A STUDY ON TURKISH MIDDLE SCHOOL STUDENTS' NATURE RELATEDNESS, ATTITUDES AND BEHAVIORS TOWARD THE ENVIRONMENT

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

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The aims of the present study were defined as (1) to assess nature relatedness level, attitudes toward the environment and responsible environmental behaviors of the Turkish middle school students and (2) to examine the predictive power of nature relatedness, and attitudes toward the environment on responsible environmental behaviors.

Data was collected from 908 middle school students via knowledge of Turkish version of Nature Relatedness (NR) scale, Environmental Attitude Scale and Children Responsible Environmental Scale (CREB). The result of the present study demonstrated that students' nature relatedness and attitudes toward the environment were high. The students were worried about human actions and impacts on all living things and had an ecological identity with nature but their physical familiarity was respectively low. Besides, they gave a value for nature because nature owns sake rather than the welfare of human beings. Also, the students were willing to take

physical actions to solve or help environmental issues. However, they hesitated to encourage or persuade someone.

Data were analyzed according to multiple linear regression analysis. It was found out that there was a statistically significant association between nature relatedness, and attitudes toward the environment with environmentally responsible behaviors.

Keywords: Middle school students, nature relatedness, attitudes toward environment, environmental responsible behavior

ÖZ

ORTAOKUL ÖĞRENCİLERİNİN DOĞAYLA İLİŞKİLERİ, ÇEVREYE YÖNELİK TUTUMLARI VE SORUMLU DAVRANIŞLARI ÜZERİNE BİR ÇALIŞMA

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Bu çalışmanın amacı (1), ortaokul öğrencilerinin doğa ile ilişki düzeylerini, çevreye yönelik tutumlarını ve çevreye yönelik sorumlu davranışlarını değerlendirmek (2) doğa ile olan ilişki ve çevreye yönelik tutumun, çevreye yönelik sorumlu davranışlarını ne derece tahmin edebileceğini bulmak olarak tanımlanmıştır.

Çalışmanın verileri Doğa ile İlişki ölçeği, Çevresel Tutum ölçeği ve Çocukların Çevreye Yönelik Sorumlu Davranışları ölçeği kullanılarak 908 ortaokul öğrencilerinden toplanmıştır. Bu çalışmanın sonucu, öğrencilerin doğa ile olan ilişkilerinin ve çevreye yönelik tutumlarının oldukça yüksek olduğunu göstermiştir. Öğrencilerin insan davranışlarının tüm canlılar üzerindeki etkileri konusunda endişeli oldukları ve doğa ile ilgili ekolojik kimlik geliştirdikleri ortaya çıkmıştır. Ancak öğrencilerin doğa ile fiziksel yakınlık seviyesinin biraz düşük seviyede olduğu tespit edilmiştir. Bunun yanı sıra, öğrencilerin doğanın kendi iyiliği için doğaya değer verdikleri ve çevre sorunlarını çözmek veya çevre sorunlarını çözmeye yardım etmek

için fiziksel eylemlerde bulunmaya istekli oldukları ortaya çıkmıştır. Fakat çevre sorunlarını çözmek için birisini cesaretlendirmekte veya birini ikna etmekte tereddüt ettikleri belirlenmiştir.

Çoklu doğrusal regresyon analizine göre, öğrencilerin doğa ile olan ilişkilerinin ve çevreye karşı tutumlarının, çevreye karşı sorumlu davranışları ile istatistiksel olarak anlamlı bir ilişki içinde olduğu bulunmuştur.

Anahtar Kelimeler: Ortaokul öğrencileri, doğayla ilişki, çevreye yönelik tutum, çevreye yönelik sorumlu davranış

DEDICATION

To My Parents

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LIST OF ABBREVIATIONS

NR	Nature Relatedness
CREB	Children's Responsible Environmental Behavior
df	Degree of freedom
f	Frequency
n	Sample size
p	Significance level
M	Mean
SD	Standard deviation

CHAPTER 1

INTRODUCTION

Human beings always want to increase their living standards and live in a more comfortable life. They over-utilize natural resources to meet their needs until they have been facing that natural resources are consumed away and pollution decreases their living standards (Stern, 2000). Besides, rapid population growth, human behaviors cause breaking down the natural balance and coming out environmental problems (United Nation the World Commission on Environment and Development [WCED], 1987). According to the WCED (1987) report, it is urgent to take an action to manage environmental resources and sustaining human development for a more secure and a more just future. Therefore, it is crucial to examine human behaviors that cause environmental problems and after all the behaviors should change.

There is growing body research about why some people show pro-environmental behaviors and others do not (Allen & Ferrand, 1999; Dunlap, & Mertig, 1995; Kaiser, Wölfing, & Fuhrer, 1999; Nordlund & Garvill, 2002; Pelletier, Dion, Tuson, & Green-Demers, 1999). Recent studies found that there may be various factors affecting human behaviors categorized as external factors (e.g. intuitional, economic, social and cultural) and internal factors (e.g. motivation, values, attitudes, locus of control, responsibilities, and priorities) (Kollmuss & Agyeman, 2002). This shows that explanation of human behaviors is a very complex task but it can be possible to find out how these are related to each other and which factors that have a large effect than the others on human pro-environmental behavior. Nisbet et al. (2009) stated that ‘there is a gap between people’s feelings and attitudes about environmental problems and their own actions’ and if the gap is

filled, prediction of human pro-environmental behaviors can be possible. Also, to fill this gap Nature Relatedness (NR) was developed by Nispet et al., (2008). They come up with a reason that if people spend more time in the natural environment, they care the nature, show pro-environmental attitudes and act environmentally responsible behaviors.

In this sense, Nature Relatedness seems to be very important to come up with environmental problems. However, there are many obstacles between nature and human beings in today's urbanized world. Especially, children were growing up disconnected from nature because of biodiversity loss, electronic entertainment media, family members' attitudes towards nature-based activities and urbanization of surroundings (Soga et al., 2018).

Lieflander et al. (2012) suggested nature relatedness can be strengthening by preserving biodiversity in children's school environments, providing activities in nature and they offered strengthening nature relatedness is more sustainable before the age of 11. Gigliotti (1990) defended that the salvation of the environmental problems was education. The environmental problems could not solve unless we produce environmentally literate citizens in time. If we could not achieve this goal in 20 years, we need to take new and drastic measures. Tbilisi Intergovernmental Conference on Environmental Education (1977) was made to handle environmental problems. Objectives of environmental education to produce environmentally literate citizens were determined as to develop awareness and sensitivity about environment, to improve basic understanding of environment and related problems or issues, to get a set of values and feelings about environment, to became skillful for identifying and solving environmental problems and to participate all levels in working toward resolution of environmental problems.

On the other hand, most people seem to concern environmental issues and problems but they were unwilling to make personal sacrifices (Gigliotti, 1990). Therefore, it is needed more knowledge about the roots of the behaviors toward the environment and specifically what actions they can and should take.

1.1 The Main and Sub Problems

1.1.1. The Main Problems

The main problems of this study are (1) to determine 5th, 6th, 7th and 8th grade students' nature relatedness level, attitudes toward the environment, and children responsible environmental behaviors, (2) to find out relationships between children responsible environmental behaviors with nature relatedness and attitudes toward environment.

1.1.2 The Sub-Problems

Sub-questions related with main problem 1:

1) What is the middle school students' nature relatedness?
2) What are the middle school students' attitudes toward the environment?
3) What are the middle school students' responsible environmental behaviors?

Sub-questions related with main problem 2:

To what extend could middle school student' nature relatedness, and attitudes toward environment predict the children's responsible environmental behaviors?

1.2 Null Hypothesis

There is no statistically significant relationship between responsible environmental behaviors and nature relatedness with attitudes toward environment of the middle school students.

1.3 Definition of Important Terms;

Nature Relatedness (NR) described as an individual level of connectedness with the natural world (Nispet et al., 2009).

Attitudes toward Environment assess motives or values (ecocentric and anthropocentric) that underlie support for environmental problems (Thompson & Barton, 1994).

Responsible Environmental Behaviors identified in Tbilisi Conference (Hungerford &Volk, 1990) as a kind of behavior of the individuals who are actively involved in the identification and solution of the environmental problems

1.4 Significance of the Study

The purpose of this research is to investigate middle school students' environmental profiles and adding information to the body of knowledge of environmental education by examining middle school students' nature relatedness, attitudes toward environment and children's responsible environmental behaviors and the relationship between them. In the literature, many researches and theories try to explore how to explain and predict different behaviors of human toward environment. Many studies demonstrated that attitude toward environment is one

of the powerful predictor for pro-environmental behaviors (Kaiser et al., 1999; Onur et al., 2011; Tuncay et al., 2011). In addition to attitude toward environment, nature relatedness found to be one of the better predictor of pro-environmental behaviors such as sustainable consumption, identification as an environmentalist etc. (Nisbet et al., 2009). It is believed that the relationship between nature relatedness and attitudes toward environment with responsible environmental behavior is significant since the relevance between these constructs can provide understanding the underlying cause of the environmental problems.

In Turkey, there is limited research about nature relatedness level of the students. Therefore, this study can be helpful to provide information for program developers, teacher educators and teachers. Such as, it can be made some arrangements in middle school settings to increase students' physical connection with nature. Eventually, it may contribute to the improvements of the pro-environmental behaviors of human.

Gigliotti (1990) states that "If we plan for change, the changes will be less difficult. If we wait for the changes to hit us head on, fighting each crisis as it arises; the social and environmental upheavals could make life very miserable" (p. 12). We should begin to make a plan to change the behaviors that give damage to environment. Firstly, it is necessary to get knowledge about the current condition to make a plan for change.

In Turkish Education system, primary school curricula changed in 2018 and redesigned. 5th, 6th, 7th and 8th grades have been educated by using new curriculum. In the new science curriculum, some skills related with the environment identified as:

- Discovery of nature,
- Understanding the relationship between human and environment,
- Adopt the scientific research approach,
- Produce solutions to the problems encountered in these fields,
- Raise awareness about sustainable development and natural resources,
- Raise interest and curiosity about the natural events,
- Develop an attitude to natural events,

This study offers information about the current state of the students' responsible environmental behaviors can give clue of the environmental problems. In the literature, there are lots of variables such as knowledge, pre-school education, mother and education level, locus of control, attitudes, individual's sense of responsibility etc. (Erdogan, 2008; Hines et al., 1987) that have an influence on the responsible environmental behaviors toward environment. Therefore, though these objectives integrated in the curriculum, still there can be standing problems related with the students' behaviors toward environment to examine or determine. For this reason, it is believed that the findings of the current study would contribute to new curriculums by presenting information about students' responsible environmental behaviors.

CHAPTER 2

REVIEW OF THE LITERATURE

This chapter purposes to offer a brief review of related literature on the definition and studies about the nature relatedness, attitudes toward environment and responsible environmental behaviors in the context of environmental education.

2.1 Nature Relatedness

Human beings and nature interact with each other ever since the evolution of human beings. At the beginning of the evolution, human beings accommodate themselves to nature, such as, they migrated a place, which had the appropriate condition for living. Even after that, they started to alter nature, like human beings built his home by using many resources. By the 19th century, human being faced with a lot of environmental problems like climate change, loss of biodiversity, water, and air pollution, etc. Taghvaee et al. (2017) examined the relationships between human beings and nature in three stages. The first stage started from the beginning to the 16th century where there was a direct connection with nature. In the second stage, human beings had separated from nature and created an artificial environment. They believe that scientific and industrial development could handle whole problems and gave irreparable damages to nature. Although the capacity of the world sustains a technologically advanced, civilization is exponentially expanding and is likely to collapse within the near future (Malone & Corell, 1989). Third stage was started in the late 20th century and continuing. In that stage, human beings faced with the limited capacities of nature and struggle to fulfill their excess needs. In this stage, they need more information about the

relationship between human and environment to handle the problems while they meet their needs. Current environmental problems interlinked with our level of nature relatedness (Anne et al., 2012). If human beings think themselves as isolated and distinct from the natural environment, the problems ensue (Franz et al., 2005).

A growing body of research has shown that relatedness with the natural environment provides many reasons to conserve nature such as happiness, pleasant moods, etc. Capaldi and his colleagues (2014) performed a meta-analysis (n=8523) to examine the relationship between happiness and nature relatedness. According to the test result, participants who had the strongest relation to nature tended to experience more positive affect, vitality, and life satisfaction and the relationship between nature relatedness and happiness had small but significant effect size (r=0.19).

Nispet and Zelenski (2011) conducted two experimental researches. In the first experiment, two groups of participant ages range between 16 and 48 years old were selected randomly. The first group (N=78) had an indoor walking route and the second group (N=72) had an outdoor walking route. Before the walking, participants rated their anticipated effect like fascinated, curious, interested, etc. After 17 min walking, each group rated their effects again and nature relatedness. According to the between-subjects analyses of variance (ANOVAs) test results F (1, 145) = 4.02, p = .05, participants walked outdoor reported more pleasant effects and their nature relatedness scores higher than the other group. In the second experiment, they repeat the first experiment with different routes. According to the test result, the second experiment confirmed the first experiments' result. The writers concluded that if a person spends more time in nature, they will be happier and their relation with nature increases. After all, the person starts to show sustainable behaviors.

Tang et al., (2015) conducted a research by showing three pictures to the participants (n=77), age ranges between19 to 65. They to how individual nature relatedness could be increased. They evaluated the participants' perceived environmental information such as sense of safety, familiarity, restorativeness, etc. Later, they measure the participants' nature relatedness by using the NR scale (Nisbet et al., 2009). It was found out that nature relatedness is increased with age and number of visits to natural areas. It reported that nature relatedness is a significant predictor for individuals' evaluation of forest setting images. In addition, the increasing nature relatedness also raises the perceptual evolution of natural environment, for example, people with a strong relation to nature have a better understanding of the natural environment and see nature more attractive and fascinating.

Cheng and Monroe (2012) were developed an index, which is the connection to nature, to measure (n=5500) fourth grade public school students' affective attitudes toward natural environment. They tried to find out how these affective elements impress the students' pro-environmental choices in Florida. After they made a survey and statistical analysis, they found out three variables that have an impact on students' attitudes toward nature that are experience, nature near the home and family values toward the nature. The researchers expressed that perception of nature relatedness of the students includes four variables that are the enjoyment of nature, the empathy of creatures and sense of responsibility. Moreover, it found that there is a significant correlation between the children's nature relatedness and nature near their homes and the correlation between family values toward nature, previous experiences in nature, and knowledge. In addition, it stated that nature relatedness is a strong predictor for the children's interest in participating in nature-based activities and family values toward nature are the better predictor for the natural connection of the children. Lastly, it reached that relatedness with nature can increased with previous experience in nature.

Soga et al., (2018) revealed the reasons why children could not have direct experience with nature. They conducted a study with 5801 children from 45 middle schools in Japan. The study results show that children's direct experiences with nature were highly correlated with individual nature relatedness and family members' nature orientation. In addition, direct experiences of nature negatively correlated with the degree of urbanization. In addition, it reported that female children participated in nature-based activities less frequently than male children did.

In this regard, pupils can grow by spending time in nature so that their relation to the natural environment increase and they became a member who aware and care environmental issues and make an effort to solve the problems but there are some barriers to children's direct experiences of nature (Soga et al., 2018).

Barthelmess and colleagues (2013) conducted a study with 1600 participants to assess the South Korean, Swiss, and Czech students' concern level about environmental issues, their sense of urgency for change towards a more environmentally compatible life, and whether ecological consciousness and action go together with a sense of nature relatedness or not. Later, they compared the students' connections with natural environment regarding their culture. The study demonstrated that the students have a deep sense of nature and willing to protect it but they do not aware of their behaviors and impacts on other livings. Besides, the writers emphasized that cultural differences should not be forgotten to promote responsible environmental behavior. In this study, it was found that there is a statistically significant difference between the East (South Korean) and the West (Swiss and Czech) culture. While South Korean students' had a spiritual closeness to nature, Swiss Students experienced closeness to nature. In addition, Czeck students overtook the active responsibility of the present and future of our living environment.

Bahar (2015), examined Turkish Middle students' responsible environmental behaviors, nature relatedness, and motive concerns and then she examined the relationship of Middle school students' environmentally responsible behaviors with their environmental motive concerns and nature relatedness. All 7th and 8th grade students in the middle part of the Black Sea Region had been decided as the target population. The study was made with 7th and 8th grade, 1774 public school students in the city center of Samsun. To collect the data one questionnaire and three scales applied to the students and to collect the students' demographic information, the Demographic questionnaire designed and used. Nature Relatedness scale (Nispet et al., 2009) used to measure affective, cognitive and physical connections of the students. To assess the students' environmentally responsible behavior Children's Responsible Environmental Behavior (CREB) Scale was developed by Erdogan et al. (2012) was utilized. Lastly, it benefited from the Environmental Motive Concern Scale (Schultz, 2001) to assess the students' motive concerns. According to descriptive statistics results, it found that they related to nature. The writer claims that the students related to nature because of the characteristics of the region such as Samsun city is a place within the forest and rivers. Therefore, if the study is made in the place where urbanization is over than Samsun city, it can be evaluated that students' attitudes change or not with the different living place. Moreover, it emerged that students were actively involved to protect nature, and most of the students showed more the egocentric motive concerns. In addition, the inferential statistics showed that students' relation to the nature and motive concerns explain their responsible environmental behavior but egocentric motive concern was a weak predictor for responsible environmental behaviors of the students.

In conclusion, these studies show that previous experience in nature is very important to nature connection because it constitutes participants' perceptual evolution of natural environment. For example, one may have negative feelings toward nature due to a sense of fear. Moreover, direct experience of nature highly

correlated with nature relatedness, family attitudes toward nature and the degree of urbanization of surroundings. Nature relatedness can increased by physical relationship with nature such as visiting natural areas, living in nature near home, etc. If people feel connected to nature, they want to protect it (Zelenski & Nisbet, 2014) and after all, this can be the solution to current environmental problems.

2.2 Attitudes toward the Environment

Although people concern about environmental problems, they do not reflect their concern to their behaviors (Nispet, 2009). Kallus and Agyeman (2002) researched that why do people act environmentally and what are the barriers to pro-environmental behavior? These questions were subject to psychology, sociology and education. Some models and theories developed to find out the answers of the questions.

One of the theories is value-belief-norm (VBN) theory (Figure 1) of environmental attitudes, which developed by Stern et al. (2000), extended version of Schwartz's (1977) norm-activation model of altruism. According to Stern et al. (2000) that VBN theory composed of three value orientations, which are egoistic, biospheric and social-altruistic value orientations and these value orientations, are related to environmental concern levels.

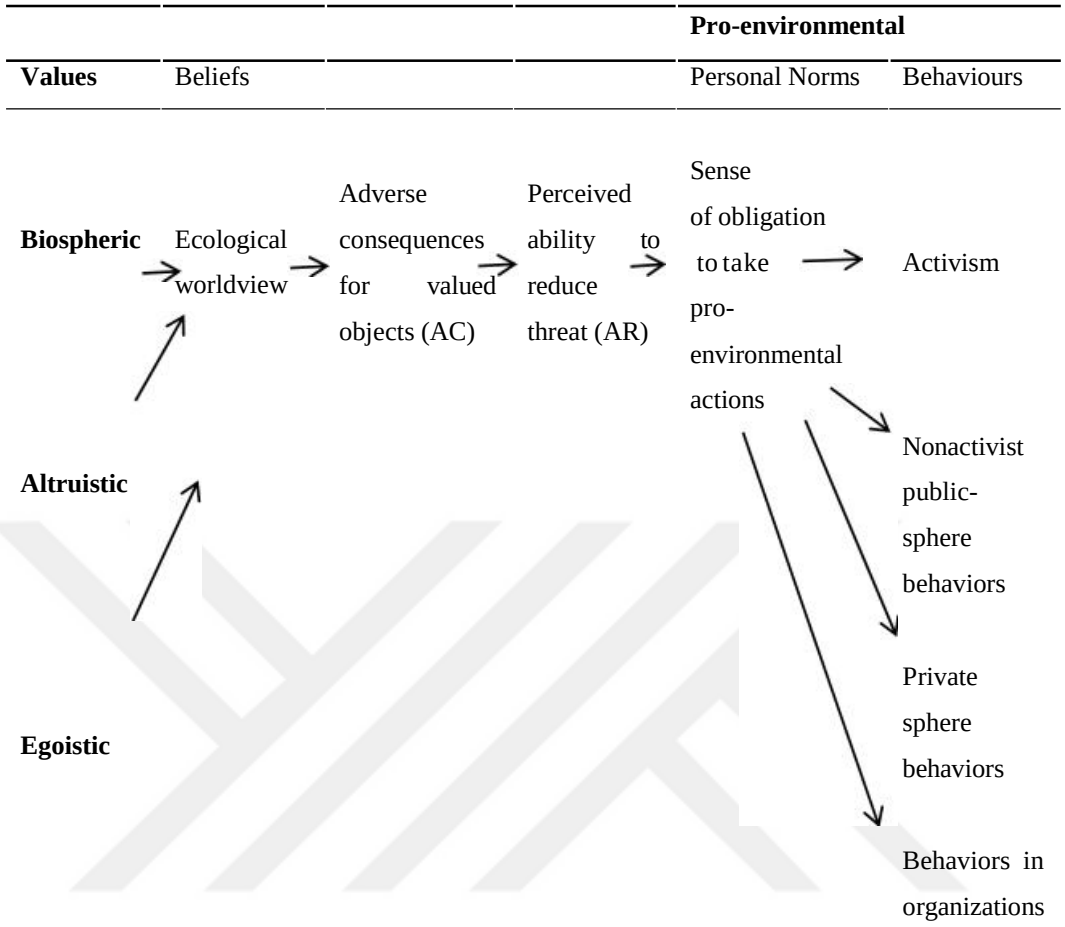

Figure 2. 1 A proposed model of VNB Theory of Environmentalization (Stern, 2000)

According to the VBN theory, personal norms 'sense of obligation to act in a certain way' prompt environmental behaviors. The norms are activated when a person believes that violation of the norms would have converse effects on things they value. Then, they take action and take responsibility of consequences. Personal beliefs formed according to personal values (e.g., altruistic values, egoistic values).

Thompson and Barton (1994) suggested there were at least two values which are eco-centrism and anthropocentrism that underpin the behaviors about environmental issues. According to many studies, when it is asked to the

individuals whether they support the environmental issue or not, many of them support the environmental issues but offer different explanations for reasons. Eco-centric individuals support the environmental issue because of nature own sake. On the other hand, anthropocentric individuals express that the environment needs to support because of human beings. The writers claimed that if they bring into open the eco-centric and anthropocentric individuals, they can predict their environmental attitudes turn into behaviors. They developed a scale to measure anthropocentric or eco-centric attitudes, apathy and then self-reported behaviors are examined to test the relationship between eco-centrism anthropocentrism and their self-reported behaviors. According to the study result, it was found that when eco-centric individuals show more conservative behaviors, anthropocentric individuals show more environmental apathy.

Eagles and Demare (2010) examined factors that influence children's environmental attitudes. 6th grade (N=72) students participated in this study. The students participated in a summer camp with their families. Regarding the study, talking about the environment at home, reading environmental books or magazines, and watching environmental television or movies was created a difference between ecologist attitude scores between students involved in an activity and those not involved. On the other side, it was found that there was no correlation between attending summer camp, camping with family, and talking about the environment in class with ecologist attitude score. The researcher claims that the questionnaire was not suitable for camping so the camping's lack of influence might be due to questionnaire design.

Bozzolasco (2016) conducted a PhD thesis to examine the students' pre-existing nature conceptions, ecological worldviews, environmental perceptions, and preferences, also the contribution of outdoor environmental education courses. 5th and 7th grade students (N=142) were attended this study in an urban school district in New Jersey. At the beginning and end of the course, New Environmental

Paradigm Scale (NEP) was used to measure the environmental worldview of the students. ANOVA test was utilized and according to test result, there were no statistically significant differences between the groups' preprogram (F (3, 36) = .17, p = .91) and post-program (F (3, 36) = .01, p = 1.00). Besides, they reported that the majority of the students had an ecocentric worldview.

Onur et al. (2011) investigated value orientations, attitudes and concerns of the Turkish middle school students' (number of 952) in Turkey. It was stated that the socialization process affects the value orientation and much research was made in different countries with different cultures. Therefore, it is important to understand the value orientation toward the environment in Turkey because Turkey has a different background such as culture, life style, economic situation, geographic place etc., than places where most of the studies about value orientation made in. First of all, the students' environmental attitudes (ecocentrism, anthropocentrism and apathy), value orientation (egoism, biospherism and altruism) and environmental concern level were determined by using adapted version of environmental attitudes and apathy scale developed by Thompson and Barton (1994) and environmental motive concern scale developed by Schultz (2001). Later the relationships between the variables examined. It was come out that the students concern toward the environment and show more ecocentric attitudes. The students' environmental values did not differentiate clearly. Besides this, the relationship between these variables was parallel to the previous research such as, while anthropocentric individuals show a positive correlation between environmental apathy, ecocentric individuals show a negative significant relationship with environmental apathy.

Tuncer et al. (2007) conducted a study to examine Turkish middle school students' and pre-service teachers' attitudes toward the environment and whether there is a relationship between pre-services teachers' and middle students' attitudes toward the environment. The data was collected from 1235 Middle

students and 334 pre-service science teachers. The adapted version of the environmental attitude questionnaire developed by Worsly and Skrzypiec (1998) used in this study. The Chi-square test was conducted to examine the difference between pre-services teachers' and middle students' attitudes toward the environment. It found out that preservice science teachers were more aware of environmental problems than middle students were. It presented that Middle students care about the environment but they did not know how they protect the environment. On the other hand, pre-service teachers' attitudes toward the solution of the environmental problems higher than Middle students but pre-service science teachers also did not have enough environmental knowledge.

2.3 Responsible Environmental Behavior

Education has crucial purposes which are shaping human behavior e.g., successful consumerism, productive employment, responsible citizenship (Hungerfold, 1990). These behaviors were taken up in detail Tbilisi Intergovernmental Conference on Environmental Education (1977). The objectives of environmental education were defined as;

> Awareness-to help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems [and/ or issues]
> Sensitivity-to help social groups and individuals gain a variety of experiences in, and acquire a basic understanding of, the environment and its associated problems
> [and/or issues]
> Attitudes-to help social groups and individuals acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection
> Skills-to help social groups and individuals acquire skills for identifying and solving environmental problems [and/or issues]
> Participation-to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems [and/or issues] (Hungerford and Volk, 1990, p.9)

These objectives were prepared to overcome many environmental problems that humanity faced. On the other hand, many research revealed that although people are good feelings and attitudes, they are unwilling to behave environmentally (Gigliotti, 1990; Nispet et al., 2008). Gigliotti (1990) claims that the necessary changes in values had not formed so most people were unwilling to make personal sacrifices for the environment, therefore people need more knowledge about the roots of the environmental problems and specifically what actions they can and should take.

As a first step, many researchers tried to reveal the factors associated with responsible environmental behaviors (Arbuthnot, 1977; Hines et al. 1987). Arbuthnot (1997) investigated that recycling behavior, which is one of the responsible environmental behaviors, predicted by education, knowledge, and environmentally related attitudes and environmental knowledge predicted by information through books, personality, and attitudes. Hines et al. (1987) conducted a meta-analysis and presented a model related to predictors of environmental behavior. They found out that knowledge of issues, knowledge of action strategies, locus of control, attitudes, verbal commitment, and an individual's sense of responsibility were the predictors of responsible environmental behaviors.

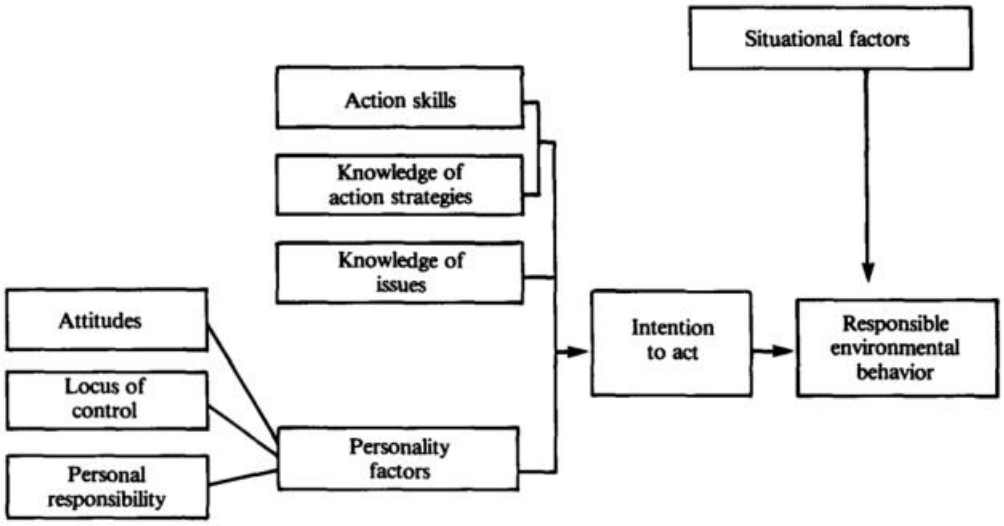

Figure 2. 2 The proposed Model of Responsible Environmental Behavior (Hines et al, 1986/1987, p7)

In this model, Hines et al. (1986) explained the variables of responsible environmental behaviors as situational factors, cognitive and affective variables. While cognitive factors included action skills, knowledge of action strategies and knowledge of issues, affective variables contained attitudes, locus of control and personal responsibilities. Situational factors were evaluated as external factors that sometimes lower or strengthen the other factors.

Alp et al. (2008) examined the variables, which are environmental knowledge and attitudes, behavioral intentions, environmental effects and students' locus of control on pro-environmental behaviors. The data collected from the number of 1140, 6th and 8th grade students in Ankara. It presented that although students did not have enough knowledge about environmental issues; they showed positive attitudes toward the environment. However, according to the test results, the students' behavioral intention was low. This shows that there is a gap between what they say and what they do. Besides this, environmental effect was a powerful

predictor for pro-environmental behaviors. Lastly, it was reported that students' locus of control is highly related to pro-environmental behaviors.

Erdogan (2011) to evaluate the effects of ecology-based nature education program on middle school students' environmental knowledge, environmental effect, and responsible environmental behavior conducted one pretest-posttest experimental study. In this study, 26 girls and 38 boys, age range between 8 and 13, were participated. At the beginning and the end of the program, some instruments, which were knowledge, affect, and behavior regarding environment, were applied. According to repeated measures of ANCOVA and t-test results, it was revealed that ecology-based nature education program promoted significantly to children's responsible environmental behavior [t (52) = -3.33, p<0.01, eta squared = 0.17]. The writer reported that nature-based educational programs promoted environmentally responsible behaviors because of enhancing students' sense of responsibilities, increase students' awareness of the dimensions of the environment, develop environmental values, the ones who know how to act on the protection of the environment tend to take an active role in environmental protection.

Another research was made by (Hsu, 2004), in Taiwan, to evaluate the effects of a 16 weeks environmental education course on responsible environmental behaviors and environmental literacy levels of college students. Before the course, pretest was applied to the experiment group (n=64) who had taken the environmental education course and the control group who had taken a normal course (n=57). Pretest results showed that both groups showed the same responsible environmental behavior. At the end of the course, posttest applied to both groups. Follow up tests applied for two groups every 2 months. The result of the study revealed that there was a statistically significant difference between the students who took the 16 weeks course and the others. The course contributed the students' responsible environmental behavior [F(1,118)=32.73, p<05], perceived

knowledge of environmental issues [$F(1,118)=5.38$, $p<05$], and perceived knowledge of and skills in using environmental action strategies [$F(1,118)=6.29$, $p<05$]. The researcher suggested that environmental education promote students' cognitive environmental literacy variables. Therefore, the environmental education program should use in formal and non-formal school settings.

To conclude, many factors affect peoples' behaviors. The review of the small number of study presented that there is a difference between people's action and thinking related with environmental issues. The negative behaviors can change with education.

CHAPTER 3

METHOD

The chapter presents some information on study context, population, and sampling, description of variables, measuring instruments, data collection and statistical techniques used in the analysis of data, assumptions, and limitations of the study.

3.1 Study Context

Igdır is a city with a population of two hundred thousand people on the east coast of Turkey. It occupies a place between high mountains and large plateau. It has a special climate and geologic structure from the nearside cities. It is hot and dry in summers and winters have a mild climate. Igdır is appropriate for mountain climbing and hiking, ecotourism, nature tourism, skiing, mountaineering, and paragliding. It has large biodiversity. Fox, wolf, rabbit, lynx, wild boar, vulture, eagle, viper snake, trout, and carp are some of the animals live in Igdır. Unfortunately, forest areas are almost non-existent. It contains only 0.6% of the land. Because of the migration, unplanned urbanization, and poor forest land, some environmental problems arise. According to Igdır Province Environmental Status Report 2017, air pollution, solid waste, noise, water, soil pollution and erosion are the problems that are ascertained Especially, it was found that the city is one of the most polluted cities in 2009 (Aras and Tekay, 2018).

3.2 Population and the Sample

This research is determined as a local study because the target population is all middle public school students in Igdır. There are 86 middle public schools. To reach all middle public school students in Igdır is not feasible because some of the schools are too far from the center. Reaching all the schools is time-consuming and expensive. Therefore, the accessible population was compulsory determined and the sample was minimized. As a sampling methodology, a convenient sampling method, which is non-random and can be defined as selecting the individuals who are available for the study, was used. The data was collected from five Middle public school located at the center of the city.

Table 3.1

Descriptions of the Sample (n=908)

Variables		n	Percentage (%)
Gender	Female	496	54.6
	Male	412	45.4
	Not labelled	-	-
Age	9	2	.2
	10	85	9.4
	11	292	32.2
	12	250	27.5
	13	161	17.7
	14	72	7.9
	15	16	1.8
	Not labelled	30	3.3
Grade Level	5	360	39.6
	6	232	25.6
	7	211	23.2
	8	73	8.0
	Not labelled	32	3.5
Home town	Rural	19	21.4
	District	79	8.7
	Province	609	67.1
	Not labelled	26	2.9

A total of 908 fifth, sixth, seventh and eighth grade public school students participated in the study. Among them, 360 fifth graders (39.6%), 232 sixth graders (25.6 %), 211 seventh graders (23.2%), 73 eighth graders (8.0%) and 32 students (3.5%) did not label their grades. There were 496 female students (54.6%) while 412 students (45.4%) were male in the sample.

The students' age was ranging from 9 to 15 with a mean of 11.87 (SD=1,18). In addition, 67.1 percent of the students (n= 609) defined their hometown as a province, 21.4 percent of them (n=194) defined as rural, and 8.7 percent of the students defined as a district. All statistics demonstrated in Table 3.1

3.3 Variables

In this study, independent variables were identified as nature relatedness and attitudes toward environment and dependent variable was labelled as children's environmentally responsible behaviors.

3.3.1 Independent Variables

Independent variables are chosen to examine the probable effects on other variable(s) (Fraenkel & Wallen, 2006). In this research, children's environmentally responsible behaviors were selected as independent variables. Nature Relatedness composed of three dimensions Nature Relatedness self, experience and perspective. In addition, Attitudes toward Environment has two dimensions that are ecocentrisim and anthropocentrism.

NR-Experience assesses the physical proximity with the natural world.

NR-Self measures internalized identification with nature.

NR-Perspective measures to what extent the individuals show an external, nature-related worldview.

Ecocentrism measures to what extent individuals concern environmental issues because of natures' own sake.

Anthropocentrism measures to what extent individuals concern environmental issues because of their effects on human quality of life and survival.

3.3.2 Dependent Variable

This variable selected to examine the effects of independent variable on dependent variable (Büyüköztürk et al., 2008). In the present study, children's responsible environmental behaviors (CREB) selected as dependent variable.

Responsible Environmental Behavior; this variable includes acquired or learned behaviors (actions) to solve environmental problems and resolving issues (Sia, Hungerford, and Tomera 1985/1986).

3.4 Instruments

3.4.1 Demographic Questionnaire

Demographic questionnaire was used to get demographic information of the students. The questionnaire included 4 questions; gender, age, grade level, where do you grow up (Rural, District, Province)?

3.4.2 Nature Relatedness (NR)

Nature relatedness level of the students was measured by using preexisting instrument, Turkish adapted version of the Nature Relatedness Scale (NR) (Çakır, Karaarslan, Şahin, & Ertepınar, 2015). The scale contains three factors, which are NR-self, NR-perspective and NR-experience and 21 Likert type items with a 5 point response scale (strongly agree to strongly disagree). NR-self contains 12 items to measure the feelings of the participants, such as 'I feel very connected to all living things and the earth'. NR-perspective includes 4 items to measure the participants' actions and impacts on nature. For example, 'humans have the right to use natural resources any way we want'. Lastly, NR-experience has 3 items and shows a physical connection with nature. An example of one of the items for NR-experience is 'I do not often go out in nature'. The combination of these factors gives the measure of Nature relatedness of the participants. Çakır et al. (2015) noted that when the scale was translated into Turkish, the instrument was translated according to Turkish tradition, culture and social structure also examined by experts.

It was expected from the students to rate the items on a 5 point Likert type scale ranged from 1 to 5. One point was assigned to ''strongly disagree'', 2 to ''disagree'', 3 to ''undecided'', 4 to ''agree'' and 5 to ''strongly agree.

The data obtained from the scale entered to the SPSS program and reverse scored appropriate items. Then controlled KMO and Bartlett's test whether the data have an appropriate structure or not. Exploratory factor analysis (N=908) was conducted. According to the KMO and Bartlett's test, the KMO value is .92 and Bartlett's test of sphericity is significant ($p<.05$). Tabachnick and Fidell (2007) indicated that if KMO index should be at least .6 for good factor analysis. Nispet et al. (2008) and Bahar (2015) study indicated that the factors were correlated so Promax rotation was selected in this research ($\kappa = 4$). According to analysis result, three factors were extracted first-four eigenvalues were 5.75, 1.75, 1.26 and 1.05) accounting for 46.75% of the total variance. Besides, Catells's scree plot method also shows three-factor model. The result of the factor analysis showed that the items were loaded on three factors, which are labelled as self, experience, and perspective, which are the same with the original scale (Table 3.3). Two items, which were loaded on two factors, extracted from the analysis. Some items related with experience factor in the original scale were loaded in self factor. The result was similar to Bahar (2015) research so it is supported that Middle grade students' internalized identification is connected with their physical familiarity.

Table 3. 2

Factors Loadings of NR Scale Items

Item number	Factor Loadings		
	Self	Experience	Perspective
NR17	.750		
NR7	.747		
NR12	.702		
NR9	.669		
NR1	.630		
NR21	.629		
NR8	.609		

Table 3.2 (continued)

NR16	.593		
NR5	.587		
NR6	.551		
NR19	.514		
NR20	.480		
NR3		.673	
NR2		.665	
NR18		.555	
NR14			.623
NR10			.603
NR13			.594
NR11			.587

For this study, Cronbach's alpha coefficient is 0.80 for NR-self dimension, 0.63 for NR-perspective and 0.61 for NR-experience. Cronbach's alpha coefficient should be larger than 0.70 for internal consistency. NR perspective and NR experience dimensions alpha coefficients were smaller than 0.70. Small alpha coefficient level can depend on low item number (Pallant, 2011). Cronbach's alpha coefficient of whole scale was found as 0.86 which showed quite high reliability.

3.4.3 Attitudes toward the Environment

Attitudes toward Environment scale which Thompson and Barton (1994) had developed to measure students' motives. The original scale was contained three components, which were ecocentrism, anthropocentrism, and general apathy. In this study, ecocentrism and anthropocentrism dimensions covered because these dimensions used to explain apathy toward the environment. The scale adapted and

translated to Turkish according to Turkish tradition and culture by Eryiğit (2010). The translated version of the scale was used. The scale contained 21 items in which 13 items belonged to ecocentrism and 8 items belonged to the anthropocentrism dimension. Participants rated the Likert scale ranging from 5 (1, strongly disagree; 2, disagree; 3, undecided; 4, agree; 5, strongly agree).

For this study, KMO (.92) and Bartlett's ($p<.05$) test were controlled and confirmatory factor analysis was conducted. Ecocentrism items were loaded on factor 1 and Anthropocentrism items were loaded on factor 2. 2 items were not included in the analysis because of negative factor loading.

Table 3. 3

Factor analysis of Environmental Attitude Scale

Item	Factor	
Number	1	2
EA 13	.799	
EA 11	.775	
EA 9	.704	
EA 7	.667	
EA 17	.625	
EA 4	.610	
EA 1	.571	
EA 15	.553	
EA 3	.481	
EA 20	.479	
EA 2	.397	
EA 18	.343	
EA 14		.606
EA 10		.505
EA 8		.451
EA 21		.429
EA 5		.409
EA 6		.405
EA16		

Internal consistency reliability test was conducted. According to the test result, Cronbach alpha value was .86 for ecocentrism dimension and .54 for anthropocentrism dimension. Although Cronbach alpha value is low, it was accepted because there are 8 items (Pallant, 2011). Whole scale alpha value was .81 which was acceptable value for internal consistency.

3.4.4 Children's Responsible Environmental Behaviors

In the present study Children's Responsible Environmental Behavior scale (CREBS) adopted from studies of Erdogan et al. (2012) and Alper (2014), used to assess the students' behaviors toward environment. CREBS contains four factors which are political action; individuals help to prevent and resolve environmental problems by using governmental and political means, physical action; individuals help to prevent and resolve the environmental problems by involving directly in nature, consumer and economic action; consumer and economic action; individuals help to prevent and resolve environmental problems by using monetary support or financial pressure, individual and public persuasion; individuals or groups help to prevent and resolve environmental problems and issues by encouraging and appealing others (Erdogan et al., 2012). In the present study, it was focused only physical action and individual and public persuasion dimensions of CREB because it was believed that these dimensions were adequate to demonstrate students' responsible environmental behaviors.

In this research, it was expected from the participants to rate the items according to how often they do these behaviors in 1 year. They rated the items on a five point scale ranging from 'always' to 'never' (i.e., 1=never, 2=rarely, 3=sometimes, 4=often, 5=always).

In order to validate the structure of the test the Kaiser-Meyer-Olkin (KMO) and Barttlet's test utilized. The KMO value is .94 and the test result statistically significant according to Barttlett's test value smaller than .05. Table 3.4 shows that physical action items clustered on factor 1, also individual and public persuasion dimensions clustered on factor 2. However, there was one item which belongs to physical dimension. In this study, it clustered inside of the persuasion dimension. Therefore, this item is removed from the scale.

Table 3. 4

Factor Analysis of CREB Scale

Item Number	Factor	
	1	2
CREB 18	.743	
CREB 11	.719	
CREB 16	.689	
CREB 9	.645	
CREB 12	.636	
CREB 17	.609	
CREB 13	.532	
CREB 14	.488	
CREB 10	.457	
CREB 15	.420	
CREB 6		.694
CREB 5		.685
CREB 4		.625
CREB 7		.540
CREB 2		.452
CREB 3		.420
CREB 1		.386
CREB8		.351

In the present study, Cronbach alpha coefficient was .80 for physical action and .87 for individual and public persuasion dimensions. In addition, reliability of the whole scale was found .90 which shows that the scale has higher internal consistency.

3.5 Procedures

In this research, it was examined nature relatedness, environmental attitudes toward the environment, children's responsible environmental behaviors and relation between these constructs. The participants were 5th, 6th, 7th and 8th grade Middle public school students in Iğdır. Firstly, the researcher conducted a literature review by using the keywords such as connection to nature, nature relatedness, and environmental attitudes, environmentally responsible behaviors, and Middle school students, etc. The documents about content and subject analyzed very carefully. The studies, which were made in different places and sample, are related to connection to nature, responsible behaviors toward the environment and attitudes toward the environment were examined. It was preferred to use an existing instrument because to create an instrument is hard work and needs too much time and controlled validity and reliability of the instruments. It was decided to use a more appropriate instrument to measure nature relatedness, children's responsible environmental behavior and attitudes toward environment. Content-related evidence, criterion-related evidence and construct-related evidence of validity and reliability were evaluated to reach more concrete inferences. For content related evidence; it was evaluated the previous research results and experts' opinions were taken about the appropriateness of the items' language, the purpose of the study and participants' characteristics, etc. Construct-related evidence of validity controlled by examining the factor analysis of the instruments. To control the reliability, the internal consistency reliability of the instruments was examined.

The necessary permission was taken from the authors who developed the instruments, Ethical Committee of Graduate School of Social Sciences at Middle East Technical University and Directorate of National Education of Igdır. Later, the main study was applied to the accessible population in Igdır by considering internal validity threats such as location and subject characteristics threat. It will be tried to eliminate or minimize these threats. The data was collected one point in time and the duration of the study was decided as 40 min according to pilot study. And after data was collected, the participants' identity was kept in secret and analyzed very carefully.

After the data gathered from the study, they were entered in the Statistical Package for the Social Sciences Program (SPSS). All variables were coded according to the categories by the researcher. Female students were coded as 1, and male students were coded as 2. The age level of the students did not code. Fifth grade students were coded as 5, sixth grade students were coded as 6, seventh grade students coded as 7 and eighth grade students coded as 8. For the environment item, "urban" was coded as 1, "district" was coded as 2, and "province" was coded as 3. For the multiple choice items in nature relatedness and attitudes toward environment scale , "strongly agree" was coded as 5, "agree" was coded as 4, "undecided" was coded as 3, "disagree" was coded as 2, "strongly disagree" was coded as 1. For the children's environmental responsible behavior scale, never coded as 1, hardly coded as 2, sometimes coded as 3, frequently coded as 4 and always coded as 5.

3.6 Statistical Techniques Utilized in the Study

SPSS was utilized to analyze the data. The data were analyzed in three parts; in the first part preliminary data analysis was performed in order to handle missing data, normality, and outlier check, in the second part descriptive statistics was

performed and in the last part inferential statistics was conducted. Mean, median and mode was calculated to see the central tendency of the sample. Standard deviation was also calculated to understand how the values are differentiated. Later, scatterplot were generated by using SPSS program to see the characteristics of the relationship. Correlation coefficient (r) also was calculated to see whether there is a relationship between these constructs or not. According to Fraenkel and Wallen (2006), if correlation coefficient is below .35, this shows that slight relationship. If correlation coefficient is between .40 and .60, this demonstrates that it has theoretical value depending on the context and correlation coefficient is bigger than .65, accurate prediction can be made between variables. If correlation over than .85, this indicates that strong relationship and researcher should be careful because the variables can measure same characteristics.

3.6.1 Preliminary Data Analysis

Preliminary data analysis was made at the beginning of the study to prepare the data to get a more accurate result. At first, missing data analysis was conducted by controlling the percentage of the missing data. The same missing data exited in the sample but it was less than 5% of the answers and they were randomly distributed in the items. To handle the missing values, they replaced by the mean scores of the item. Demographic variables (gender, grade, etc.) were not replaced by the mean score.

Secondly, normality assumption was checked because multiple regression analysis requires normally distributed data as a prerequisite. Therefore, in the present study, univariate normality of the data was controlled by skewness and kurtosis values. Skewness and kurtosis values of some items are between -1 and +1 which can be accepted excellent but some values are between -2 and +2 which are also acceptable according to George and Mallery (2003).

Lastly, outliers were controlled by looking maximum and minimum values of the answers in the frequency distribution table.

3.6.2 Descriptive Statistics

The data obtained from the demographic questionnaire was used to calculate mean and standard deviation statistics. And these statistics were used to examine the Middle school students' nature relatedness, attitudes toward environment and children's responsible environmental behavior.

3.6.3 Inferential Statistics

Statistical techniques were utilized to see the relationship between nature relatedness, attitudes toward environment and children's responsible environmental behavior of Middle grade students. By using the SPSS program, multiple linear regression analysis was conducted to see the relationship between them. It will be decided whether there is a relation between Middle school students' nature relatedness, attitudes toward environment and responsible environmental behaviors.

3.7 Assumptions and Limitations

3.7.1 Assumptions

1. The participants of the study responded to the items honestly.
2. The instrument was applied to students under the same conditions.

3. The students did not interact with each other during the instruments' administration.

3.7.2 Limitations

1. The data might not represent the complete objectivity because it is a self-report measure
2. The participant Middle grade students may not represent the population of interest.
3. A qualitative study might be conducted to make clear statements concerning for the results of the quantitative analysis.
4. The number of items presented in the questionnaire may not be sufficient to grasp the students' responsible environmental behaviors, nature relatedness and related attitudes toward the environment.

3.8 Internal Validity Threats

Mortality; It was distributed the instruments one point in time and collected them. So mortality did not effect on internal validity but it is a threat to external validity. The sampling group size was large as much as possible to decrease the effect of mortality threat.

Lose of the subject; if the sample size is low, the loss of subjects can be a treat, but in this study, there were 908 students so the loss of subjects was not a treat.

Location; Applying the instrument in a different locations can create location threat. To eliminate this threat, the researcher was applied the instrument in a location with the same characteristics.

Instrumentation; to decrease the instrumentation threat, the same person collected the data and he/she should behave same against to all participants. The research scales are 5 points Likert type so instrument decay was not a threat.

In addition, it has got as much as possible information about the characteristics of subject characteristics, instrumentation, and location to minimize the effects of the threats.

CHAPTER 5

RESULT

This chapter presents the results of descriptive and inferential statistics. In the part of the descriptive statistics, mean scores of nature relatedness, attitude toward environment, and children's responsible environmental behaviors, standard deviation, minimum and maximum values and frequency analyses were used. The inferential statistics part, on the other hand, consisted of correlation analysis among nature relatedness, attitude toward environment and children's responsible environmental behaviors and was utilized from multiple linear regression analyses.

4.1 Descriptive Statistics

In this part, descriptive statistics results regarding nature relatedness, attitude toward environment and children's responsible environmental behaviors presented.

4.1.1 Descriptive Statistics of Nature Relatedness Scale

In this part, the responses of students to the nature relatedness were handled. The descriptive statistics involving mean scores, standard deviations of nature relatedness scale concerning for gender and grade level depicted in Table 4.1.

Table 4. 1

Mean and Standard Deviation of NR Scale Concerning for Gender and Grade level

		NR self		NR experience		NR Perspective	
Grade Level	**Gender**	**M**	**SD**	**M**	**SD**	**M**	**SD**
	Girl	3,72	0,88	3,43	1,00	3,98	1,05
5	Boy	3,59	0,84	3,44	0,95	3,87	0,99
	Total	3,66	0,87	3,43	0,98	3,93	1,02
	Girl	3,80	0,90	3,42	0,92	4,01	0,93
6	Boy	3,61	0,80	3,34	1,08	3,66	1,03
	Total	3,71	0,86	3,38	0,99	3,84	0,99
	Girl	3,97	0,62	3,41	0,90	4,26	0,77
7	Boy	3,76	0,79	3,42	0,88	3,80	1,05
	Total	3,88	0,70	3,41	0,89	4,08	0,92
	Girl	3,89	0,72	3,64	1,05	4,23	0,93
8	Boy	3,80	0,73	3,60	1,05	4,07	0,94
	Total	3,85	0,72	3,62	1,04	4,15	0,93
	Girl	3,82	0,82	3,44	0,96	4,08	0,95
Total	Boy	3,65	0,81	3,42	0,98	3,81	1,01
	Total	3,74	0,82	3,43	0,97	3,96	0,99

As reported in Table 4.1, the total mean scores of Nature Relatedness Scale is between higher than 3, indicating that students of this study had a relatively high connection with nature. Perspective items (*M*=3.96) demonstrates that students had an external, nature-related worldview. They worried about human actions and their impact on all living things. According to self-items, the students were connected with nature and showed the ecological identity with nature (*M*=3.74). In addition, experience items (*M*=3.43) represent that students reflected physical familiarity with nature.

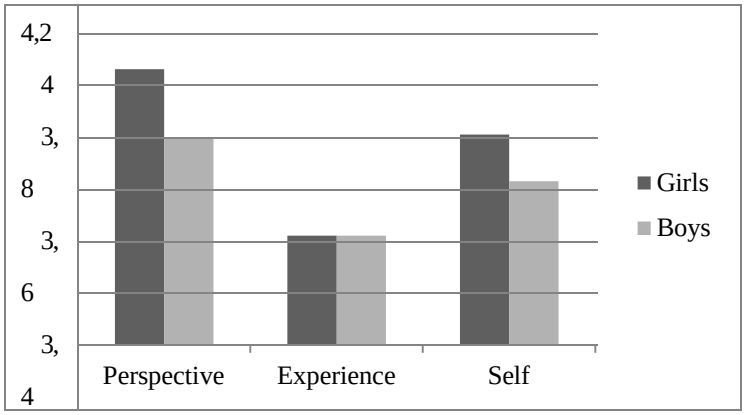

Figure 4. 1 Clear picture of Nature Relatedness Scale with Respect to Gender

Concerning gender, girls compared to boys gained higher scores from the perspective (M=4.06) and self_items (M=3.81) than boys' perspective (M=3.80) and self (M=3.63) which demonstrates that girls have higher internalized identification with nature and they worried about impacts of human activities on the natural world. Boys and girls mean scores of experience are M=3.42 which means that they have the same physical familiarity with the natural world.

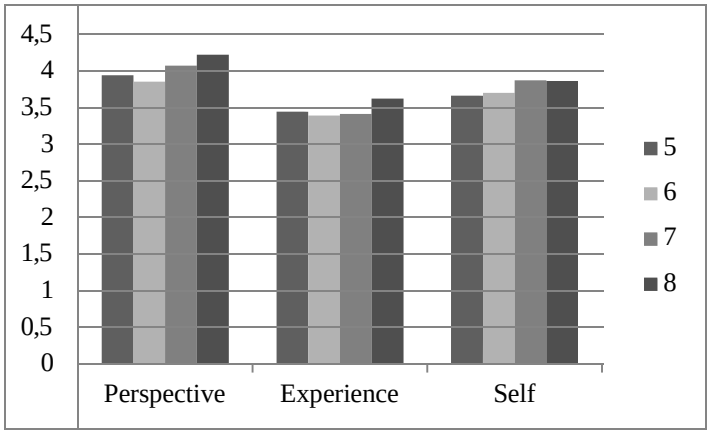

Figure 4.1 Clear picture of NR Scale with Respect to Grade level

It was compared the students' grade level and nature relatedness. Figure 4.1 revealed that, 8th grade students' mean scores of self (*M*=3,87), experience (*M*=3,63) and perspective (*M*=4,23) are higher than 5th grade students' mean scores of self (*M*=3,67), experience (*M*=3,45) and perspective (*M*=3,95). 6th grade students' mean scores of self is3,71, of experience is 3,40 and of perspective is 3,86. In addition, 7th grade students' mean scores of self is3,88, of experience is 3,42 and of perspective is 4,08. It can be interpreted that in generally, students' connection with nature increased with grades.

Table 4. 2

Frequency table of NR Scale with Self Statements Corresponding Item means and Standard Deviations

Items	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**	**Item M**	**Item SD**
My connection to nature and the environment is a part of my spirituality	11.1	3.5	4.5	18.4	40.9	4.1	1.33
My relationship to nature is an important part of who I am	12.6	7.3	19.4	17.7	40.6	3.6	1.38
I am not separate from nature, but a part of nature	11.9	7.9	19.8	22.7	35.4	3.6	1.34
I always think about how my actions affect the environment	11.1	4.7	13.4	24.2	44.6	3.8	1.32
I am very aware of environmental issues	9.6	13.4	7.7	23.5	53.7	4.0	1.27

Table 4.2 (continued)

I think a lot about the suffering of animals	16.0	3.9	5.4	17.0	57.7	3.9	1.49
I take notice of wildlife wherever I am	8.4	7.3	23.2	23.6	35.1	3.7	1.24
I feel very connected to all living things and the earth	10.6	4.6	24.2	24.3	33.1	3.6	1.26
I enjoy digging in the earth and getting dirt on my hands	15.5	11.5	14.3	17.5	39.4	3.5	1.48
The state of nonhuman species is an indicator of the future for humans	11.5	7.6	26.2	18.0	33.8	3.5	1.32

Table 4.2 demonstrates the self-dimensions' frequencies, mean and standard deviation scores of the Nature Relatedness Scale. Self-dimension contains five point Likert type items. According to table 4.3, majority of the students (74%) indicated their agreement on the item with the idea that "I think a lot about the suffering of animals" and "I am very aware of environmental issues" (77%). However, 27% of the students indicated their *disagreement* on the item that "I enjoy digging in the earth and getting dirt on my hands". Moreover, 24% of the participants were *unsure* of the statement, which is "I feel very connected to all living things and the earth". All items and answers related to self-dimension of the Nature Relatedness scale can be seen from Table 4.2.

Table 4. 3

Frequency Table of NR Scale with Experience Statements Corresponding Item means and Standard Deviations

Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Item M	Item SD
My feelings about nature do not affect how I live my life	30.7	17.6	26.0	11.9	13.9	3.3	1.37
I don't often go out in nature	35.6	21.7	19.9	12.4	10.5	2.4	1.35
The thought of being deep in the woods, away from civilization, is frightening	32.1	17.5	19.6	12.2	18.7	2.6	1.49
Nothing I do will change problems in other places on the planet	30.8	15.2	24.5	8.8	20.7	2.7	1.49
Animals, birds and plants have fewer rights than humans	61.8	13.3	8.0	6.5	10.3	1.1	1.41

Table 4.3 indicates the students' answers to the experience dimension which is related with the students' physical familiarity with natural world. According to the table, most of the students disagree with the sentences 'Animals, birds and plants have fewer rights than humans' (70%), 'I don't often go out in nature' (57%), 'The thought of being deep in the woods, away from civilization, is frightening' (49%). Detailed information about the experience dimension was given in Table 4.3.

Table 4. 4

Frequency Table of NR Scale with Perspective Statements Corresponding Item means and Standard Deviations

Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Item M	Item SD
Conservation is unnecessary because nature is strong enough to recover from any human impact	67.2	10.0	7.4	5.3	10.1	1.8	1.35
Some species are just meant to die out or become extinct	52.7	14.0	16.9	8.0	8.5	2.0	1.33
Humans have the right to use natural resources any way we want	48.6	18.3	13.1	7.8	12.2	2.17	1.41

Table 4.4 demonstrates the students' responses to perspective dimension which had higher mean score (*M*=3.96). According to the table, vast majority of the students refuse the idea of 'Conservation is unnecessary because nature is strong enough to recover from any human impact' (77%), 'Some species are just meant to die out or become extinct' (66%) and 'Humans have the right to use natural resources any way we want' (66%).

4.1.2 Descriptive Statistics of Attitudes toward Environment

In this section, the descriptive statistics (mean and standard deviation) of environmental attitude scale respect to gender and grade level were demonstrated in Table 4.5. The table indicates that the mean scores of the current study were;

ecocentric *M*= 3.80 and anthropocentric *M*= 3.20, which means that most of the students support the environmental issue because of nature own sake.

Table 4. 5

Mean and Standard Deviation of Environmental Attitude Scale with Respect to Gender and Grade level

		Ecocentric		**Anthropocentric**	
Grade Level	**Gender**	**M**	**D**	**M**	**SD**
5	Girl	3.77	0.82	3.16	0.61
	Boy	3.73	0.79	3.21	0.66
	Total	3.75	0.81	3.18	0.63
6	Girl	3.81	0.85	3.15	0.56
	Boy	3.70	0.84	3.20	0.67
	Total	3.76	0.84	3.17	0.62
7	Girl	4.02	0.61	3.25	0.59
	Boy	3.77	0.73	3.25	0.62
	Total	3.92	0.67	3.25	0.60
8	Girl	3.98	0.77	3.29	0.43
	Boy	3.74	0.85	3.15	0.56
	Total	3.87	0.81	3.23	0.49
Total	Girl	3.86	0.78	3.19	0.58
	Boy	3.73	0.80	3.21	0.64
	Total	3.80	0.79	3.20	0.61

Regarding the gender, girls (*M*=3.86) shown more ecocentric value orientation than boys (*M*=3.73). On the contrary, boys (*M*=3.21) had anthropocentric value orientation than girls (*M*=3.86).

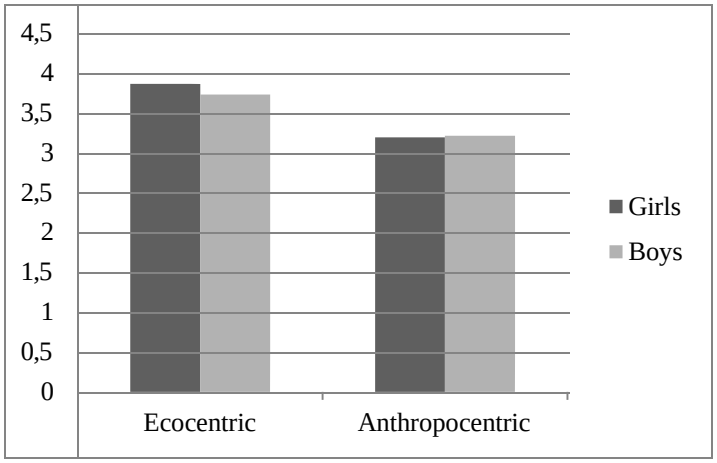

Figure 4. 2 Clear Picture of Environmental Attitude Scale with Respect to Gender

Regarding the grade level, in generally, 7th (*M*=3.92) grade students had more ecocentric value orientation than other grade levels. In addition, 7th (*M*=3.25) grade students had more anthropocentric value orientation than other grade levels.

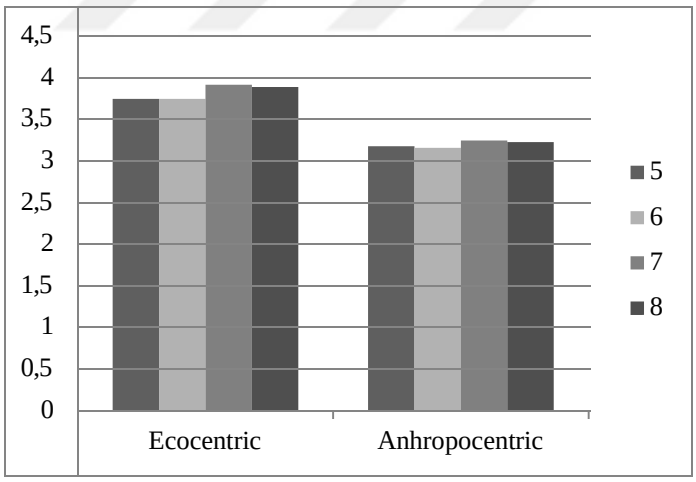

Figure 4.2 Clear picture of Environmental Attitude Scale with Respect to Grade Level

Table 4.6 demonstrated that the level of agreement to Environmental Attitude Scales' items about ecocentric attitude. The scale, five point Likert type composed of 20 items. Majority of the students agreed the statements like 'It makes me sad

to see natural environments destroyed' (76%), 'Nature is valuable for its own sake' (75%), 'Human are as much a part of the ecosystem as other animals' (69%), 'One of the most important reasons to conserve is to preserve wild areas' (73%), 'One of the worst things about overpopulation is that many natural areas are getting destroyed for development' (66%), 'Being out in nature is a great stress reducer for me' (67%), 'Sometimes when I am unhappy I find comfort in nature' (66%), 'I need time in nature to be happy' (66%), 'Sometimes it makes me sad to see forests cleared for agriculture' (63%), 'Sometimes animals seem almost human to me' (56%). On the other side, thirty percent of the students were undecided with the sentences of 'I prefer wildlife reserves to zoos'. The items were presented in the Table 4.6 in detailed.

Table 4. 6

Frequency table of Environmental Attitude Scale with Ecocentrism Statements Corresponding Item means and Standard Deviations

Items	**Strongly Disagree**	**Disagree**	**Undecided**	**Agree**	**Strongly Agree**	**Item M**	**Item SD**
Human are as much a part of the ecosystem as other animals	11.8	4.0	14.2	18.5	50.7	3.93	1.36
One of the worst things about overpopulation is that many natural areas are getting destroyed for development	9.7	7.6	13.7	14.2	51.9	3.93	1.35
Sometimes animals seem almost human to me	14.4	9.0	18.7	21.6	34.9	3.54	1.41
Being out in nature is a great stress reducer for me	12.2	5.9	12.4	16.9	50.2	3.89	1.40

Table 4.6 (continued)

Nature is valuable for its own sake	7.5	4.0	9.6	17.4	58.5	4.19	1.21
It makes me sad to see natural environments destroyed	7.7	3.6	7.8	17.7	59.3	4.21	1.21
Sometimes when I am unhappy I find comfort in nature	9.8	4.8	14.4	18.9	47.8	3.94	1.30
I need time in nature to be happy	6.5	7.5	18.1	22.2	44.5	3.91	1.22
Sometimes it makes me sad to see forests cleared for agriculture	10.9	7.8	15.1	18.6	44.8	3.80	1.36
I prefer wildlife reserves to zoos	24.6	10.9	30.3	12.8	21.9	2.96	1.44
One of the most important reasons to conserve is to preserve wild areas	8.8	5.4	12.6	20.6	52.5	4.02	1.28
I can enjoy spending time in natural settings just for the sake of being out in nature	10.4	7.2	21.7	22.6	37.0	3.69	1.30
It bothers me that humans are running out of their supply of oil	13.8	12.3	25.2	19.3	28.9	3.37	1.37

Table 4.7 revealed that students' agreement level of anthropocentric value orientation. The majority of the students agreed the statements such as 'Nature is important because of what it can contribute to the pleasure and welfare of humans' (57%). On the other hand, Most of the students rejected the items such as 'Only economically important plants and animals should be protected' (63%). Most of the students were undecided some statements like 'The worst thing about

the loss of the rain forest is that it will restrict the development of new medicines' (34%) and 'Continued land development is a good idea as long as a high quality of life can be preserved' (29%).

Table 4. 7

Frequency table of Environmental Attitude Scale with Anthropocentrism Statements Corresponding Item means and Standard Deviations

Items	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Item M	Item SD
The thing that concerns me most about deforestation is that there will not be enough lumber for future generations	23.1	9.1	22.0	15.0	29.5	3.18	1.52
One of the best things about recycling is that it saves money	19.1	11.3	19.8	18.3	29.8	3.30	1.52
Nature is important because of what it can contribute to the pleasure and welfare of humans	10.9	8.8	20.5	18.2	39.4	3.67	1.35
Continued land development is a good idea as long as a high quality of life can be preserved	13.1	11.5	29.5	16.9	26.1	3.92	1.30
Only economically important plants and animals should be protected	53.5	10.2	11.1	4.2	18.4	2.21	1.55
The worst thing about the loss of the rain forest is that it will restrict the development of new medicines	16.3	7.4	34.4	12.7	25.9	3.25	1.35

4.1.3 Descriptive Statistics of Children's Responsible Environmental Behaviors Scale

Children's Responsible Environmental Behaviors (CREBS) evaluated two dimensions of responsible environmental behavior which were physical action and individual and public persuasion. Mean scores and standard deviation of CREBS dimensions are demonstrated in Table 4.8.

Table 4. 8

Mean and Standard Deviation of Children's Responsible Environmental Behaviors Scale with Respect to Gender and Grade level

		Physical		Persuasion	
Grade Level	Gender	M	SD	M	SD
5	Girl	4.18	0.70	3.43	0.93
	Boy	3.88	0.84	3.23	0.88
	Total	4.04	0.78	3.34	0.91
6	Girl	4.04	0.76	3.33	0.94
	Boy	3.84	0.94	3.29	1.04
	Total	3.94	0.86	3.31	0.99
7	Girl	4.10	0.63	3.32	0.91
	Boy	3.87	0.80	3.18	0.92
	Total	4.01	0.71	3.26	0.92
8	Girl	3.93	0.62	2.89	1.18
	Boy	3.77	0.91	3.31	0.78
	Total	3.86	0.76	3.08	1.03

As demonstrated at the Table 4.7, physical dimension scores (*M*=3.86) were higher than persuasion dimension scores (*M*=3.08). In other words, students involve in natural world directly and they encourage the other to solve the environmental problems. Moreover, physical dimension scores of the girls (*M*=4.06) higher than boys (*M*=3.85) and also persuasion dimension scores of girls (*M*=3.33) higher than boys (*M*=3.24). The clear pictures were presented in the Figure 4.3 in detailed.

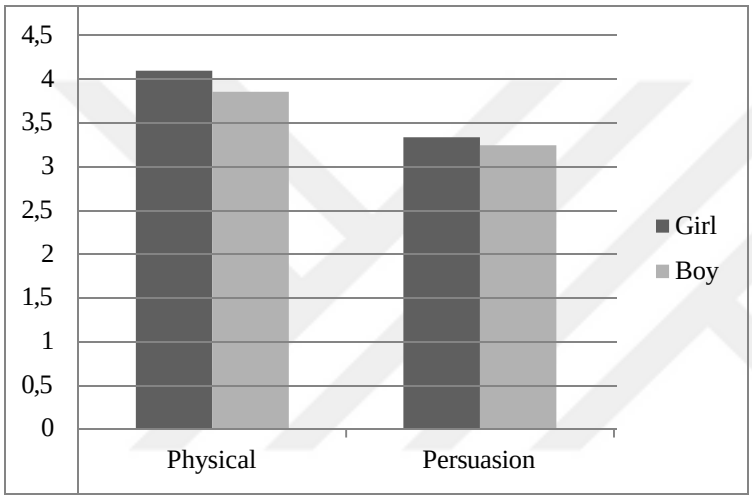

Figure 4. 3 A Clear Picture of CREB Scale with Respect to Gender

Table 4.9 demonstrated the students' agreement level of physical action items which was the part of the Children's Responsible Environmental Scale. The students rated the scale how often they did the written statements in one year. The majority of the students reported that they always made some statements, such as 'For energy saving, I turned off the lamps if I am the last person left in.' (62%), 'I threw my garbage to bins in street, school and home' (59%),'I threw materials such as paper, glass, plastic, cans, aluminum, and batteries into recycling bins' (40%), 'I gave old books, dress, toys, and other things, which are not used, to people and institutions in need' (46%) and 'I took steps to conserve water (e.g.

turning off the fountains not in use, using little water while brushing my teeth, bathing, and washing hands)' (57%), Most of the students answered as always sentence 'I picked up litter, trash, and garbage in schools, picnic areas, parks, and street and threw them in garbage bins' (36%).

Table 4. 9

Frequency Table of CREBS with Physical Action Statements Corresponding Item means and Standard Deviations

Items	Never	Rarely	Sometimes	Frequently	Always	Item M	Item SD
I picked up litter, trash, and garbage in schools, picnic areas, parks, and street and threw them in garbage bins.	10.5	5.6	36.0	17.7	28.4	3.48	1.24
I threw materials such as paper, glass, plastic, cans, aluminum, and batteries into recycling bins	5.5	7.3	26.1	18.9	40.3	3.82	1.19
I took steps to conserve water (e.g. turning off the fountains not in use, using little water while brushing my teeth, bathing, and washing hands)	5.2	4.2	12.7	18.0	57.3	4.21	1.13
I took steps to protect Natural environment (i.e. watering the trees and flowers, feeding the birds and other animals)	6.5	8.1	21.5	20.4	41.6	3.84	1.23
I threw my garbage to bins in street, school and home.	3.9	3.2	12.0	17.4	59.5	4.30	1.04

Table 4.9 (continued)

For energy saving, I turned off the lamps if I am the last person leaved in.	4.4	4.8	10.5	15.5	62.6	4.29	1.11
I gave old books, dress, toys, and other things, which are not used, to people and institutions in need	6.9	5.9	21.0	17.4	46.8	3.92	1.24

Table 4.10 represented the means and standard deviations of items related to individual or group persuasion scores. Most of the students answered as frequently some statements such as 'I shared information about environmental issues' (36%), 'I warned people about threw materials such as paper, glass, plastic, cans, aluminum, and batteries into recycling bins' (35%), 'I suggested to people around me buy products which are recyclable and which are made from recycled materials (40%). 25 percent of the students answered the statement as sometimes and other 25 percent as always 'I warned individuals or groups involved in some kind of destructive environmental behavior to stop (e.g., not to use water and electricity if not necessary to)'. The items were presented in Table 4.10 more detailed.

Table 4. 10

Frequency table of CREBS with Persuasion Statements Corresponding Item means and Standard Deviations

Items	Never	Rarely	Sometimes	Frequently	Always	Item M	Item SD
I warned individual or group involved in some kind of destructive environmental behavior to stop (e.g., not to use water and electricity if not necessary to)	14.3	15.3	25.9	16.7	25.1	3.23	1.35
I shared information about environmental issues	9.3	11.3	22.0	19.3	35.9	3.62	1.31
I prepared posters, pictures, and writings about protecting environment in order to hang on the bulletin boards at school and on the streets	27.9	18.4	19.9	11.3	20.4	2.77	1.47
I asked for support protection of natural world my family/ teacher/friends	14.9	16.7	24.2	13.8	28.3	3.24	1.40
I warned people about threw materials such as paper, glass, plastic, cans, aluminum, and batteries into recycling bins	8.7	10.6	25.8	17.3	35.1	3.61	1.29
I suggested to people around me buy products which are recyclable and which are made from recycled materials	11.7	8.3	21.8	16.0	40.0	3.65	1.37
I suggested to people around me to purchase products fresh, healthy, organic/ ecological	12.8	12.7	23.1	14.6	34.1	3.45	1.39

Table 4. 10 (continued)

I prepared posters, pictures, and writings about protecting environment in order to hang on the bulletin boards at school	26.9	17.6	21.0	11.2	20.0	2.79	1.45
I talked with my family, my friends and other people not to use water and electricity if not necessary	13.0	12.9	20.5	16.6	34.3	3.47	1.40
I talked with people around me to participate in environmentally friendly campaigns/activities	20.7	17.6	21.8	13.4	24.2	3.02	1.45

4.2 Inferential Statistics

In this part, the results of the Multiple Linear Regression Analysis were examined. Multiple linear regression analysis was utilized to investigate the relationship between one continuous dependent variable and several independent (predictors) variables (Pallant, 2011). In the present study, it was analyzed whether there was a relationship between children's responsible environmental behaviors with the nature relatedness and environmental attitudes of the students.

4.3 Assumptions

The assumptions of Multiple Linear Regression analysis were discussed before the analysis was conducted. The assumptions of Multiple Linear Regression are generalizability, multicollinearity, singularity, outliers, normality, linearity, homoscedasticity.

According to Tabachnick and Fidell (2007), the sample size should be bigger than 50 + 8m (m=number of the independent variable) to meet the sample size requirements. Regarding this, at least 66 students participate in the study because there were 2 independent variables. 908 participants attended the study which is sufficient for generalizability.

Hair (1995) explains multicollinearity as 'it was produced if any single predictor variable is highly correlated with a set of other predictor variables" Therefore, it was controlled by tolerance and VIF values which are provided by the SPSS program. If tolerance value less than .10 and VIF value above than 10, there is multicollinearity between the predictor variables (Pallant, 2011). In this study, tolerance values were between .38 and .86 and VIF values were between 1.11 and 2.74. Regarding to this, there was no violation of the multicollinearity assumption.

Another assumption is outliers, which shows the 'cases with values well above or well below the majority of other cases' (Pallant, 2011). It was controlled the Mahalanobis distance which was produced by the SPSS program and there were 6 cases with much larger values. To deal with this, they were excluded from the analysis.

Normality assumptions were controlled with normal P_P plot of regression standardized residual which is presented below and skewness and kurtosis values which should be between +1.00 and -1.00 (George, 2003). The straight line from bottom left to top rights indicates the sample distributed normally.

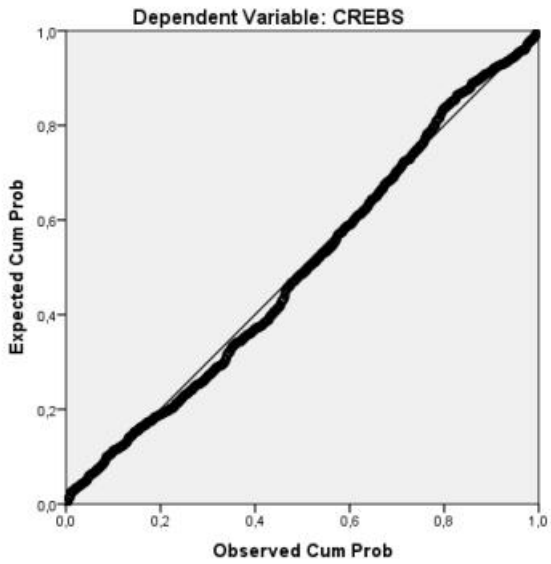

Figure 4. 4 Normal P-P Plot of the Dependent Variable

Table 4. 11

Demonstrates Skewness and Kurtosis values of the Dependent Variable

	Skewness	Kurtosis
CREBS	-0.31	-0.65

Pallant (2011) suggests that 'scatter plot of dependent variable should be concentrated at the center (along the 0 point) which is the indicator for nonlinearity and heteroscedasticity.'

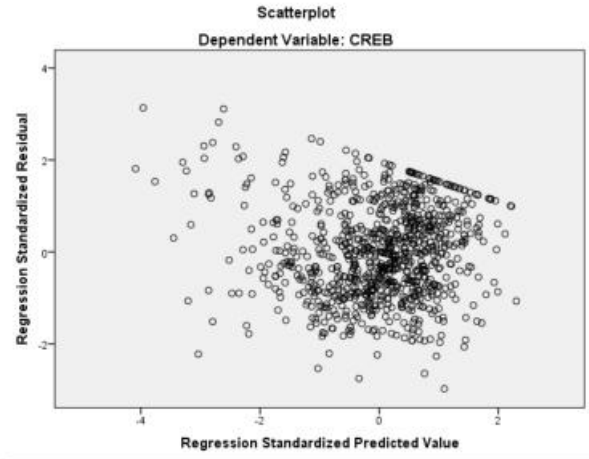

Figure 4. 5 Scatter Plot of the Dependent Variable

According to the scatterplot, most of the scores gathered around the 0 points so linearity and homoscedasticity assumption was not violated. There were some outliers shown in the plot. There were controlled by looking at the maximum value for Cooks' distance which should be smaller than 1. In this study, the value for Cooks' distance was .04 so the outliers were neglected.

Independence of residuals is one another assumption which means that the residuals are not correlated serially from one observation to the next. The Durbin-Watson Statistic is used to test for the presence of serial correlation among the residuals. If the Durbin-Watson test value is between -3 and +3, the residuals are uncorrelated (Tabachnick & Fiedel, 2007). The value of this test is +1,98 so the independence of residuals assumption is met.

4.4 Multiple Linear Regressions

In the study, the dependent variable is children's environmentally responsible behaviors and independents variables are the dimensions of nature relatedness self, experience and perspective and dimensions of attitudes toward environment ecocentrism and anthropocentrism.

4.4 1 Null Hypothesis

There is no statistically significant relationship between Middle school students' responsible environmental behaviors with nature relatedness and their attitudes toward the environment.

Multiple Linear Regression analysis was operated to assess to what extent nature relatedness and environmental attitudes of middle school students predict responsible environmental behaviors. Before the test was conducted, preliminary analyses were made to make sure that there is no violation of Multiple Linear Regression Analysis assumptions' which are generalizability, multicollinearity, singularity, outliers, normality, linearity, homoscedasticity. According to preliminary analysis, it was recorded that there was no violation of the assumptions.

Table 4.12 demonstrated the result of the analysis. Regarding the test result, linear combination of self, experience, and perspective, which are the dimensions of nature relatedness, and ecocentrism and anthropocentrism, which are the dimensions of environmental attitudes, were significantly related with responsible environmental behaviors ($F(5,887) = 34.243$, $p < .005$) with an $R^2 = .16$). The sample multiple correlation coefficient was .40 indicating that 16% of the variance of the children's responsible environmental behaviors were accounted for the linear

combination of other variables. Experience, ecocentrism, perspective and anthropocentrism were statistically significant predictors ($p<0.05$) also experience explained the largest proportion ($\beta=.24$ and part correlation=.15) of the dependent variable. However, the self which is the dimension of nature relatedness did not have a statistically significant relation ($p>0.05$) with responsible environmental behavior. As a conclusion, the null hypothesis was rejected since there was a statistically significant relationship between Middle school students' responsible environmental behaviors with nature relatedness and their attitudes toward environment.

Table 4. 12

The Results of Multiple Linear Regression Analysis

	Standardized Beta Coefficient	**Part Correlation**	**T**	**p**	**R Square**	**F**	**p**
Constant CREB			10,72		.162	34.243	.000
Perspective	-,117	-,104	-3,39	,000			
Experience	,048	,045	1,47	,001			
Self	,131	,082	2,66	,141			
Ecocentrism	,241	,150	4,86	,008			
Anthropo centrism	,127	,115	3,74	,000			

Multiple Linear Regression Analysis Results revealed that responsible environmental behaviors are significantly related to the 5th, 6th , 7th and 8th grade students' ecocentrism, anthropocentrism and experience in a positive way and with perspectives in a negative way.

CHAPTER 5

CONCLUSIONS, DISCUSSIONS AND IMPLICATIONS

In this chapter, it was reported that the summary of the research study, the conclusion of the study, discussion of the results, implications of the study and recommendations for further researches.

5.1 Summary of the Study

The main pur1pose of this study was to investigate the middle school students' level of nature relatedness, attitudes toward the environment and responsible environmental behaviors. In addition, the relationship between nature relatedness and attitudes toward the environment with responsible environmental behaviors was examined with the number of 908 middle public school students in Igdır, a city from Turkey.

It was investigated that the students care about human action and the actions' impacts on living things. And they had internalized identification with the natural world they gave value to nature because of nature itself. On the other hand, their physical familiarity with nature was relatively low. In general, the students had a high connection with nature. Girls had a higher tendency to nature than boys. It was observed that when the grade level increased, students' connection to nature was increased. The students who grew up in rural areas had more connected with nature than the others.

In addition, it was revealed that students had ecocentric value orientation which means they concern about environmental issues because of nature own sake. Girls had more ecocentric value orientation than boys. Furthermore, 8th grade students had a higher tendency to ecocentric value orientation than 5th grade students.

It came out that the students actively involves physical activities like turning off the fountains not in use, using little water while brushing teeth, throwing materials to recycle bin, etc. to resolve the environmental problems. Besides this, students show fewer tendencies to encourage individuals or groups to solve environmental problems.

5.2 Conclusion

The finding of the current study demonstrated that students highly connected with the natural world. Especially, they consider human action and their impacts on other livings. On the other hand, their physical familiarity was relatively low. But most of the students were undecided about the items ‘The state of nonhuman species is an indicator of the future for humans’. This was revealed that students were not aware of the situation of present-day will have an effect on the future generation. In addition, students who grow up in rural areas had shown more connection with the natural environment. Regarding gender, girls were more connected to nature than boys. But girls and boys had similar physical familiarity with the natural world.

Regarding the students' attitudes toward the environment, the majority of the students had ecocentric value orientation. They concern the environment because they gave value to nature itself. The result revealed that there was a difference between girls and boys' value orientation. Girls showed ecocentric value

orientation than boys, on the other hand, boys showed anthropocentric value orientation than girls.

The present study indicated that students display responsible environmental behavior. The majority of the students reported that they made physical actions frequently to prevent and resolve environmental problems such as throwing materials batteries into recycling bins, saving energies, or throwing garbage to bins, etc. On the other hand, they had a low persuasion level. This means that they mostly could not encourage and appeal to someone to solve environmental problems.

The results of the inferential statistics indicated that the students' environmentally responsible behaviors predicted by nature relatedness and attitudes toward the environment. According to results, anthropocentrism, experience, perspective especially ecocentrism dimensions significantly predicted environmental responsible behaviors. However, self-dimension was not a significant predictor for environmental responsible behaviors.

5.3 Discussion of the Result

The present study demonstrated that middle school students had a high connection level with the natural environment and they did not live in isolated from nature. Connection with the natural environment can be strengthening by preserving biodiversity in children's school environments (Lieflander et al., 2012). If the students' school environment considered, they have a lot of trees, green areas around the school environment. Although Igdır is evaluated as a city, actually it has some urban and some rural places. For this reason, students have a high-level connection with the natural environment. The result is correlated with another study (Bahar, 2015) that was conducted at Samsun which is a famous city with

green environments. In that study, 7th and 8th grade students demonstrated high level nature relatedness.

Also, the current study revealed that the students who had grown up in rural areas shown more connection than the others. Nature relatedness depends on previous experiences in nature (Cheng & Monroe, 2012). The students who had grown in rural areas have more opportunities to be in nature. Consistent with Tang et al. (2015) research, while the 8th grade students had a higher connection level, 5th grade students had a lower connection with nature. They obtained that nature relatedness increased with age and number of visit to natural areas and claimed that perceptual evaluation of natural environment is increasing by mature relatedness.

Nature Relatedness level was evaluated according to students' external nature-related world view, internalized identification and physical familiarity with the natural world. The current study revealed that Middle school students' external nature-related world view was pretty high. They believe that the conservation of the natural environment is necessary since nature could not recover from any human impact. They disagree that some species are just meant to die out or become extinct. Besides, they disallow to humans for using natural resources anyway they want. Regarding the middle school science education curriculum (Ministry of National Education, 2018), it was touch on sustainable development. Sustainable development was defined as meeting the needs of future generations without consuming natural resources by providing a balance between human beings and nature in the Our Common Future Report which was prepared by Brundtlent Commission (1987). To this end, it was expected from the students to realize human action and the impacts on the environment and to conserve natural resources. The study result showed that students consider non-human species and they resisted to human to use natural resources anyway they want.

In the present study, it was found that Middle school students' internalized identification was also high. They reported that they see themselves as aware of environmental problems, think a lot about the suffering of animals and see the environment as a part of their spirituality. It could be inferred that the students identified themselves with the natural environment. They thought the state of nonhuman species as an indicator of the future for humans. According to this, students were aware of the interaction between humans and nature not only now but also in the future.

The results also indicated that students' physical relatedness with the natural environment was relatively low. Soga et al., (2018) touched on some obstacles between nature and children such as biodiversity loss, electronic entertainment media urbanization and family members' attitudes toward environment. These obstacles could decrease children's physical relatedness with natural world.

The majority of the students were unsure that they can change environmental problems in other places on the planet. It seems that students' did not think the world as a whole and they believed small things could not contribute to the solution to environmental problems.

In this study, Middle school students' attitudes toward the environment were also examined. Contrary to Alp et al. (2006b) and Erdogan's (2008) findings, older children showed more environmental attitudes than younger children. Actually, it was probable that older children should have more environmental attitudes because their awareness level increased by education. However, awareness of the environmental problems was not the only predictor for attitudes. Erdogan (2008) reported that the attitude and behavior of family members and of role models of the students might also influence their environmental attitudes. In addition, it was

found out that the majority of the students had ecocentric attitudes than anthropocentric attitudes. It can be interpreted that the students' primary goals were with the health and well-being of ecological wholes, such as species or ecosystems (Leopold, 1948). To illustrate, the majority of the students agreed that one of the most important reasons to conserve is to preserve wild areas and one of the worst things about overpopulation is that many natural areas are getting destroyed for development. The students indicated they gave a value for livings and non-living in nature. However, they were unsure about to prefer wildlife reserves to zoos. It seems to be the students who were undecided because there were no zoos in and around Igdır and they could not have information about the zoos.

Considering the students' responsible environmental behaviors, the students reported that they demonstrated physical actions such as, recycling, energy-saving, etc. to handle the environmental problems. But it seems that they hesitated to persuade or encourage someone to help prevent or resolve environmental problems and issues. Especially, the students reported that they did not prepare posters, pictures, and writings about protecting the environment in order to hang on the bulletin boards at school and on the streets. Coherent with Erdogan's study (2008), although they attended physical actions to restrain environmental problems, they did not share information about environmental issues with others. Regarding gender, similar to Alp et al. (2006) and Tuncer et al. (2005), girls more tended to show responsible environmental behaviors than boys.

This study found out that environmentally responsible behavior predicted by nature relatedness and attitudes toward the environment. Predictor variables were attitudes toward the environment, included anthropocentrism and ecocentrism, nature relatedness, contained the experience, perspective, and self-dimensions. According to multiple regression analysis results, environmentally responsible behavior significantly associated with ecocentrism. On the other hand, self-dimension was not a statistically significant predictor for environmental responsible behaviors.

5.4 Implications of the Study

Tbilisi Intergovernmental Conference on environmental education (1977) was identified as an environmentally literate citizenry and environmental behavior to overcome environmental problems. In this study, environmentally responsible behaviors of Middle grade students were determined. Besides, the predictive power of nature relatedness and attitudes toward the environment on environmentally responsible behavior were examined. The result of this study has some implications for teachers, school administrators, policymakers and environmental researchers.

The school environment should be redesigned to increase the relationship with nature and environmental activities such as planting trees, keeping a pet in the school garden, etc. The activities can provide a strong connection to nature, a better understanding of the natural environment. Besides, the activities should be included in the school curriculum. Schools should have main sources about the environment such as books, media, videos, etc. Main sources can provide precious information for students and raise interest and curiosity about environmental issues.

Teachers and families have a crucial role to increase the relationship with nature and develop an attitude in favor of the environment. Teachers should give importance to outdoor activities while teaching environmental-related topics. This facilitates students' learning in the environment. Besides, families should have time for nature with the children. In addition, adult education is crucial to develop environmentally responsible behaviors.

In addition to teachers and family members, policymakers have also crucial roles for creating environmentally responsible behaviors. Ministry of education should

develop the curriculum by considering the natural environment and involving nature-related activities such as observing different types of animal and plant species, planting trees, etc. In addition, environmental activities like projects, saving natural resources, recycling should support.

5.5 Recommendation for Further Studies

The present study was conducted with Middle public school students in the city center of Igdır. The data were gathered from 908 students. For further studies, it is recommended that researchers can conduct a nation-wide survey by including primary and middle schools so that comparing the results and getting more information about current situations of students. Especially, it is recommended that researchers can conduct in a metropolis because urbanization is much more than other cities so nature relatedness level can be different from this study. Teachers and parents' attitudes toward environment are very important to improve the environmental responsible behaviors. Therefore, nature relatedness level and attitudes toward environment of parents and teachers can be examined and can be compared with children' scores.

Experimental studies can be conducted to examine the effects of environmental activities on connection with nature, attitudes toward environment and responsible environmental behaviors. Although it is found out that there is a statistically significant relationship between the constructs, it is needed more evidences about that high connection with nature and environmental attitudes are the reason of environmentally responsible behaviors.

Environment education has crucial role to educate environmental literate citizen so examining the environmental education curriculum is very important. By this way, the gap in the curriculum can be identified and developed according to new

information. So the children' potential of the becoming environmentally literate citizens can be increased.

REFERENCES

Allen, J. B., & Ferran, J. L. (1999). Environmental locus of control, sympathy, and pro-environmental, behavior. A Test of Geller's actively caring hypothesis. *Environmental and Behavior, 31*(3), 338-353. doi:10.1177/00139169921972137

Alp, E. (2005). *A study on students' environmental knowledge and attitudes: The effects of grade level and gender*. Master Thesis., Middle East Technical University, Ankara, Turkey

Alper, U. (2014). *Modelling pre-service science teachers' environmentally friendly behaviours in relation to psychological and cognitive variables*. PhD diss., Middle East Technical University, Ankara, Turkey.

Liefländer, A. K., Fröhlich, G., Bogner, F. X., & Schultz, P. W., (2013) Promoting connectedness with nature through environmental education, *Environmental Education Research, 19*(3), 370-384. doi: 10.1080/13504622.2012.697545

Amerigo, M., Aragones, J. I. Frutos, B., Sevillano, V.& Cortes, B. (2007). Underlying dimension of ecocentric and anthropocentric environmental beliefs. *The Spanish Journal of Psychology. 10*(1), 97-103. doi: 10.1017/S1138741600006351

Aras, E., & Tekay, N., (2018). *Iğdir ili 2017 yılı çevre durum raporu:* Report represented to the Iğdır Valiliği Çevre ve Şehircilik İl Müdürlüğü, Retrieved from https://webdosya.csb.gov.tr/db/ced/icerikler/son-igdir-2017-cevre-durum-raporu-28.06-20180702081724.pdf

Arbuthnot, J. (1977). The roles of attitudinal and personality variables in prediction of environmental behavior and knowledge. *Environment and Behavior, 9*(2), 217-232. Retrieved from https://doi.org/10.1177/001391657792004

Bahar, F. (2015). *A study on Turkish elementary school students' nature relatedness, environmentally responsible behaviors and motive concerns*' (Master's Thesis)., Middle East Technical University, Ankara, Turkey.

Barthelmess, P.Y., Schüz, M., Fuchs, R., Kučera, D., & Prandini, M. (2013). Different shades of green: A comparative study on nature relatedness and ecological consciousness among South Korean, Swiss, and Czech students. Central European Business Review, *2*(2), 7-18

Bozzolasco, A. M., (2017) *Before and After Attending an Environmental Education Program* (Doctoral Dissertations and Culminating Projects). Retrieved from https://digitalcommons.montclair.edu/etd/34

Bruntland Report (1987) *Our Common Future: The World Commission on Environment and Development*. Oxford: Oxford University Press

Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2008). Bilimsel araştırma yöntemleri. (18th ed.). Ankara: Pegem Akademi.

Capaldi, C. A., Dopko, R. L., & Zelenski, J. M., (2014). The relationship between nature connectedness and happiness: A meta-analysis. *Frontiers in Psychology*, 5. 976. Retrieved from 10.3389/fpsyg.2014.00976

Crutzen, P. J. & Stoermer, F. (2000, May 10), The "Anthropocene", G*lobal Change Newsletter*, No 41, Retrieved from http://www.igbp.net/download/18.316f18321323470177580001401/1376383088452/NL41.pdf

Çakır,B., Karaarslan, G., Şahin, E. and Ertepınar, H. (2015). Adaptation of nature relatedness scale to Turkish. *İlköğretim online. 14*(4). Retrieved from; http://dx.doi.org/10.17051/io.2015.95299

Imperatives, Strategic. (1987) *Report of the World Commission on Environment and Development: Our Common Future*. Retrieved from http://www.ask-force.org/web/Sustainability/Brundtland-Our-Common-Future-1987-2008.pdf

Davis, J. L., Green, J. D., & Reed, A. (2009). Interdependence with the environment: Commitment, interconnectedness, and environmental behavior. *Journal of Environmental Psychology*, *29*, 173-180. doi: 10.1016/j.jenvp.2008.11.001

Dunlap, R. E., & Mertig, A. G. (1995). Global concern for the environment: Is affluence a prerequisite? *Journal of Social Issues*, *51*, 121-137. doi: 10.1111/j.1540-4560.1995.tb01351.x

Eagles, P. F. J. & Demare, R. (1999). Factors influencing children's environmental attitudes. *The Journal of Environmental Education, 30(4), 33–37*.doi:10.1080/00958969909601882

Erdogan, M. (2011). The Effects of Ecology-Based Summer Nature Education Program on Primary School Students' Environmental Knowledge, Environmental Affect and Responsible Environmental Behavior. *Educational Sciences: Theory and Practice*, *11*(4), 2233-2237.

Erdoğan, M., Ok, A., & Marcinkowski, T. J. (2012). Development and validation of children's responsible environmental behavior scale. *Environmental Education Research* 4, 507- 540. Retrieved from http://dx.doi.org/10.1080/13504622.2011.627421

Eryiğit, A. (2010). *A cross-age study on elementary students" value orientations, environmental optimism and environmental concern*. (Master's Thesis), Middle East technical University, Ankara

Frantz, C., Mayer, F. S., Norton, C., & Rock, M. (2005). There is no "I" in nature: The influence of self-awareness on connectedness to nature. *Journal of Environmental Psychology*, *25*(4), 427-436. doi:10.1016/j.jenvp.2005.10.002

Fraenkel, J.R. & Wallen, N.E. (2006). *How to design and evaluate research in education* (6th ed.). Boston, McGraw: Hill Pub

George, D. & Mallery, M. (2003). *Using SPSS for Windows step by step: a simple guide and reference*. Boston, MA: Allyn y Bacon

Gigliotti, L. M. (1990). Environmental Education: What Went Wrong? What can be Done? *The Journal of Environmental Education, 22*(1), *9–12.* doi:10.1080/00958964.1990.9943040

Onur, A., Şahin, E., and Tekkaya, C., (2012). An investigation on value orientations, attitudes and concern towards the environment: the case of Turkish elementary school students. *Environmental Education Research. 18*(2). 271-297. Retrieved from; http://dx.doi.org/10.1080/13504622.2011.614690

Hair, J. F., Anderson, R.E., Tatham, R.L., & Black, W.C. (1995). *Multivariate Data Analysis with Readings.* Upper Saddle River, NJ: Prentice Hall

Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1986/1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *Journal of Environmental Education, 18*(2.). 1-8.

Hsu, S. J. (2004) The Effects of an Environmental Education Program on Responsible Environmental Behavior and Associated Environmental Literacy Variables in Taiwanese College Students, *The Journal of Environmental Education, 35*(2), 37-48. doi: 10.3200/ JOEE.35.2.37-48

Hungerford, H.R. & Volk, T. L. (1990). Changing learner behavior through environmental education. *The Journal of Environmental Education, 21*(3), 8–22.

Kaiser, F. G., Wölfing, S., & Fuhrer, U. (1999). Environmental attitude and ecological behavior. *Journal of Environmental Psychology, 19*, 1-19. Retrieved from: https://home.zhaw.ch/~cahu/dateien/Kaiser-Woelfing-Fuhrer99.pdf

Kollmus, A. & Agyeman. J.(2002) Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior?

Environmental Education Research, 8(3), 239-260. doi:10.1080/13504620220145401

Malone, T. F. & Corell, R. (1989). Mission to Planet Earth Revisited. Environment: Science and Policy for Sustainable Development, *31(3), 6–35.* doi:10.1080/00139157.1989.9929938

Milfont, T. L. & Duckitt, J. (2006). Preservation and utilization: understanding the structure of environmental attitudes. *Medio Ambiente y Comportamiento Humano*, *7*(1), 29-50. Retrieved from https://mach.webs.ull.es/PDFS/Vol7_1/Vol7_1_c.pdf

Nisbet, E. K., Zelenski, J. M., & Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environment and Behavior*, *41*, 715-740. doi: 10.1177/0013916508318748

Nisbet, E. K. & Zelenski, J. M. (2011). *Underestimating Nearby Nature. Psychological Science, 22(9),* 1101–1106.doi:10.1177/0956797611418527

Nordlund, A. M. & Garvill, J. (2002). Value structures behind pro-environmental behaviors. *Environment and Behavior, 34*(6), 740-756. Retrieved from https://www.rug.nl/gmw/psychology/research/onderzoek_summerschool/firststep/content/papers/3.3.pdf

Pallant, J. (2011). *SPSS survival manual: A step by step guide to data analysis using the SPSS program.* (4th Ed.), Allen & Unwin, Berkshire.

Pelletier, L. G., Tuson, K. M., Green-Demers, I., Noels K., & Beaton, A. M. (1998). Why are you doing things for the environment? The motivation toward the environment scale (MTES). *Journal of Applied Psychology, 28*(5), 437-468. doi: 10.1111/j.1559-1816.1998.tb01714.x

Schultz, P.W. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology, 21,* 327–39. doi:10.1006/jevp.2001.0227

Schwartz, S.H. (1977). Normative influence on altruism. *In advances in experimental psychology*, (10th ed.). L. Berkowitz, 222–75, New York, NY: Academic Press

Sia, A.P, Hungerford, H. R., & A.N. Tomera. (1985/1986). Selected predictors of responsible environmental behaviors: An analysis. Journal of Environmental Education 17, no. 2:31-40

Soga, M., Yamanoi, T., Tsuchiya, K., Koyanagi, T. F., & Kanai, T. (2018). What are the drivers of and barriers to children's direct experiences of nature? Landscape and Urban Planning, *180*, 114–120. doi:10.1016/j.landurbplan.2018.08.015

Stern, P.C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues, 56*(3), 407-424. Retrieved from https://pdfs.semanticscholar.org/d89c/c8f2ecfc6c0ed2480bb4c3604b0578a3c332.pdf

Taghvaee, A. , Kamyar, M. & Moradi, A. (2017) Human, Nature, City: From Oblivion to Review. *Open Journal of Ecology*, *7*, 433-446. doi: 10.4236/oje.2017.77030.

Tang, C., Sullivan, W. C., & Chang, C. (2015), Perceptual evaluation of natural landscapes: the Role of the individual connection to nature. *Environment and Behavior*, *47*(6) 595– 617, doi: 10.1177/0013916513520604

Tabachnick, B.G. & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education

Thompson, S.C.G. & Barton, M. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology*, *14*, 149-157. Retrieved from https://www.researchgate.net/requests/r26498706

Tuncay, B., Yılmaz-Tuzun, O. & Tuncer-Teksoz, G. (2011). The relationship between environmental moral reasoning and environments attitudes of pre-

services science teachers. *International Journal of Environmental Education.1*(3), Retrieved from http://dergipark.ulakbim.gov.tr/iejeegreen/article/viewFile/1087000032/1087000020

UNESCO-UNEP 1976. The Belgrade charter. Connect: UNESCO-UNEP Environmental Education Newsletter 1, no. 2: 1–2

Zelenski, J. M. & Nisbet, E. K. (2014). Happiness and feeling connected: The distinct role of nature relatedness. *Environment and Behavior*. *46*(1) 3-23, Doi:10.1177/0013916512451901

Worsley, A. & Skrzypiec, G. (1998). Environmental attitudes of senior secondary school students in south Australia. *Global environmental Change*. *8*, 209-255

APPENDICES

A. APPROVAL OF THE MINISTRY OF EDUCATION

T.C.
IĞDIR VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : 19255454-44-E.10522061 28/05/2019
Konu : Anket Çalışması Hk.

VALİLİK MAKAMINA

Orta Doğu Teknik Üniversitesi İlköğretim Anabilim Dalı yüksek lisans programı öğrencisi Mine Özdemir'in " *Ortaokul Öğrencilerinin Doğa ile Olan İlişkileri, Çevreye Yönelik Tutum ve Davranışları Üzerine Bir Çalışma"* başlıklı araştırması için Mine Özdemir'in 2018-2019 Eğitim Öğretim yılında Müdürlüğümüze bağlı ortaokullarda 5., 6., 7. ve 8. Sınıf öğrencilerinden veri toplama isteği;

Balıkesir Üniversitesi Fen Bilimleri Enstitüsü yüksek lisans öğrencisi Zeynep Büşra UZUN'un "Ortaokul Öğrencilerinin Geometrik Düşünme Düzeyleri, Uzamsal Yetenekleri Ve Geometriye Yönelik Tutumları" konulu tez çalışmasının Müdürlüğümüze bağlı ortaokullarda veri toplama isteği;

Ondokuz Mayıs Üniversitesi Eğitim Bilimleri Anabilim Dalı Yüksek lisans öğrencisi Ahmet KAÇAN'ın, "Bilsemlerde Uzaktan Eğitim İle Öğretim Uygulamaları Çeşitliliğini Artırmak" konulu tez çalışmasının Bilim ve Sanat Merkezinde uygulanmasında veri toplama isteği;

Müdürlüğümüzce anket çalışmalarının yapılması uygun görülmüştür.
Makamlarınızca da uygun görülmesi halinde olurlarınıza arz ederim.

Hakan GÖNEN
İl Millî Eğitim Müdürü

Ek:
1.Yazı (12 Sayfa)
2.Yazı (23 Sayfa)
3.Yazı (19 Sayfa)
4.Komisyon Tutanağı (3 sayfa)

OLUR
28/05/2019

Halit BENEK
Vali a.
Vali Yardımcısı

4f9e-c6e8-342d-abef-233b

B. APPROVAL OF METU HUMAN SUBJECTS ETHIC COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
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Sayı: 28620816 /84

20 Şubat 2019

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Doç.Dr. Elvan ŞAHİN

Danışmanlığını yaptığınız ***Mine ÖZDEMİR' in*** **"Ortaokul Öğrencilerinin Doğa ile Olan İlişkileri, Çevreye Yönelik Tutum ve Davranışları Üzerine Bir Çalışma"** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve **075-ODTÜ-2019** protokol numarası ile onaylanmıştır.

Saygılarımızla bilgilerinize sunarız.

Prof. Dr. Tülin GENÇÖZ
Başkan

Prof. Dr. Ayhan SOL
Üye

Prof. Dr. Ayhan Gürbüz DEMİR
Üye

Prof. Dr. Yaşar KONDAKÇI (4.)
Üye

Doç. Dr. Emre SELÇUK
Üye

Doç. Dr. Pınar KAYGAN
Üye

Dr. Öğr. Üyesi Ali Emre TURGUT
Üye

C. THE PARENTAL CONSENT FORM USED IN THE STUDY

Veli Onay Formu

Sevgili Anne/Baba,

Bu çalışma Orta Doğu Teknik Üniversitesi yüksek lisans öğrencisi Mine Özdemir tarafından yürütülmektedir.

Bu çalışmanın amacı nedir? Çalışmanın amacı, çocuğunuzun doğayla ilişkisini, çevreye yönelik tutum ve davranışını tespit etmektir.

Çocuğunuzun katılımcı olarak ne yapmasını istiyoruz? Bu amaç doğrultusunda, çocuğunuzdan verilen anketi cevaplamasını isteyeceğiz ve daha sonra anketi değerlendireceğiz. Sizden çocuğunuzun katılımcı olmasıyla ilgili izin istediğimiz gibi, çalışmaya başlamadan çocuğunuzdan da sözlü olarak katılımıyla ilgili rızası mutlaka alınacak.

Çocuğunuzdan alınan bilgiler ne amaçla ve nasıl kullanılacak?: Çocuğunuzdan alacağımız cevaplar tamamen gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Elde edilecek bilgiler sadece bilimsel amaçla (yayın, konferans sunumu, vb.) kullanılacak, çocuğunuzun ya da sizin ismi ve kimlik bilgileriniz, hiçbir şekilde kimseyle paylaşılmayacaktır.

Çocuğunuz ya da siz çalışmayı yarıda kesmek isterseniz ne yapmalısınız?: Katılım sırasında sorulan sorulardan ya da herhangi bir uygulama ile ilgili başka bir nedenden ötürü çocuğunuz kendisini rahatsız hissettiğini belirtirse, ya da kendi belirtmese de araştırmacı çocuğun rahatsız olduğunu öngörürse, çalışmaya sorular tamamlanmadan ve derhal son verilecektir.

Bu çalışmayla ilgili daha fazla bilgi almak isterseniz: Çalışmaya katılımınızın sonrasında, bu çalışmayla ilgili sorularınız yazılı biçimde cevaplandırılacaktır.

Çalışma hakkında daha fazla bilgi almak için İlköğretim Matematik ve Fen Bilimleri Bölümü Yüksek Lisans Öğrencisi Mine Özdemir ile (e-posta: mine.ozdemir@metu.edu.tr) ile iletişim kurabilirsiniz. Bu çalışmaya katılımınız için şimdiden teşekkür ederiz.

Yukarıdaki bilgileri okudum ve çocuğumun bu çalışmada yer almasını onaylıyorum (Lütfen alttaki iki seçenekten birini işaretleyiniz.

Evet onaylıyorum___ ***Hayır, onaylamıyorum___***

Annenin adı-soyadı: _____ Bugünün

Tarihi:_____

Çocuğun adı soyadı ve doğum tarihi:_____

(Formu doldurup imzaladıktan sonra araştırmacıya ulaştırınız).

D. THE QUESTIONNAIRES USED IN THE STUDY

1. Kişisel Bilgiler

Ankete verdiğiniz yanıtları daha kapsamlı değerlendirebilmek için size bir kaç kişisel soru sormak istiyoruz. Bu bölümde vereceğiniz yanıtların gizli tutulacağını lütfen unutmayınız.

1. Cinsiyetiniz: Kız ☐ Erkek ☐

2. Yaşınız:
3. Sınıfınız:
4. Büyüdüğünüz çevreyi nasıl tanımlarsınız?
   a) Kırsal alan (köy, kasaba, belde, çiftlik)
   b) İlçe
   c) İl

2. Doğa İle İlişki

Aşağıdaki ifadelerle ilgili düşüncelerinizi belirtiniz.	**Kesinlikle Katılmıyorum(1)**	**Katılmıyorum (2)**	**Kararsızım(3)**	**Katılıyorum(4)**	**Kesinlikle Katılıyorum(5)**

1- Açık havada vakit geçirmekten zevk alırım.	1	2	3	4	5
2-Bazı türlerin soyu devam etmese de olur.	1	2	3	4	5
3- İnsanların doğal kaynakları istedikleri gibi kullanmaları uygun bir davranıştır.	1	2	3	4	5
4- İdeal tatil yerim uzak, el değmemiş bir doğa alanıdır.	1	2	3	4	5
5- Davranışlarımın çevreyi nasıl etkilediğini düşünürüm.	1	2	3	4	5
6- Toprakla uğraşmaktan zevk alırım.	1	2	3	4	5
7- Doğaya ve çevreye bağlılığım ruhumun bir parçasıdır.	1	2	3	4	5
8- Çevre sorunlarının farkındayım.	1	2	3	4	5
9- Nerede olursam olayım doğadaki yaşamı gözlemlerim.	1	2	3	4	5
10-Doğal alanlara sık gitmem.	1	2	3	4	5
11- Çevre konusunda ne yaparsam yapayım dünyanın öteki yerlerindeki problemlere çözüm olmayacaktır.	1	2	3	4	5
12- Kendimi doğanın bir parçası olarak görüyorum.	1	2	3	4	5
13- Şehirden uzak, ormanda olma düşüncesi korkutucudur.	1	2	3	4	5
14- Doğa ile ilgili hislerim günlük yaşamımdaki davranışlarımı etkilemez.	1	2	3	4	5
15- Hayvanlar ve bitkiler, insanlara göre daha önemsiz canlılardır.	1	2	3	4	5
16- Şehrin ortasında bile etrafımdaki doğayı fark ederim.	1	2	3	4	5
17- Doğa ile ilişkim kişiliğimin önemli bir parçasıdır.	1	2	3	4	5
18- Doğa, insanların yol açtığı sorunlarla başa çıkabilir, bu yüzden doğanın korunması gereksizdir.	1	2	3	4	5
19- İnsan dışındaki canlıların durumu, insanoğlunun geleceğinin bir göstergesidir.	1	2	3	4	5
20- Hayvanların çektiği acıları umursarım.	1	2	3	4	5
21- Dünyaya ve canlıların tümüne oldukça bağlıyım.	1	2	3	4	5

4. Çevreye Yönelik Tutum

Aşağıdaki ifadelere ne derece katıldığınızı lütfen belirtiniz.	**Kesinlikle Katılmıyorum**	**Katılmıyorum (2)**	**Kararsızım(3)**	**Katılıyorum(4)**	**Kesinlikle Katılıyorum(5)**
İnsanlar da, diğer hayvanlar kadar ekosistemin bir parçasıdır					
İnsanların petrol kaynaklarını tüketiyor olması beni rahatsız ediyor					
Bazen, hayvanlar bana adeta insanmış gibi geliyor					
Doğada zaman geçirmek stresimi büyük oranda azaltır					
Ormanların yok olması hakkında beni en çok endişelendiren şey, gelecek nesiller için yeterli kereste bulunmayacak olmasıdır					
Geri dönüşüm yapmanın en iyi yanlarından biri para tasarrufu sağlamasıdır					
Doğanın kendi içinde bir değeri vardır					
Doğa, insanların refah ve keyfine sağlayabileceği katkılardan dolayı önemlidir					
Çevreye zarar verildiğini görmek beni					

üzer					
Doğal kaynakları, yüksek bir yaşam kalitesi sürdürmek için korumalıyız					
Bazen mutsuz olduğumda doğada huzur bulurum					
Doğal kaynakları korumanın en önemli nedenlerinden birisi, insanların yüksek yaşam standardının devamını sağlamaktır					
Mutlu olmak için doğada zaman geçirmeye ihtiyaç duyarım					
Doğal alanların insan kullanımına açılması insanlara yüksek yaşam kalitesi sunduğu sürece iyi bir fikirdir					
Tarım alanları yaratmak için ormanların tahrip edilmesi beni üzer					
Yaban hayatı, hayvanat bahçelerine tercih ederim					
Doğal kaynakları korumanın en önemli nedenlerinden biri, doğal yaşam alanlarını korumaktır					
Sırf doğada olmak adına, doğal ortamda vakit geçirmekten zevk alırım					
Sadece ekonomik önemi olan bitki ve hayvanlar korunmalıdır					
Aşırı nüfus artışının en kötü yanı doğal alanların yok ediliyor olmasıdır					
Yağmur ormanlarının kaybının en kötü yanı, yeni ilaçların geliştirilmesinin sınırlanacak olmasıdır					

4. Davranış Ölçeği

Aşağıda verilen davranışları son 1 yıl içerisinde ne sıklıkla yaptığınızı lütfen belirtiniz.	**Hiçbir zaman**	**Neredeyse Hiç**	**Bazen**	**Sıklıkla**	**Her zaman**
Sokakta, parkta ya da okulda yere atılmış çöpleri toplayıp çöp kutusuna attım.					
Doğal hayatı korumak için destek verdim (örn; ağaç ve çiçek dikmek ya da kurumaması için sulamak; kuşları ya da sokak hayvanlarını beslemek).					
Kâğıt, cam şişe, plastik, pil gibi malzemeleri geri dönüşüm kutusuna attım.					
Su kullanımını azaltmak için önlemler aldım (örn; dişlerimi fırçalarken, ellerimi sabunlarken suyu boş yere akmamak).					
Sokakta, okulda ya da evde çöplerimi çöp kutusuna attım.					
Enerji tasarrufu için odadan çıkan en son kişiysem ışıkları kapattım.					
Kullanmadığım kıyafet, kitap, oyuncak gibi eşyalarımı ihtiyacı olan kişilere verdim.					
Çevreye zarar veren davranışta bulunan kişileri, bu davranışlarından (örn; yerlere çöp atmak, ışıkları açık bırakmak, suyu boş yere akıtmak) vazgeçmesi için uyardım.					
Enerji ve su gibi doğal kaynaklarımızın tasarruflu kullanımı konusunda arkadaşlarımla konuştum.					
Çevre konuları ile ilgili edindiğim bilgileri başkalarıyla paylaştım.					

Çevre sorunlarına çözümler öneren yayınlar hazırladım veya paylaştım (afişler, sosyal paylaşım sitelerinde videolar/mesajlar gibi).

Doğal hayatın koruması için ailemden/öğretmenimden/arkadaşlarımdan destek istedim.

Uygun olan atıkların geri dönüşüm kutusuna atılması için etrafımdaki kişileri uyardım.

Aileme, yeniden kullanılabilir veya geri dönüştürülebilir kaplardaki ürünleri (örn; cam kavanozlar, depozitolu şişeler) satın almalarını önerdim.

Yerel, sağlıklı ve doğal ürünler satın almaları konusunda etrafımdaki kişileri uyardım.

Okul panosuna çevre korumasına dikkat çekmek için poster ya da yazı hazırladım.

Enerji ve su gibi doğal kaynaklarımızın tasarruflu kullanımı konusunda ailem ile konuştum.

Çevre dostu kampanyalara/faaliyetlere katılmaları konusunda etrafımdaki kişilerle konuştum.

Çevre dostu kampanyalara/faaliyetlere katıldım (örn; pil toplama, plastik kapak toplama).

E. TURKISH SUMMARY/ TÜRKÇE ÖZET

GİRİŞ

İnsanlar her zaman yaşam standartlarını yükseltmek ve daha konforlu bir yaşam sürdürmek isterler ve ihtiyaçlarını karşılayabilmek için doğal kaynakları israf ederek kullanıyorlardı ta ki doğal kaynakların tüketildiğini ve kirliliğin yaşam standartlarını düşürdüğünü görene kadar (Stern, 2000). Ayrıca hâlâ, hızlı nüfus artışı ve insan davranışları doğal dengeyi bozmaya, çevre sorunlarına yol açmaya neden olmaktadır (Birleşmiş Milletler Çevre ve Kalkınma Komisyonu [WCED], 1987). WCED (1987) raporuna göre, daha güvenli ve daha adil bir gelecek için çevresel kaynakları yönetmek ve insani kalkınmayı sürdürmek için acilen harekete geçmemiz gerekir. Bu nedenle, çevresel sorunlara neden olan insan davranışlarını incelemek ve sonrasında tüm davranışların değiştirilmesi için çaba harcamak gerekir.

Bazı insanlar çevre yanlısı davranışlar gösterirken, bazı insanların neden bu davranışları göstermediğini incelemek için pek çok araştırma yapılmıştır (Allen ve Ferrand, 1999; Dunlap ve Mertig, 1995; Kaiser, Wölfing ve Fuhrer, 1999; Nordlund ve Garvill, 2002; Pelletier, Dion)., Tuson ve Green-Demers, 1999). Son araştırmalar, dış faktörler (örneğin sezgisel, ekonomik, sosyal ve kültürel) ve iç faktörler (örneğin motivasyon, değerler, tutumlar, kontrol odağı, sorumluluklar ve öncelikler) olarak sınıflandırılan insan davranışlarını etkileyen çeşitli faktörlerin olabileceğini bulundu (Kollmuss ve Agyeman)., 2002). Bu faktörlerin çok fazla olması, insan davranışlarının açıklanmasının çok karmaşık bir iş olduğunu göstermektedir, ancak bunların birbirleriyle nasıl ilişkili olduklarını ve bu faktörlerden hangisinin çevre yanlısı davranış üzerinde daha büyük etkiye sahip olduğunu bulmak mümkün olabilir. Nisbet ve diğerleri. (2009), insanların çevre

sorunları ile ilgili kendi duyguları ve tutumları ile kendi davranışları arasında bir boşluk olduğunu belirtti. Eğer bu boşluk doldurulabilirse, insanlarının çevre yanlısı davranışlarını tahmin etmek mümkün olabilir. Nispet ve arkadaşları (2008) bu boşluğu doldurmak için Doğa ile İlişki (NR) kavramını geliştirmişlerdir ve insanların doğal ortamda daha fazla zaman harcadıklerında, doğayı önemseyip, çevre yanlısı tutum ve sorumlu davranışlar sergilediklerini savunmuşlardır.

Bu bağlamda, Doğa ile İlişkinin azalması, çevre sorunlarının ortaya çıkması için çok önemli bir neden olarak görünüyor. Bununla birlikte, günümüzün kentleşmiş dünyasında doğa ile insan arasında birçok engel vardır. Özellikle biyoçeşitlilik kaybı, elektronik eğlence medyası, aile üyelerinin doğaya yönelik faaliyetlere karşı tutumları çocukların doğadan kopuk büyümesine neden olmaktadır (Soga ve diğerleri, 2018).

Lieflander ve diğerleri (2012), çocukların okul ortamlarındaki biyoçeşitliliğin korunmasıyla ve doğa içindeki aktivitelerin arttırılmasıyla doğa ile ilişkinin arttırılabileceğini öne sürmüşlerdir. Gigliotti (1990), çevre sorunlarının çözümünün eğitim olduğunu savunmaktadır. Vatandaşlarımızı zamanında çevre okur-yazarı olarak eğitemediğimiz sürece, çevre sorunlarını çözemeyeceğimizi, eğer bu hedefi 20 yıl içinde başaramazsak, yeni ve daha sert önlemler almamız gerektiğini belirtmişlerdir. Çevre sorunlarıyla başa çıkmak için Tbilisi Intergovernmental Conference on Environmental Education (1977) yapılmıştır. Çevre okuryazarı bireyler yetiştirmek için çevre eğitiminin amaçları; çevre hakkında farkındalık ve duyarlılık geliştirmek, çevre ve ilgili temel problemleri veya sorunları anlamak, çevre ile ilgili bir dizi değer ve duygu geliştirmek, çevreyi tanımlamak, çevresel problemleri çözebilmek için yetenekli olmak, çevre sorunlarına ve çevre sorunlarının çözümüne yönelik çalışmalara katılmak olarak belirlenmiştir. Öte yandan, çoğu insanın çevre sorunları ve sorunları ile ilgileniyor gibi göründükleri fakat bu sorunların çözümü konusunda kişisel fedakârlık yapmak istemedikleri ortaya çıkmıştır (Gigliotti, 1990). Bu nedenle, çevreye

yönelik davranışların nedenleri ve çevre problemlerinin çözümü için alabilecek önlemler gerekenler daha fazla bilgiye ihtiyaç vardır.

ÇALIŞMANIN ÖNEMİ

Bu araştırmanın amacı, ortaokul öğrencilerinin çevre profillerini araştırmak ve ortaokul öğrencilerinin doğayla ilişkilerini ile çocukların çevreye yönelik davranışlarını ve aralarındaki ilişkiyi inceleyerek çevre eğitimi bilgi birikimine bilgi eklemektir. Literatürde birçok araştırma ve teori, insanın çevreye yönelik davranışlarını açıklamaya ve tahmin etmeye çalışmaktadır. Birçok çalışma, çevreye karşı tutumun çevre yanlısı davranışların güçlü öngörücülerinden biri olduğunu göstermiştir (Kaiser ve diğerleri, 1999; Onur ve diğerleri, 2011; Tuncay ve diğerleri, 2011). Çevreye yönelik tutuma ek olarak, doğayla ilişki, sürdürülebilir tüketim, çevreci olarak tanımlanma vb. gibi çevresel yanlısı davranışların daha iyi tahmin edicilerinden biri olarak bulundu (Nisbet ve diğerleri, 2009). Doğayla ilişki, çevreye yönelik sorumlu davranış ve çevreye yönelik tutumun ve bu yapılar arasındaki ilişki çevre sorunlarının altında yatan nedenin anlaşılmasını sağlayabileceğine inanılmaktadır.

Türk Eğitim sisteminde ilköğretim müfredatı 2018 yılında değiştirildi ve yeniden tasarlandı. Yeni müfredat kullanılarak 5., 6., 7. ve 8. sınıflar fen bilimleri eğitimi aldılar. Yeni fen müfredatında, çevre ile ilgili bazı beceriler şöyle tanımlanmıştır:

· Doğanın keşfi,
· İnsan ve çevre arasındaki ilişkiyi anlamak,
· Bilimsel araştırma yaklaşımını benimsemek,
· Bu alanlarda karşılaşılan sorunlara çözüm üretmek,
· Sürdürülebilir kalkınma ve doğal kaynaklar hakkında farkındalık yaratmak,
· Doğal olaylarla ilgili ilgi ve merak uyandırmak,
· Doğal olaylara karşı tutum geliştirmek,

Bu çalışma, öğrencilerin mevcut durumları hakkında çevreyi koruma davranışları hakkında ipucu verebilecek sorumlu çevresel davranışlar hakkında bilgi sunacaktır. Literatürde; bilgi, okul öncesi eğitim, anne ve eğitim düzeyi, kontrol odağı, tutum, bireylerin sorumluluk duygusu vb gibi birçok değişken vardır (Erdoğan, 2008; Hines ve diğerleri, 1987). Bu nedenle, bu hedefler müfredata entegre olmasına rağmen, öğrencilerin çevreye yönelik davranışlarını incelemek veya belirlenmesiyle, öğrencilerin davranışlarında hala bir problem olup olmadığı araştırılabilir. Bu nedenle, bu çalışmanın bulgularının, öğrencilerin sorumlu çevre davranışları hakkında bilgi sunarak geliştirilecek yeni müfredatlara katkı sağlayacağına inanılmaktadır

LİTERATÜR TARAMASI

İnsan ve doğa, insanlığın evriminden bu yana birbirleriyle etkileşime girerler. Evrimin başlangıcında, insanlar kendilerini doğaya göre adapte ettiler, örneğin yaşam için uygun koşullara sahip bir yere göç ettiler. Daha sonra, yavaş yavaş doğayı kendilerine göre değiştirmeye başladılar, mesela, birçok kaynağı kullanarak kendi evlerini inşa ettiler. 19. yüzyılda insan, iklim değişikliği, biyolojik çeşitlilik kaybı, su ve hava kirliliği gibi birçok çevresel sorunla karşı karşıya kaldı. Taghvaee et al. (2017), insan ve doğa arasındaki ilişkileri üç aşamada inceledi. İlk etap, baştan 16. yüzyıla, doğayla doğrudan bağlantılı olan bir yüzyıla başladı. İkinci aşamada, insanlar doğadan ayrıldı ve yapay bir ortam yarattı. Bilimsel ve endüstriyel gelişimin tüm sorunları çözebileceğine ve doğaya onarılamayacak zararlar verdiğine inanıyorlar. Dünyanın kapasitesi teknolojik olarak gelişmiş olsa da, insan sayısı katlanarak artmaktadır ve yakın bir gelecekte çökmesi muhtemeldir (Malone ve Corell, 1989). Üçüncü aşama 20. yüzyılın sonlarında başladı ve devam ediyor. Bu aşamada, insanlar doğanın sınırlı kapasiteleri ile karşı karşıya kaldılar ve aşırı ihtiyaçlarını karşılamak için mücadele ediyorlardı. Bu aşamada, ihtiyaçlarını giderirken bir yandan da çevresel

problemleri çözmek için insan ve çevre arasındaki ilişki hakkında daha fazla bilgiye ihtiyaç duydular. Mevcut çevresel problemler doğaya bağlılık seviyemizle bağlantılı olduğu sonucuna ulaşıldı (Anne ve ark., 2012). İnsanlar kendilerini doğal ortamdan ayrı olarak gördüğünde, sorunların ortaya çıktığı bulundu (Franz ve ark. 2005).

Birçok araştırma, doğal çevre ile olan ilişki arttığında, mutluluk, huzur gibi duyguların daha çok hissedildiği ortaya çıkmıştır. Bu gibi birçok neden doğa ile ilişkinin arttırılması gerektiğini kanıtlar niteliktedir. Capaldi ve meslektaşları (2014) doğa ve mutluluk arasındaki ilişkiyi incelemek için bir meta-analiz (n = 8523) yapılmıştır. Test sonucuna göre, doğa ile en güçlü ilişkiye sahip olan katılımcılar daha olumlu tepki gösterdikleri ortaya çıkmıştır.

İnsanlar çevresel sorunlardan endişe duysalar da, endişelerini davranışlarına yansıtmazlar (Nispet, 2009). Kallus ve Agyeman (2002), insanların neden çevreci davrandığını ve çevre yanlısı davranışın önündeki engellerin neler olduğunu araştırdı. Bu sorular psikoloji, sosyoloji ve eğitime konu oldu. Soruların cevaplarını bulmak için bazı modeller ve teoriler geliştirildi.

Teorilerden biri, Stern ve arkadaşları tarafından geliştirilen çevresel tutum-değer-inanç-normu (VBN) teorisidir (2000). Stern ve ark. (2000), egoistik, biyosferik ve sosyal-özgecil değer yönelimleri ve bu değer yönelimleri olan üç değer yöneliminden oluşan VBN teorisinin çevresel kaygı düzeyleriyle ilişkili olduğunu göstermiştir.

Thompson ve Barton (1994) eko-merkezcilik ve antroposentizm olmak üzere çevresel konulardaki davranışları destekleyen en az iki değer olduğunu öne sürdüler. Birçok araştırmaya göre, bireylere çevre sorununu destekleyip desteklemediği sorulduğunda, birçoğu çevre meselelerini desteklemekte ancak nedenlerle farklı açıklamalar sunmaktadır. Eko-merkezli bireyler, doğanın kendi

iyiliği nedeniyle çevre sorununu desteklemektedir. Öte yandan, insan merkezli bireyler çevrenin insanlar nedeniyle desteklenmesi gerektiğini ifade etmektedir. Yazarlar, eko-merkezli ve insan merkezli bireyleri ortaya çıkarırlarsa, çevresel tutumlarının davranışlara dönüşeceğini tahmin edebileceklerini iddia etmişlerdir. Yazarlar antroposentrik veya eko merkezli tutumları, ilgisizliği ölçmek için bir ölçek geliştirdiler ve eko-merkezcilik antroposentizmi ile kendileri tarafından bildirilen davranışları arasındaki ilişkiyi test etmek için kendi bildirdikleri davranışlar incelendiler. Çalışma sonucuna göre, eko merkezli bireylerin daha olumlu davranışlar gösterdikleri, antroposentrik bireylerin daha fazla çevresel ilgisizlik gösterdiği görülmüştür.

Eagles ve Demare (2010), çocukların çevresel tutumlarını etkileyen faktörleri inceledi. Çalışmaya 6. sınıf (N = 72) öğrenci katılmıştır. Öğrenciler aileleriyle birlikte bir yaz kampına katıldılar. Çalışma ile ilgili olarak, evdeki çevre hakkında konuşmak, çevre kitaplarını veya dergilerini okumak ve çevresel televizyon ya da film izlemek, bir etkinliğe katılan öğrenciler ile dâhil olmayanlar arasında ekolojist tutum puanları arasında bir fark yarattı. Diğer taraftan yaz kampına katılmakla, aile ile kamp yapmak ve ekolojik tutum puanıyla sınıfta çevre hakkında konuşmak arasında bir ilişki olmadığı tespit edildi. Araştırmacı, anketin kampçılık için uygun olmadığını, bu nedenle kampanyanın etkisinin eksikliği anket tasarımından kaynaklanıyor olabileceği ile açıklandı.

Bozzolasco (2016), öğrencilerin önceden var olan doğa anlayışlarını, ekolojik dünya görüşlerini, çevre algılarını ve tercihlerini, ayrıca dış mekan çevre eğitim kurslarının katkısını incelemek için doktora tezi yürütmüştür. New Jersey'deki bir şehir okul bölgesinde bu çalışmaya 5. ve 7. sınıf öğrencileri (N = 142) katıldı. Kursun başında ve sonunda, öğrencilerin çevresel dünya görüşlerini ölçmek için Yeni Çevre Paradigması Ölçeği (NEP) kullanılmıştır. ANOVA testi kullanıldı ve test sonucuna göre grupların preprogram (F (3, 36) = .17, p = .91) ve post-program (F (3, 36) =) arasında istatistiksel olarak anlamlı bir fark yoktu. 01, p =

1.00). Ayrıca, öğrencilerin çoğunu çevre merkezci bir dünya görüşüne sahip olduğunu bildirmişlerdir.

Eğitim çevreye yönelik sorumlu davranış geliştirmede çok önemli bir role sahiptir. (Hungerfold, 1990). Çevreye yönelik sorumlu davranışlar Tbilisi Intergovernmental Conference on Environmental Education (1977) konferansında detaylı bir şekilde tanımlanmıştır; Bu davranışlardan bazıları şu şekildedir: çevre problemlerinin çözümünde sosyal gruplara aktif bir şekilde katılmak ve problemlerin çözümünde aktif olarak rol almak çevreyle ilgili problemlerin çözümüyle ilgili beceriler geliştirmek, çevreyi korumak için olumlu tutum ve his geliştirmek, çevre problemleriyle ilgili farkındalık geliştirmek (Hungerford and Volk, 1990, p.9). Bu tanımlar çevre problemlerini çözebilmek için geliştirilmiştir. Fakat, bir çok araştırma insanların çevre konusunda olumlu his ve tutum geliştirmelerine ragmen çevreye yönelik olumlu davranış geliştirmediğini ortaya çıkartmıştır. (Gigliotti, 1990; Nispet et al., 2008). Gigliotti (1990) pek çok kişinin çevre konusunda fedakarlık yaparak istememesinin sebebinin, onların çevreye yönelik değer yargı geliştirmemiş olmasını savunur. Bu nedenle, insanların çevreye yönelik davranışının sebebi konusunda daha çok bilgiye ihtiyaç duyulmaktadır.

Bu konu hakkında, pek çok araştırma ilk olarak çevreye yönelik sorumlu davranışlarla ilgili olan değişkenleri ortaya çıkarmaya çalışmıştır (Arbuthnot, 1977; Hines ve ark. 1987). Arbuthnot (1997) göre, geridönüşüm çevreye yönelik sorumlu davranışlardan bir tanesidir. Bu davranış. eğitim, bilgi, tutum, kişinin karakteristik özellikleriyle tahmin edilebileceği bulunmuştur.

Hines ve ark. (1987) çevreye yönelik sorumlu davranışları tespit edebilmek için bir meta-analiz yapmışlardır. Bu çalışmaya göre, konu hakkındaki bilgi, sorun hakkında ne yapılması gerektiği hakkındaki bilinç, tutum, sözlü ikna kabiliyeti,

ve kişinin sorumluluk alma isteği ile çevreye yönelik sorumlu davranışın ilişkili olduğu ortaya çıkmıştır.

Alp ve arkadaşları (2008) çevresel bilgi, davranışsal niyet ve çocukların control odağının çevreye yönelik olumlu davranışla ilişkisini incelemiştir. Bu çalışma 1140, 6 ve 8. Sınıf öğrencileriyle yapılmıştır. Çalışmanın soucuna göre, öğrencilerin çevcre konusunda yeterli bilgisinin olmamasına rağmen, çevreye yönelik olumlu davranışlara sahip olduğu ortaya çıkmıştır. Fakat yaptıkları davranışın amacı konusunda öğrencilerin seviyesi düşük çıkmıştır. Bunun yanında, öğrencilerin control odağının, çevresel davranışlarıyla oldukça yüksek bir ilişkide olduğu ortaya çıkmıştır.

Başka bir araştırma Hsu (2004) tarafından 16 haftalık çevre eğitimi kursunun çeyreye yönelik davranış ve çevre okur yazarlığına katkısını incelemek için yapılmıştır. Kursa başlamadan önce bir deney grıubu seçmiş, bu grup çevre derslerini almıştır. Başka bir grup ise , konrrol grubu, bu derslaeri almamıştır. Çalışmaya başlamadan önce. Ön test yapmış ve test sonuçları her iki grubunda aynı çıkmıştır. Kurs boyunca her iki ayda bir testler yaparak grupların durumunu takip etmiştir. Test sonuçları çevre kursunu alan grupla almayan grup arasında istatistiksel olarak anlamlı bir ilişkinin olduğunu ortaya çıkarmıştır. Kurs öğrencilerin davranışlarında olumlu bir değişikliğe sebep olmuştur. Araştırmacı, çevre eğitiminin, öğrencilerin bilişsel çevre okur yazarlık düzeyini arttırdığı sonucuna ulaşmıştır.

YÖNTEM

Bu çalışmanın temel amacı (1) 5., 6., 7. ve 8. sınıf öğrencilerinin doğa ile ilişki düzeylerini, çevreye yönelik tutumlarını ve çocukların sorumlu çevresel davranışlarını belirlemek, (2) çocukların sorumlu çevresel davranışlarının, doğa ile ilişki ve çevreye yönelik tutum ile ilişkisinin olup olmadığını bulmaktır.

Bu çalışmada doğa ile ilişki ve çevreye yönelik tutum bağımsız değişken, çocukların sorumlu çevresel davranışları bağımlı değişken olarak belirlenmiştir.Bu çalışmaya, Iğdır şehir merkezinde eğitim gören 908 ortaokul öğrencisi katılmıştır.

Veri Toplama Aracı

Kişisel Bilgiler Anketi

Bu anket ile öğencilerin cinsiyeti, yaşı, sınıf seviyesi ve nerede büyüdüğü hakkında bilgi edinilmiştir.

Doğa ile İlişki

Bu anket Nispet ve arkadaşları (2009) tarafından geliştirilmiş ve Çakır ve arkadaşları (2015) Türkçe'ye uyarlanmıştır. Ölçek, 5 puanlık, 21 Likert tipi madde içermektedir. Bu ölçek 3 faktörden oluşmaktadır: NR-benlik, NR-perspektif ve NR-deneyim. Öğrencilerden 5 puanlık Likert tipi bir ölçekte puanlama yapmaları istenmiştir. '1' puan " kesinlikle katılmıyorum ", '2' 'katılmıyorum', '3' 'kararsızım' ' , '4' " katılıyorum" ve '5' "kesinlikle katılıyorum"anlamına geelmektedir.

Ölçekten elde edilen veriler SPSS programına girilmiş ve puanlama yapılmıştır. Cronbach's alpha katsayısı 0.86 olarak hesaplanmıştır.

Çevreye Yönelik Tutum

Thompson ve Barton (1994) tarafından geliştirilen Çevre Yönelik Tutum, ölçeği öğrencilerin çevreye yönelik iç motivasyonlarını ölçmek için kullanılmıştır. Bu ölçek çevre merkezcilik ve insan merkezcilik olmak üzere 2 boyutludur. Ölçek Türkçe'ye çevrilmiş ve iç tutarlılığı 0.81 olarak hesaplanmıştır.

Çocukların Çevreye Yönelik Sorumlu Davranış Ölçeği

Bu çalışmada Erdoğan ve arkadaşlarının (2012) va Alper (2014) hazırladığı ölçekler bu çalışmanın amacına uygun olarak adapte edilip, kullanılmıştır. Bu ölçeğin iç tutarlılığı .90 olarak bulunmuştur. Araştırmada, katılımcılardan maddelerde bulunan davranışları 1 yıl içinde ne sıklıkla yaptıklarına göre derecelendirmeleri beklenmiştir. Öğrenciler, maddeleri "her zaman" ile "hiç" arasında değişen beş puanlık bir ölçekte derecelendirmişlerdir (1 = asla, 2 = nadiren, 3 = bazen, 4 = sık, 5 = daima anlamına gelmektedir).

Prosedür ve Veri Analizi

Araştırmada ilk olarak ayrıntılı bir şekilde yazın taraması yapılmıştır. Bulunan bilgiler analiz edilmiştir. Orta Doğu Teknik Üniversitesi Sosyal Bilimler Enstitüsü Etik Kurulu ve Iğdır Milli Eğitim Müdürlüğü'nden gerekli izin alınarak okullarda anket uygulaması yapılmıştır. Elde edilen veriler Statistical Package for the Social Sciences Program (SPSS)'ına girilerek gerekli analizler yapılmıştır.İlk olarak ön veri analizi yapılarak, veriler analize hazır hale getirilmiştir. Daha sonra çoklu doğrusal regresyon analizi yapılmıştır.

Analiz sonucuna göre öğrencilerin Doğa ile İlişkisi yüksek seviyede olduğu ortaya çıkmıştır. Ölçeğin perspektif boyutu (M = 3.96), öğrencilerin dış doğa ile ilgili bir dünya görüşüne sahip olduğunu göstermektedir. Öz-benlik boyutuna göre, öğrenciler doğaya bağlı ve ekolojik kimlik geliştirdikleri ortaya çıkmıştır (M = 3.74). Ek olarak, deneyim maddeleri (M = 3.43) öğrencilerin doğaya yönelik fiziksel deneyimlerinin göreceli olarak az olduğunu göstermektedir.

BULGULAR

Bu çalışmada ilköğretim öğrencilerinin doğa ile ilişkilerinin yüksek olduğu ortaya çıkmıştır. Perspektif maddeleri (M = 3.96), öğrencilerin insan eylemlerinin tüm canlılar üzerindeki etkileri hakkında endişelendiklerini, öz benlik maddeleri, öğrenciler doğaya yönelik ekolojik bir kimlik geliştirdiklerini (M = 3.74) göstermiştir. Ek olarak, deneyim maddeleri (M = 3.43), öğrencilerin doğadaki fiziksel deneyimlerinin göreceli olarak düşük seviyede olduğunu göstermiştir.

Öğrencilerin çevreye yönelik tutumu göz önüne alındığında, öğrencilerin daha çok çevreye kendi iyiliği için değer verdiği (M = 3.80) kendi yararı için daha az değer verdiği (M = 3.20) ortaya çıkmıştır.

Buna ek olarak öğrencilerin çevre sorunlarının çözümünde fiziksel olarak rol aldıklarını ,M=3.86, (enerji tasarrufu yapma, çöpleri çöp kovasına atma, geri dönüştürülebilen malzemeleri ayırıp, geri dönüşüm tesislerine gönderme vs.), fakat diğer insanları çevre sorunlarının çözümü konusunda ikna etmede ve bilgilndirmede yetersiz kaldıklarını göstermiştir, M=3.08.

Çoklu doğrusal regresyon analizi doğayla ilişkinin ve çevresel yönelik tutumun, çevreye yönelik sorumlu davranışlarla istatistiksel olarak anlamlı bir ilişkisinin olup oladığını araştırmak için yapılmıştır. Test sonucuna göre, doğayla ilişki

boyutları olan benlik, deneyim ve perspektifin, çevresel tutumun boyutları olan eko-merkezcilik ve antroposentrizmin lineer kombinasyonu, sorumlu çevresel davranışlarla önemli ölçüde ilişkili (F (5,887) = 34.243) , p <.005) ve R^2= .16) olduğu ortaya çıkmıştır. Çocukların sorumlu çevresel davranışlarındaki varyansın 16% 'sının diğer değişkenlerin doğrusal birleşiminden oluştuğu görülmüştür. Deneyim, ekomerkezcilik, perspektif ve antroposentrizm, istatistiksel olarak anlamlı yordayıcıdırlar (p <0.05), ayrıca ecomerkezcilik boyutu, bağımlı değişkenin en büyük oranını (β = .24 ve part correlation = .15) açıklar. Fakat, doğa ile ilişki boyutu olan benlik, sorumlu çevresel davranışı ile istatistiksel olarak anlamlı bir ilişkiye sahip olmadığı görülmüştür (p> 0.05).

SONUÇ

Bu çalışmanın sonucu öğrencilerin doğa ile ilişki içinde olduğunu ortaya çıkartmıştır. Özellikle öğrenciler insan davranışı ve davranışın diğer canlılar üzerindeki etkileri konusunda oldukça endişeli oldukları ortaya çıkmıştır. Fakat öğrenciler fiziksel olarak doğadan uzak kalmışlardır. Cinsiyetle ilgili olarak, kızlar erkeklere göre daha çok doğayla ilişkilidirler.Fiziksel yakınlık bakımından hem kızlar hemde erkeklerin aynı seviyede olduları bulunmuştur.

Bu çalışmada öğrencilerin çevre merkezci tutuma sahip oldukları ortaya çıkmıştır. Cinsiyet konusunda yine kızların çevre merkezci tutumu erkeklere göre daha yüksek çıkmıştır.

Öğrenciler çevreye yönelik sorumlu davranışlar göstermektedirler.Öğrencilerin pekçoğu fiziksel olarak çevre problemlerinin çözümüne katkı sağlamaktadırlar. Örneğin öğrenciler geri dönüşüm kutusuna metalleri ve pilleri attıklarını, enerjiyi tasarruflu kullandıklarını belirtmişlerdir. Fakat başkalarını çevre problemlerini çözmek için ikna etme, bilgilendirme konusunda yetersiz oldukları sonucu ortaya çıkmıştır.

TARTIŞMA

Bu çalışma, ortaokul öğrencilerinin doğal çevre ile yüksek bir bağlantı seviyesine sahip olduklarını ve doğadan bağımsız olarak yaşamadıklarını göstermiştir. Doğal çevre ile ilişki, çocukların okul ortamlarındaki biyoçeşitliliğin koruyanarak güçlenebileceğini göstermiştir (Lieflander ve ark., 2012). Öğrencilerin okul ortamı düşünülürse, okul ortamı etrafında çok sayıda ağaç, yeşil alan vardır. Igdır bir şehir olarak değerlendirilmesine rağmen, aslında bazı kentsel ve bazı kırsal yerleri vardır. Bu nedenle öğrenciler doğal çevre ile yüksek bir ilişkiye sahip olması yaşadıkları çevrenin doğa ile iç içe olmasından kaynaklanabilir.

Ayrıca, bu çalışmada kırsal alanlarda büyüyen öğrencilerin diğerlerinden daha fazla doğayla ilişkiye sahip olduklarını göstermiştir. Doğa ile ilişki, önceki deneyimlere bağlıdır (Cheng & Monroe, 2012). Kırsal alanlarda büyüyen öğrencilerin, doğada zaman geçirebilmek için daha fazla fırsatları vardır.

Bu çalışma, ortaokul öğrencilerinin doğayla ilgili dış dünya görüşünün oldukça yüksek olduğunu ortaya koymuştur. Öğrenciler, doğal çevrenin insan etkisinden kendi kendine kurtulamadığı için korunması gerektiğine inandıkları ortaya çıkmıştır. Ayrıca, bazı türlerin sadece ölmesi ya da soyu tükenmemesi gerektiği konusunda hemfikirler. Ortaokul fen bilimleri eğitimi müfredatında (Milli Eğitim Bakanlığı, 2018) sürdürülebilir kalkınmaya değinilmektedir. Sürdürülebilir kalkınma, Brundtlent Komisyonu (1987) tarafından hazırlanan ‘Ortak Geleceğimiz’ adlı Raporunda insan ve doğa arasında bir denge sağlayarak doğal kaynakları tüketmeden gelecek nesillerin ihtiyaçlarını karşılamak olarak tanımlandı. Bu çalışma, öğrencilerin, milli eğitim müfredatında yer alan sürdürülebilir kalkınma konusunda, bilinçli olduklarını ortaya koymuştur.

Sonuçlar ayrıca öğrencilerin doğal çevre ile fiziksel ilişkisinin nispeten düşük olduğunu göstermiştir. Soga ve ark., (2018), doğa ile çocuklar arasındaki fiziksel

ilişkinin biyolojik çeşitlilik kaybı, elektronik eğlence medyası, kentleşmesi ve aile üyelerinin çevreye karşı tutumları gibi bazı engeller nedeniyle azaldığını belitti. Öğrencilerin sorumlu çevresel davranışları göz önüne alındığında, öğrenciler geri dönüşüm, enerji tasarrufu vb.fiziksel eylemler gösterdiklerini bildirmişlerdir. Çevre sorunlarını önlemek veya önlemeye yardımcı olmak için birini ikna etmete ya da teşvik etmemekte tereddüt ettikleri gözlemlenmiştir.

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