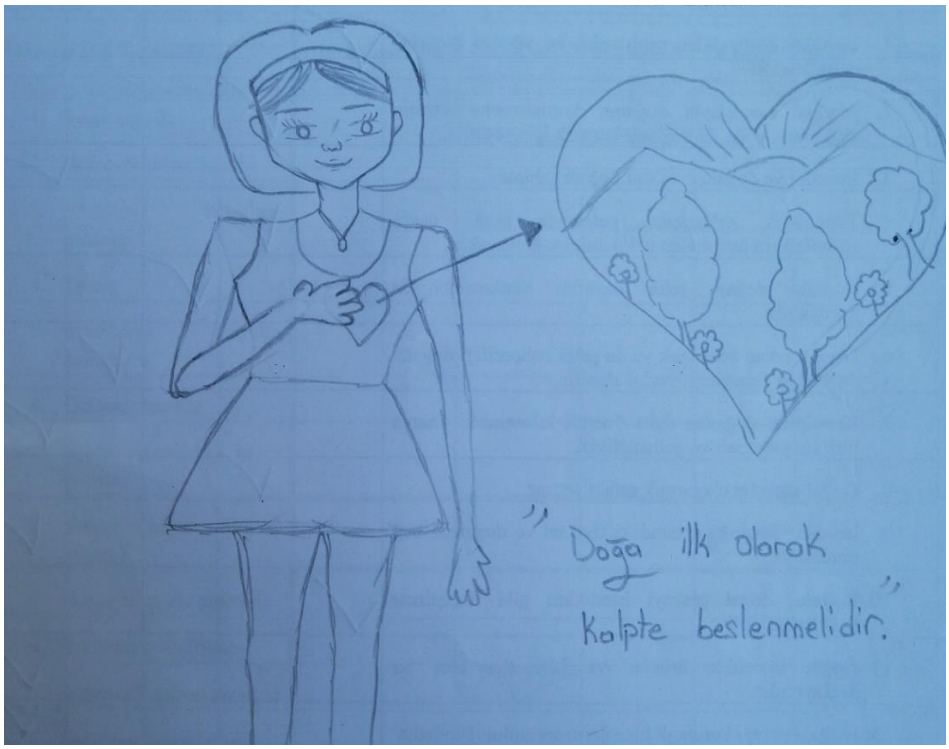

Figure 4.1 Example of participant 1 response for “humanistic” category

"Nature must first be nourished in the heart."

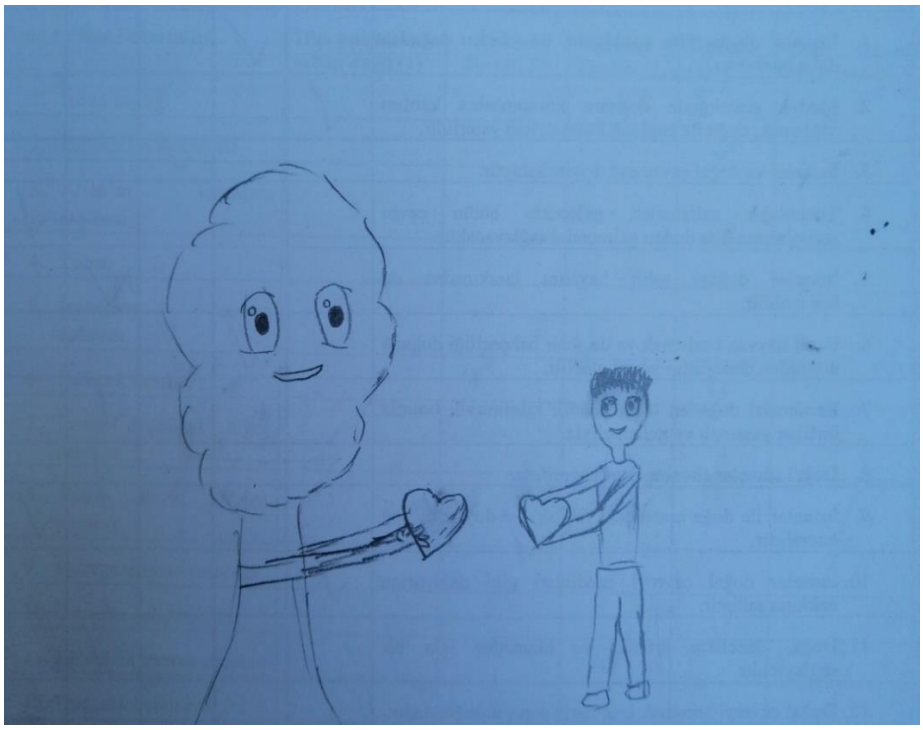

Figure 4.2 Example of participant 2 response for “humanistic” category

"We must approach nature with love."

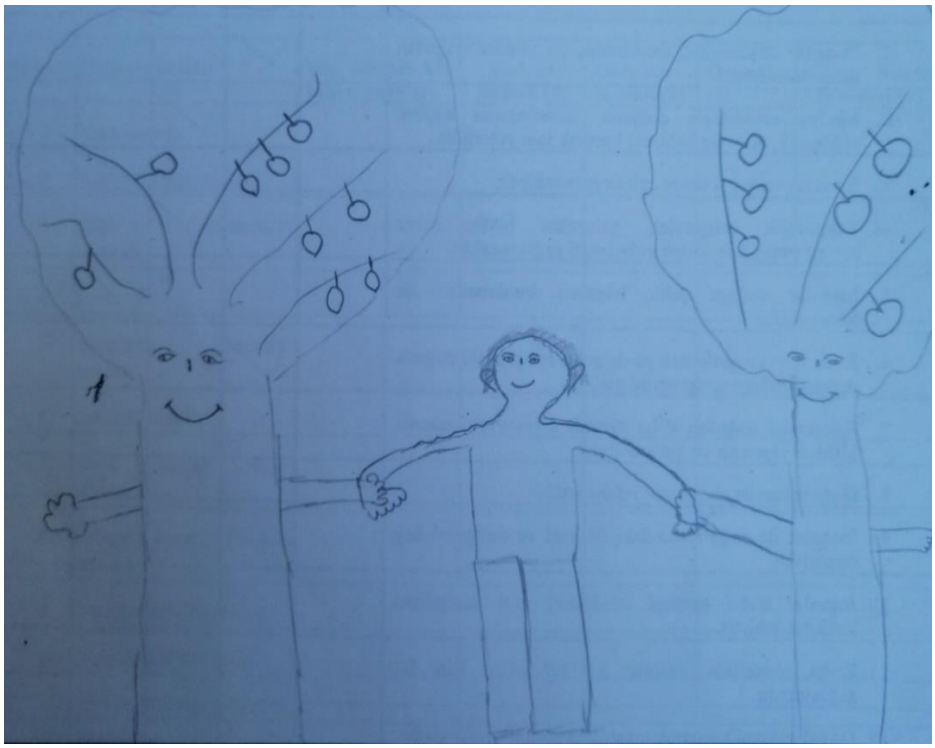

Figure 4.3 Example of participant 3 response for “humanistic” category

"Nature is our faithful friend."

Stewardship:

In this category, people emphasized their responsibility to take care of, protect and respect nature. As shown in Table 4.7, image of human-nature relationship under the stewardship category was found by 54.2 %, a total of 425 participants. The most dominant value orientation observed in the participants was stewardship. Examples of the responses of the stewardship image of human-nature relationship and their explanations were shown in Figure 4.4, Figure 4.5, Figure 4.6 below.

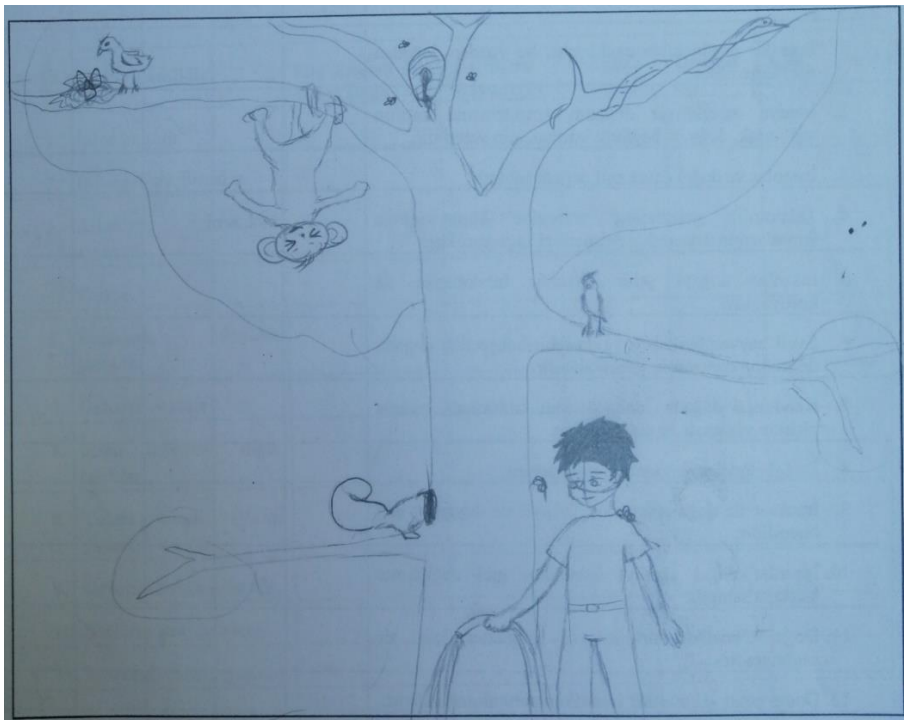

Figure 4.4 Example of participant 4 response for “stewardship” category

"People need to help it without harming trees and nature."

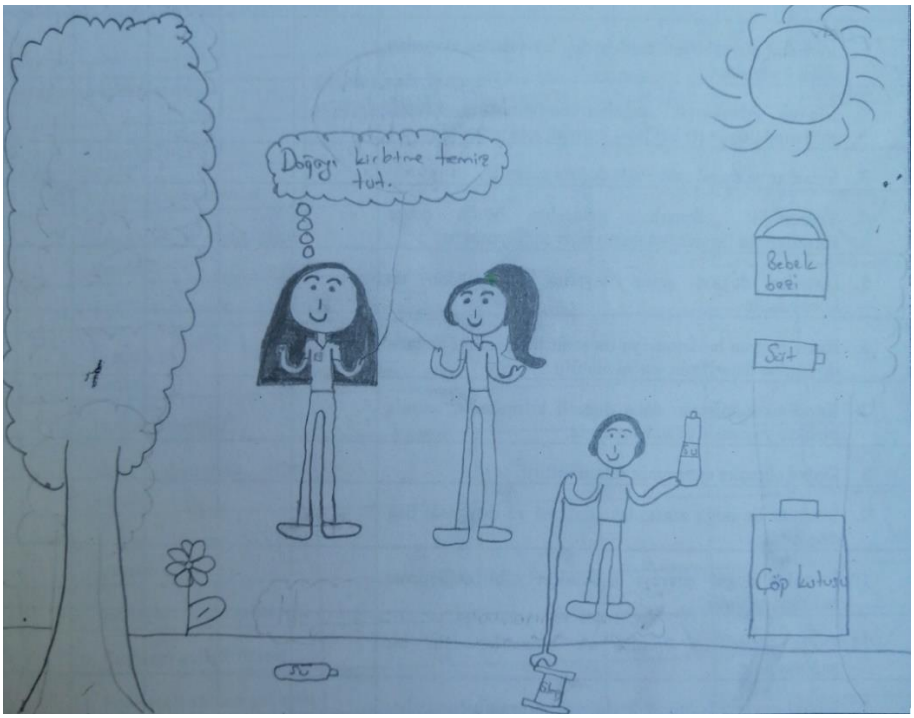

Figure 4.5 Example of participant 5 response for “stewardship” category

"Do not pollute the nature, keep it clean..."

Figure 4.6 Example of participant 6 response for “stewardship” category

"We have to collect the garbage and then sort it out for recycling. Batteries in one place, glass in one place, plastics in another..."

Interdependence:

This category focuses on the interactions and interdependence between man and nature. People should help nature because people need nature. Results revealed that 8.4 % of the participants showed image of human-nature relationship under the category of interdependence, shown in Table 4.7. The least common image of human-nature relationship was interdependence. An example of the answers of the participants of the interdependence image of human-nature relationship and the written explanation was shown in Figure 4.7 below.

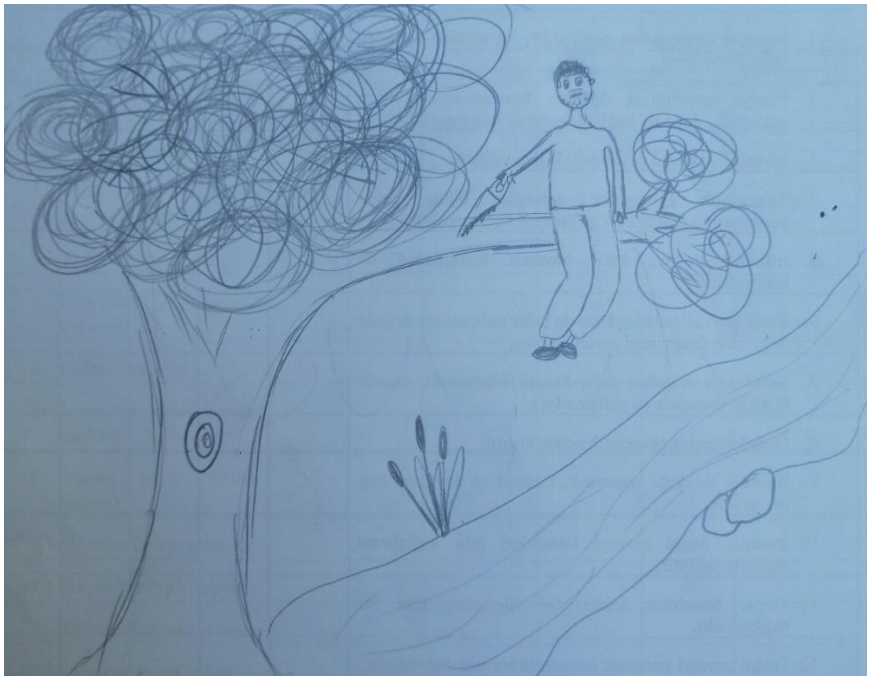

Figure 4.7 Example of participant 7 response for “interdependence” category

'When a person harms nature, he harms himself. When people take good care of nature, they benefit themselves.'

Use:

This category highlights that many humans use nature. To illustrate, people should use nature to explore, have fun, and fulfill their own needs. As seen in Table 4.7, students' image of human-nature relationship under "use" category was found by 12.9 % (101 participants). Examples of the answers of the participants belonging to image of human-nature relationship and the written explanations under "use" category were shown in Figure 4.8, and Figure 4.9 below.

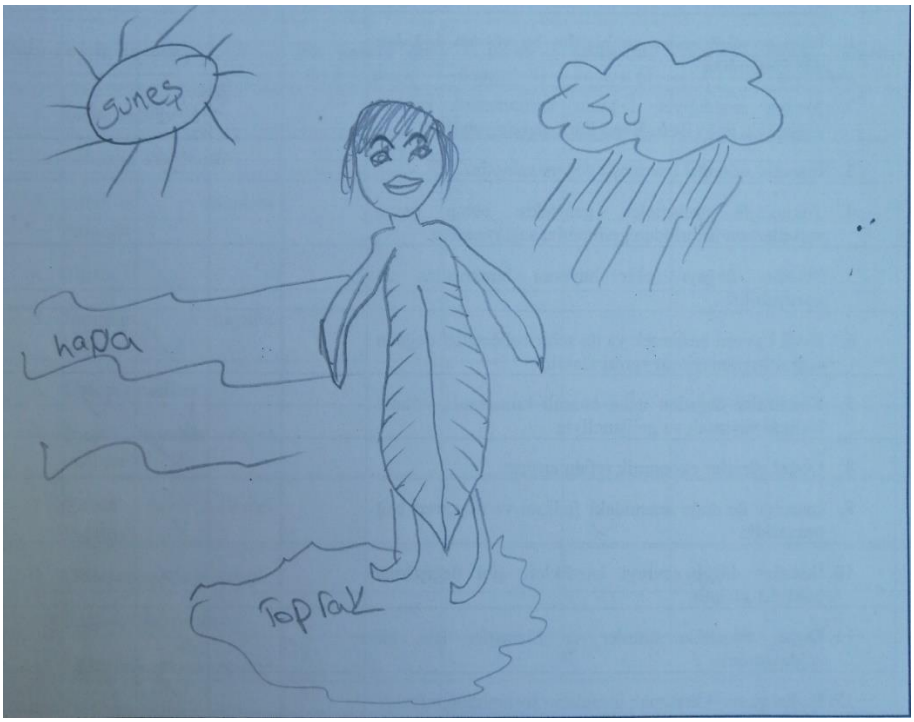

Figure 4.8 Example of participant 8 response for "use" category

"Man needs everything from nature. Even the sun, water, air, soil..."

Figure 4.9 Example of participant 9 response for “use” category

“People can gather fruits and vegetables from nature, raise and sell animals, harvest from the field, and build wooden houses.”

Dominion:

In this category, participants emphasized that people use power over nature to get what they need and want by using technology. Results showed that students’ image of human-nature relationship under “dominion” category was found by 12.7% (100 participants). An example of the answers of the participants belonging to “dominion” image of human-nature relationship was shown in Figure 4.10 below. The written description of this drawing showed humans having power over a tree and a captured rabbit.

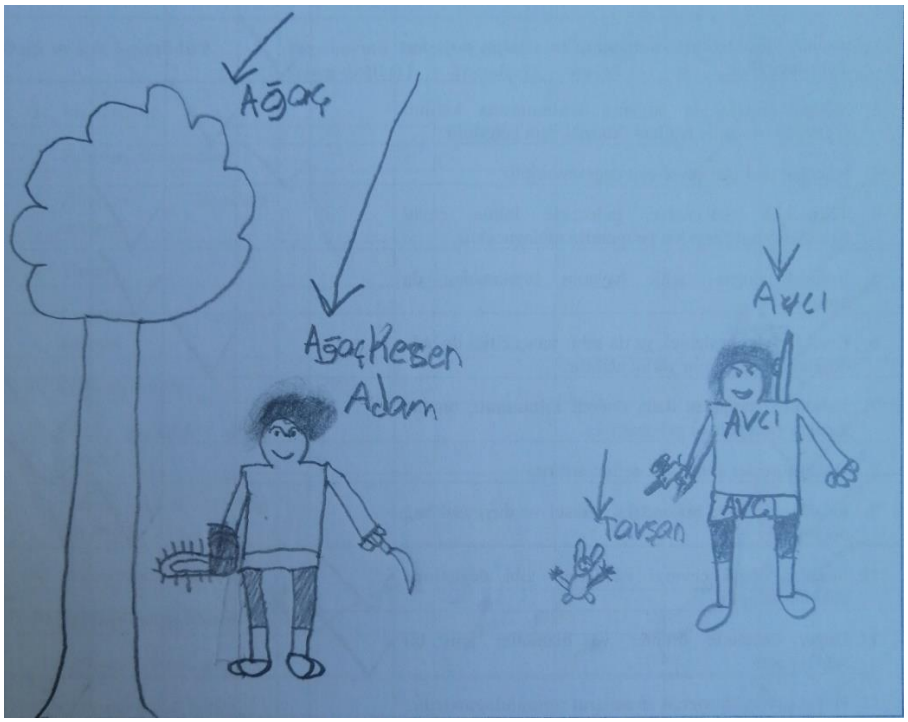

Figure 4.10 Example of participant 10 response for “dominion” category

“I drew a man who cuts the tree for himself, and a hunter hunting rabbits.”

Table 4.5 Comparison of image of human-nature relationship

Categories	Percentage of participants
Humanistic/ Family with nature	11.8
Stewardship / Family with nature	54.2
Interdependence / Eco-centric	8.4
Use / Mastery	12.9
Dominion / Mastery	12.7

4.3 Summary of Results

Descriptive results of image of nature scale indicated that participants perceived wildlife, forests, picnic areas, and campsites as “nature”. Nonetheless, according to the participants, aquarium and grass football field did not represent nature at all. Results of values of nature scale showed that students gave higher importance to religion as the reason for the importance of nature. Whereas they gave least importance to tourism as the reason for the importance of nature.

Results of quantitative analysis of image of human-nature relationship revealed that the most common image of human-nature relationship found to be ‘family with nature’ whereas the least common image of human-nature relationship found to be ‘mastery over nature’.

In addition to the quantitative analysis of image of human-nature relationship, qualitative analysis of students’ image of human-nature relationship showed that ‘stewardship’ was the most common image of human-nature relationship. Participants expressed in their drawings that the nature should be cared, respected, and protected by human beings. In a sense, these responses (and their combined similarity) are consistent with the quantitative finding of the prevalence of "family with nature" image of human–nature relationship, as both humanistic and stewardship could be considered to be within "family with nature" image of human-nature relationship.

CHAPTER 5

CONCLUSIONS, DISCUSSION, AND IMPLICATIONS

The present chapter consists of conclusion of the study, discussion of the study, internal and external validity of the study, implications of the study and recommendations for further research.

5.1 Summary of the Research Study

To investigate the specified purposes of the study, 903 students studying at state middle schools participated in this study from the district Hassa in Hatay, Türkiye. Due to limited time, convenience sampling method was used to select the sample of the study. The data were collected with Visions of Nature Scales by Van Den Born et al. (2001). Cross sectional survey study was conducted to investigate middle school students' images of nature, values of nature, and their image of the human-nature relationship.

5.2 Conclusions

The present study aims to determine middle school students' visions of nature consisting of images of nature, values of nature, and their image of human-nature relationship.

The results of the study revealed that most participants think that wild nature, especially wildlife and forests, shows pure nature whereas the concepts that the participants least associate with nature are aquarium and grass football field. From this result, it can be deduced that the students have difficulty in accepting the materials they see as man-made as nature. On the other hand, the fact that wildlife

and forests are the items they mostly accept as nature shows that the students think that pure nature is a place untouched by human hands.

For values of nature, the participants believed that the most important reason why nature is important was that it is God’s entrustment to human beings. The result also revealed that nature was seen as important at least for the entertainment of individuals. In other words, most students do not see nature's entertainment as a reason for nature's importance.

The image of relationship between human and nature were mostly found in the category of being a family with nature. In fact, students see nature as an asset that humanity should protect, take care of and value. In other words, the root of this relationship was stewardship. A high mean value was also found in the item belonging to an eco-centric image of human-nature relationship. With this item, the students stated that they feel relieved when they are in touch with nature. Low mean values were found in the mastery over nature category. In other words, most of the students stated that they did not agree with the items in which humans are considered superior to nature. In fact, the item with the lowest mean value is "People have the right to change nature as they please". That is, most students strongly disagree with the idea that people have the right to change nature as they wish.

When the drawings of the students were examined, it was revealed that the stewardship, that is, the protectionist image of nature, was the most common image of human-nature relationship. In this respect, the results of the scales and student drawings showed parallelism. The participants compared their relationship with nature to being a family, emphasizing that it should be protected and treated with respect.

5.3 Discussion

For the image of nature scale, when the results of the study (2019) of Duong and van den Born, in which the scale used in the current study were used, were examined. The sample of Duong and van den Born (2019) study consisted of Vietnamese participants. Some similar results were encountered. In both the studies, majority of participants think that forests and wildlife represent the “nature” most. In the current study, participants did not see grass soccer field, and aquarium as “pure nature”. Similarly, Duong and van den Born (2019) found that grass soccer field, aquarium and gravity were not seen as “fully nature” from participants’ perspective. The fact that the most common image of nature is 'wild nature' can also be associated with the geography where the students live. As described before, the students live in an area where agricultural lands, forests and plateaus are dense. Therefore, according to them, nature can be much more than trees planted on the streets or an aquarium bought into the house. Another study aiming to explain the nature visions of the students is the qualitative study conducted by Başer (2021) in Türkiye. In Başer's study (2021), it was observed that students see nature as an outside environment and generally use concepts such as green, greenery, trees, and forest. In addition, for the image of nature, the students mostly mentioned the existence of animals. In this respect, the results of the present study are similar. On the other hand, there are some differences with the results of current study. For example, in Başer's study (2021) , very few of the students mentioned animals in the wild. However, in the present study, according to the students, the group that fully expressed nature was the wild nature. Başer (2021) attributes this to the fact that the participants live in the city life. Since the sample of this study lives in a geography far from city life, the difference in the results may be due to the environment and opportunities of the students.

For values of nature scale, Duong, and van den Born’s study (2019) found that most participants think that nature is important for health, future generations, and intrinsic values (‘‘for its own sake’’ and ‘‘own right to exist’’). Similarly, in the

present study, majority of participants remarked that nature is important for health, future generations, and nature's own sake. However, the one main difference from Duong and van den Born's study (2019) exists that most students think that the most important reason why nature is important is God's entrustment to humans. This fundamental difference might be due to the cultural and religious differences between the two countries. In addition, majority of students in this study also associated the importance of nature with human survival. In other words, for most students, nature is essential to human survival. This result can be attributed to the fact that the students have many relations with agriculture due to the geography they are in, because most of the student families make a living from agriculture.

Similarly, in Başer's study, when students were asked why nature is important, they generally gave answers showing that they had instrumental values. To illustrate, students explained why nature is important because it ensures the survival of people, because nature is beneficial for human health both physically and mentally, because nature is important for resting and because it should be protected for future generations. Few of the students gave answers showing that they have intrinsic value. These students stated that nature is important for animals and plants and did not mention its importance because of any benefits for humans.

Moreover, in the current study, the least valued item for the importance of nature was tourism. Due to the region, students may have viewed this item as distant from themselves and nature since there is no facility or element around them that they can associate with tourism. The health value of nature took the first place in the study of Western countries (Van den Born, Lenders, De Groot, & Huijsman, 2001) using this scale and in the study in Vietnam (Duong, & Van Den Born, 2019). However, in the current study, religion was in the first place, while the health value was in the second place.

For students' image of human-nature relationship, Duong and van den Born's study (2019) revealed that "family with nature" is the most common image of individuals' relationship with nature. In addition, Van Den Born et al.'s study (2001)

in western countries concluded that 'Family with nature' was found to be the most common image of human-nature relationship. In fact, 'Humans are part of nature and therefore must bear responsibility for it.' was the item with the highest mean score. Similar to these studies, the current study revealed that the most common image of human-nature relationship among participants' responses was found to be 'family with nature'. The participants of this study consist of children who have the chance to have direct experience with nature thanks to the environment they live in. Therefore, it may have supported their approach to nature with a more protective and respectful approach.

When the results of Başer's study (2021) on images of human-nature relationship were examined, the students' opinion that people should protect nature (Stewardship) was found to be widespread. In the present study, from qualitative and quantitative data, it was determined that the common image of nature and human relations were 'family with nature' and 'stewardship' categories. Başer (2021) explained the reasons for this as the fact that in the societies of countries where the Islamic culture is widespread, the awareness of the need to protect nature has settled, and examples have been given about the need to protect the environment in the sciences taught.

The results of current study on 'Eco-centric' image of relationship items and means are parallel with the results of Doung and van den Born's study. Items related to "Mastery over nature" have means below 3, implying that students have less image of "mastery over nature". In fact, the least common image of nature was found 'Mastery over nature' similar to Van Den Born et al.'s study (2001), and Duong and Van Den Born's study (2019). Similar to the study in Vietnam (Duong, & Van Den Born, 2019), and the study in Western countries (Van Den Born et al., 2001), the current study showed that students disagree with the most is "Human beings have the right to alter the natural environment to what they want". From the qualitative data, drawings of the participants, the most common image of human-nature relationship was found as 'stewardship'.

5.4 Internal Validity of the Study

Internal validity refers that the differences observed in the dependent variable are directly related to the dependent variable, not due to another external variable. Possible threats to internal validity and methods for dealing with them are discussed in this section.

The schools and participants participating in this research were selected using convenience sampling method. Therefore, many subject characteristics (such as age, maturity, ethnicity, intelligence, speed, motivation, socioeconomic status) may be the greatest threat to the internal validity of this study.

Data collector characteristics and data collector bias threats were assumed to be controlled by the researcher since the teachers were trained and informed to ensure standard procedures under which the data were collected.

For the present study, location and instrumentation could not pose a threat as the tools were applied to all groups in a similar classroom setting and mostly by the researcher.

Lastly, confidentiality was not a possible threat to this study because students' identities were not collected and used nowhere.

5.5 External Validity of the Study

The external validity of the study is determined by the extent to which the results of a study can be generalized. In this respect, both the nature of the sample and the environmental conditions, the settings, in which a study is conducted, must be taken into account when thinking about generalizability.

The subjects of the research were selected from the accessible population by convenience sampling. 903 middle school students participated in the present study.

5.6 Implications

The results of the present study have some implications for curriculum planners, school administrators, teachers and researchers interested in environmental education in Türkiye.

In the current study, it was found that students' image of nature mostly focused on 'wild nature'. Most students' understanding of pure nature was limited to untouched green areas. In this respect, providing nature education and experiences by mentor teachers in schools can expand students' images of nature. In fact, these activities can be made more formal and not only like empty lesson activities, but also gains related to nature and nature images can be added to the curriculum. At this point, the current study might guide curriculum developers.

When the answers given by the students to the scale of values of nature were examined, according to most students, nature is important for it's God's entrustment to humans. In order for more eco-centric substances to come to the fore, the importance of nature and nature should be scientifically explained to the students. For example, nature was not seen as an important enough reason for scientific studies according to most of the study participants. This situation may be a warning about the lack of knowledge of students about nature and environmental studies.

When the quantitative results of the study's image of nature and human relations were examined, the most dominant value orientation was found to be family with nature. In the qualitative results of the study, it was found that the most dominant value orientation of the students regarding the human-nature relationship was stewardship. The bond of students with nature can be strengthened with conservation activities and actions. Giving the necessary training to the students before these activities can enable the students to develop rational and versatile solutions when they encounter a problem related to the relationship between nature and human. In addition, these activities can enable students to look at the nature and human relationship from a more eco-centric perspective.

The existing projects and studies related to nature education in the country can be enriched with the current study results. At this point, help can be obtained from governmental and non-governmental environmental institutions and organizations. In this way, students can choose nature education as a profession and a field of study in the future.

5.7 Recommendation for Further Studies

The present study has a variety of useful topics for further research studies. These are as follows:

1. A similar study can be conducted by using random sampling method to increase generalizability of the results for Turkish population.
2. The sample of the study includes only middle school students; therefore, a study can be performed with different levels of students (e.g. primary schools, high schools, college students).
3. Correlational studies can be performed to understand what affects students' visions of nature (e.g., age, sex, socioeconomic status).
4. Various long-term experimental studies can be done to develop students' visions of nature. These studies can be encouraged by Republic of Türkiye Ministry of National Education.
5. Besides, there is a strong need to investigate science teachers' visions of nature as for the lower grade they might have much more influence on students' values.
6. Longitudinal studies on the effects of the Ministry of National Education's environmental projects on students' visions of nature can be conducted in the future.

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APPENDICES

A. PERMISSION OBTAINED BY THE ETHICAL COMMITTEE OF METU

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
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14 NİSAN 2021

Konu : Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi : İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Doç.Dr.Elvan ŞAHİN

Danışmanlığını yaptığınız Gül Sena VARLIOĞLU'nun "Ortaokul Öğrencilerinin Doğa ile ilgili Anlayışları ve İnsan-Doğa İlişkisine yönelik Değer Yönelimlerinin Analizi**"** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve **125-ODTU-2021** protokol numarası ile onaylanmıştır.

Saygılarımızla bilgilerinize sunarız.

Dr.Öğretim Üyesi Şerife SEVİNÇ
İAEK Başkan Vekili

B. PERMISSION OBTAINED BY MINISTERY OF EDUCATION

T.C.
HATAY VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : E-32889839-605.01-26279192
Konu : Gül Sena VARLIOĞLU'nun
Araştırma İzin Onayı

10.06.2021

ORTA DOĞU TEKNİK ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Öğrenci İşleri Daire Başkanlığı)

Üniversiteniz Matematik ve Fen Bilimleri Eğitimi ABD yüksek lisans öğrencisi Gül Sena VARLIOĞLU, "Ortaokul Öğrencilerinin Doğa ile ilgili Anlayışları ve İnsan-Doğa İlişkisine Yönelik Değer Yönelimlerinin Analizi" konulu tez çalışması ile ilgili izin onayı ekte sunulmuştur.
Bilgilerinize arz ederim.

Kemal KARAHAN
İl Milli Eğitim Müdürü

Güvenli Elektronik İmzalı
Aslı ile Aynıdır.
10../06/2021
Hanifi YURMAZ
İl Milli Eğitim Müdürlüğü
V.H.K

Ek: Onay (1 sayfa)

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T.C.
HATAY VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : E-32889839-605.01-26228154
Konu : Gül Sena VARLIOĞLU'nun
Araştırma İzin Onayı

09.06.2021

VALİLİK MAKAMINA

Orta Doğu Teknik Üniversitesi Matematik ve Fen Bilimleri Eğitimi ABD yüksek lisans öğrencisi Gül Sena VARLIOĞLU, "Ortaokul Öğrencilerinin Doğa ile ilgili Anlayışları ve İnsan-Doğa İlişkisine Yönelik Değer Yönelimlerinin Analizi" konulu araştırmayı yapmayı talep etmektedir.

Söz konusu çalışmanın "Milli Eğitim Bakanlığı Yenilik ve Eğitim Teknolojileri Genel Müdürlüğünün 21.01.2020 tarihli ve 81576613-10.06.02-E.1563890 ve 2020/2 nolu Araştırma Uygulama İzinleri Genelgesine" uygun olduğundan, ilgilinin araştırmanın yüz yüze eğitim öğretime ara verilmesi göz önüne alınarak örgün eğitimin tam olarak başlamasıyla birlikte Müdürlüğümüzün izni ile denetimi ilçe milli eğitim müdürlükleri ve okul/kurum idaresinde olmak üzere, kurum faaliyetlerini aksatmadan, gönüllülük esasına göre, elde edilen verilerin kamuoyu ile paylaşılmadan önce Müdürlüğümüzün ilgili birimine iletilmesi ve onaylı bir örneği Müdürlüğümüzde muhafaza edilen ve uygulama sırasında da mühürlü ve imzalı örnekten çoğaltılan veri toplama araçlarının kullanılması koşuluyla; İlimiz Hassa ilçesi Şehit Oğuzhan Çito Ortaokulu, Süleyman Şah Ortaokulu, Aktepe Ortaokulu, Derviş Paşa Ortaokulu ve Hatsaş A.Ş. Ortaokulu öğrencilerine yönelik uygulama çalışması yapmasını, olurlarınıza arz ederim.

Mahmut SABAH
İl Milli Eğitim Şube Müdürü

OLUR
09.06.2021

Kemal KARAHAN
Vali a.
İl Milli Eğitim Müdürü

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C. TURKISH VERSION OF VISIONS OF NATURE SCALES

Sizin Bakış Açınız ile Doğa ve İnsan

Bu araştırma, Orta Doğu Teknik Üniversitesi, Fen Eğitimi Yüksek Lisans öğrencisi Gül Sena Varlıoğlu tarafından Doç. Dr. Elvan Şahin danışmanlığındaki yüksek lisans tezi kapsamında yürütülmektedir. Araştırmaya katılımınız tamamen gönüllülük temelinde olmalıdır. Çalışmada sizden kimlik veya okul belirleyici bir bilgi istenmemektedir. Cevaplarınız tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Çalışma, cevapları doğru ya da yanlış şeklinde değerlendirilecek sorular içermemektedir. Sizin görüşlerinizi tam olarak yansıtabilmesi için içtenlikle yanıtlamanız oldukça önem taşımaktadır. Katkılarınız için teşekkür ederiz.

Gül Sena Varlıoğlu

Matematik ve Fen Bilimleri Eğitimi Bölümü
Orta Doğu Teknik Üniversitesi

BÖLÜM I. Kişisel Bilgiler

Cinsiyetiniz: Kız ☐ Erkek ☐

Yaşınız: _____

Sınıf Düzeyiniz: _____

BÖLÜM II. Doğa İmgesi Ölçeği

Aşağıda yer alan maddeler size göre **'Doğa'**yı ne ölçüde yansıtmaktadır?

Lütfen [Hiç 'Doğa' değil (1) – Tam olarak 'Doğa' (5)] derecesini kullanarak belirtiniz.

	Hiç **' Doğa'** değil (1)	(2)	(3)	(4)	Tam olarak **' Doğa'** (5)
1. Tarım alanları					
2. Saksı bitkileri					
3. Yerçekimi					
4. Tahıl arazisi					
5. Piknik alanları					
6. Akvaryum					
7. Tarlada çalışan çiftçi					
8. Sahil					
9. Yaban hayatı (Vahşi hayat)					
10. Ormanlar					
11. Depremler					
12. Bahçeler					
13. Dikilmiş sokak ağaçları					
14. Rüzgâr					
15. Çim futbol sahası					
16. Çimlerde otlayan inek					
17. Kamp alanları					
18. Nehrin üzerinde uçan kuş					
19. Kutuplar					

BÖLÜM III. Algılanan Doğa Önemi Ölçeği

Aşağıda yer alan maddeleri dikkatlice okuyunuz. Doğanın hangi sebeplerden dolayı önemli olabileceğini bu maddeleri göz önünde bulundurarak değerlendiriniz. **İlk olarak**, size göre önce en önemli olan sebebi, **daha sonra** en az önemli sebebi belirleyerek uygun dereceyi işaretleyiniz. **Son olarak**, diğer maddeleri de bu sebeplere bağlı olarak değerlendiriniz.

Doğa ne için önemlidir?	**Hiç önemli bir sebep değil (1)**	**Çok az önemli (2)**	**Oldukça önemli (3)**	**Önemli (4)**	**Çok önemli bir sebep (5)**
1. İnsan sağlığı					
2. Bilimsel araştırmalar					
3. Allah'ın insanlara emaneti					
4. Tarım					
5. İnsanların hayatta kalması					
6. Gelecek nesiller					
7. İnsan dışındaki diğer canlılar					
8. Yaban hayat (Vahşi yaşam)					

9. Gezegenimizin geleceği					
10. İlaçların geliştirilmesi					
11. Eğlenceli zaman geçirme					
12. Doğanın kendi iyiliği					
13. Turizm					
14. Güzel manzara					

BÖLÜM IV. İnsan-Doğa İlişkisine yönelik Görüşleriniz

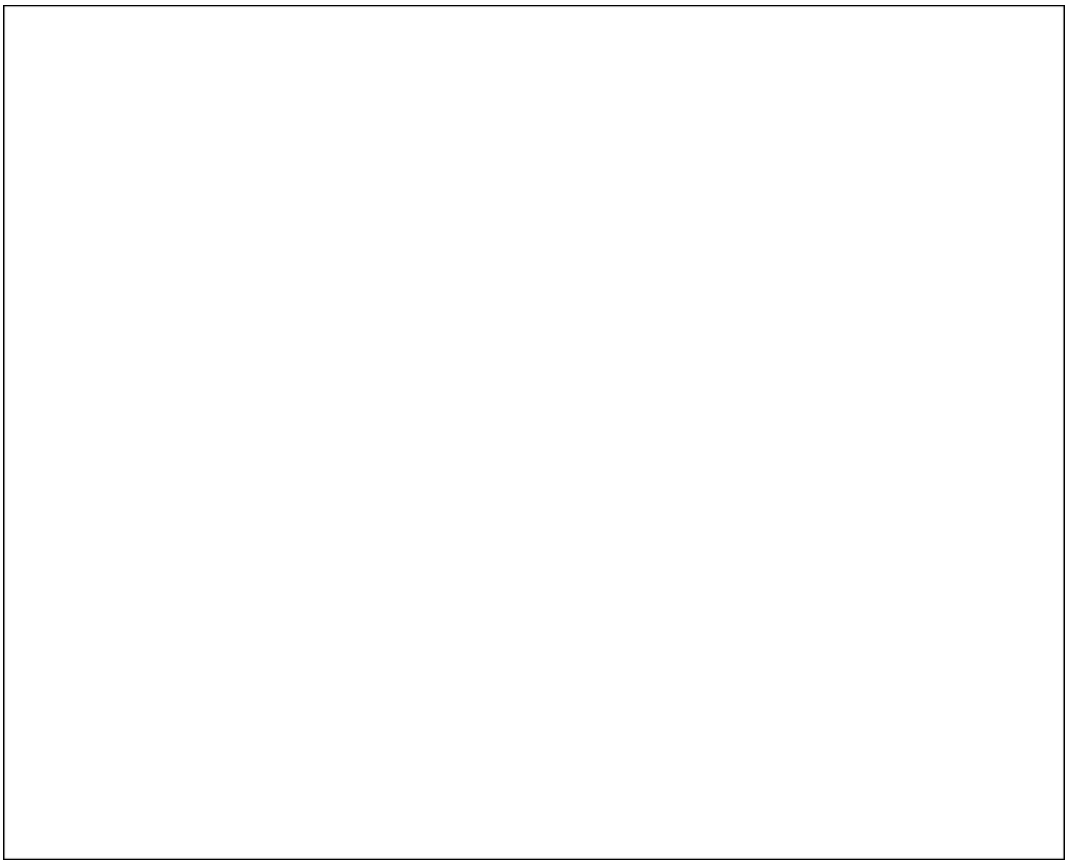
İnsan ile doğa arasındaki ilişki nasıl olması gerekir?	**Kesinlikle Katılmıyorum (1)**	**Katılmıyorum (2)**	**Kararsızım (3)**	**Katılıyorum (4)**	**Kesinlikle Katılıyorum (5)**
1. İnsanlar düşünebilen canlılardır, bu yüzden doğadan daha önemliler.					
2. Medya aracılığıyla doğanın korunmasına katılım sağlamak, doğa ile bağlantı kurmak için yeterlidir.					
3. İnsanlar ve doğal çevre eşit değere sahiptir.					
4. Teknolojik gelişmeler, gelecekte bütün çevre sorunlarının üstesinden gelmemizi sağlayacaktır.					
5. İnsanlar doğayı şehir hayatını bırakmadan da koruyabilir.					
6. Evcil hayvan beslemek ya da şehir bahçeciliği doğada doğrudan deneyimin yerini alabilir.					

7. Kendimizi doğadan daha önemli kıl**mama**lı, onunla birlikte yaşamalı ve gelişmeliyiz.					
8. Doğal süreçler ekonomik refahı arttırır.					
9. İnsanlar ile doğa arasındaki fiziksel ve duygusal bağ önemlidir.					
10. İnsanlar doğal çevreyi istedikleri gibi değiştirme hakkına sahiptir.					
11. Doğa, öncelikle ürünler ve hizmetler için bir sağlayıcıdır.					
12. Doğal çevreyi korumak insanların sorumluluğundadır.					
13. Kendimin bazen doğal çevre ile harmanlandığını (iç içe olduğumu) hissediyorum.					
14. İnsanlar, doğanın bir parçasıdır.					

15. Kendimizi doğadan daha önemli görsek bile doğaya iyi bakmamız gerekiyor.					
16. İnsan davranışlarının doğaya bir etkisi yoktur.					
17. Teknolojik gelişmeler doğa üzerindeki olumsuz etkileri en aza indirgeyecek şekilde düzenlenmelidir.					
18. Hayatta kalmak için doğaya bağımlı değiliz.					
19. Doğa ile iç içe olduğumda ruhumun ferahladığını hissediyorum.					

İnsan-Doğa İlişkisi

1. İnsan ve doğa arasındaki ilişkinin nasıl olması gerektiğini düşünüyorsunuz? Düşüncelerinizi yansıtan bir resmi aşağıda bırakılan boşluğa çiziniz. Lütfen çizimlerinize etiket ekleyiniz.



2. Çizdiğiniz resminizi açıklayınız.

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