A CROSS-AGE STUDY ON ELEMENTARY STUDENTS' VALUE ORIENTATIONS, ENVIRONMENTAL OPTIMISM AND ENVIRONMENTAL CONCERN

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Approval of the Graduate School of Social Sciences

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ABSTRACT

A CROSS-AGE STUDY ON ELEMENTARY STUDENTS' VALUE ORIENTATIONS, ENVIRONMENTAL OPTIMISM LEVELS AND ENVIRONMENTAL CONCERN

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A cross age study was conducted to investigate 6th, 7th and 8th grade students' value orientations, environmental optimism, and environmental concern. In addition, gender and grade level differences in the environmental-related attributes were examined.

A total of 938 (491 girls and 447 boys) students attending public schools located in Kelkit, the district of Gumushane, were administered a questionnaire consisting of Demographics, Environmental Attitudes and Apathy Scales, Environmental Concern Scale , Environmental Optimism Scale, Locus of Control Scale and Conservation Behavior Scale.

In general, students who participated in the current study found to endorse eco-centric attitudes, and express a high degree of concern as well as optimism level about the current and future state of the environmental issues and problems. They also seemed to be interested in environmental issues and problems and perceived environmental problems as one of the two or three most important problems currently being faced.

In order to examine the role of gender and grade level on students' environmental attitudes, two separate two-way MANOVAs were conducted. The results revealed a statistically significant gender and grade level differences both on

students' ecocentric, apathy and anthropocentric attitudes and on students' environmental optimism and concern levels.

Keywords: elementary school students, environmental concern, gender, value orientations, optimism

ÖZ

İLKÖĞRETİM ÖĞRENCİLERİNİN DEĞER YÖNELİMLERİ, ÇEVRESEL OPTİMİZM DÜZEYLERİ VE ÇEVRESEL KAYGILARI ÜZERİNE KARŞILAŞTIRMALI BİR ÇALIŞMA

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Bu çalışmanın amacı, ilköğretim öğrencilerinin değer yönelimlerini, çevresel kaygılarını ve optimism düzeylerini, cinsiyet ve sınıf düzeyinin değer yönelimlerine etkisini belirlemektir. Veriler Gümüşhane'nin Kelkit ilçesindeki devlet okullarında eğitim gören toplam 938 (491 kız ve 447 erkek) öğrenciye demografik, çevre odaklı ve insan odaklı tutum ölçeği, çevresel endişe ölçeği, çevresel optimism düzeyi ölçeği, kontrol odağı ölçeği ve çevre korumacı davranış ölçeği uygulanarak toplanmıştır. Betimsel analizlere göre, öğrencilerin genellikle çevre odaklı değer yönelimlerine sahip oldukları ve çevreye karşı duyarlı oldukları tespit edilmiştir. Öğrencilerin çevresel davranışlarının üzerinde cinsiyet ve sınıf düzeyinin rolünü değerlendirmek için iki ayrı iki yönlü MANOVA yapılmıştır. MANOVA analizlerinin sonuçları cinsiyetin ve sınıf düzeyinin öğrencilerin hem benimsedikleri değer yönelimlerini hem de çevresel iyimserlik ve endişe düzeylerini anlamlı olarak etkilediğini göstermiştir.

Anahtar Kelimeler: İlköğretim öğrencileri, çevresel duyarlılık, cinsiyet, değer yönelimleri, iyimserlik

To my endless love, Özgür…

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ABBREVIATIONS

FA	Factor Analysis
MANOVA	Multivariate Analysis of Variance
MNE	Ministry of National Education
Df	Degree of freedom
f	Frequency
N	Sample size
p	Significance level
M	Mean
SD	Standard deviation

CHAPTER I

INTRODUCTION

In recent years, 'environment' has become a very important issue because of the emergence of many environmental problems all over the world. Air and water pollution, global warming, greenhouse effects, ozone toxicology, population growth, environmental disasters, energy shortage, and etc. can be given as an example of some environmental problems (World Commission on Environment and Development, 1987). According to the studies conducted in the field of environmental education, environmental problems are the most important social problems of the day (Dunlap, 1991; Dunlap, Gallup, & Gallup, 1993; Kempton, Boster, & Hartley, 1995). It has also been recognized that environmental problems are only beginning and that in the coming years their severity will increase (Dunlap & Saad, 2001; Saad, 2002). With the increasing effects of environmental problems the importance of the environmental education and awareness of the environmental issues have gained much more importance. Although the awareness about the harmful actions of human toward the natural environment is increasing (Schultz, Gouveia, Cameron, Tankha, Schmuck, & Franek, 2005), human behavior is still considered to be one of the most important contributor of these problems (Gardner & Stern, 2002; Nickerson, 2003). As stated by Arnocky, Stroink, and DeCicco (2007) that when the harmful consequences of environmentally destructive human behavior have become more evident, people worldwide are expressing increased awareness and concern for environmental issues. Although majority of the people describe environmental problems as being a fundamentally critical social issue (Kempton, Boster, & Hartley, 1995; Leiserowitz, 2005), many people still view the potential effects of environmental destruction as applying primarily to distant places, individuals, or non-human nature (Leiserowitz, 2005). However, humans also tend to differ in their level of concern for the environment. Some are much more likely to make personal sacrifices to sustain the natural environment than are others (Arnocky

et al., 2007). As Schultz and Zelezny (1999) alleged, the level of concerned about environmental issues of two people could be equal, however, their reason could be different such as; they may concerned about adverse consequences of environmental problems for themselves, for other people, or for all living things. Since 1970s environmental ethics' literature, environmentalists and their opponents relates environmental concerns with three classes of valued objects such as; the self, other people and nonhuman objects (Stern & Dietz, 1994). In her earlier publication entitled as *Radical ecology*, Merchant (1992, p.62) reported presence of three 'ethics', namely the homocentric, eco-centric, and egocentric, which corresponds to above mentioned three classes of valued objects. While egocentric ethics based on the self, homocentric ethics grounded in the social good. On the other hand, ecocentric ethics grounded in the cosmos or whole ecosystem. In line with the Merchant's three 'ethics', Stern, Dietz and Kalof (1993) have identified three value orientations known as social-altruistic, biospheric, and egoistic Actually, Stern and his colleagues mentioned this idea in their value- belief norm (VBN) theory of environmental attitudes that is the extension of Schwartz's (1977) norm- activation theory of altruism to explain pro-environmental attitudes and behaviors (Stern, 2000; Stern, Dietz & Kalof, 1993; Stern & Dietz, 1994). Stern and his colleagues argued that Schwartz's (1977) norm-activation theory handles environmental concern only as an "altruistic value orientation". However, in Stern and his colleagues' value-belief-norm theory, they proposed that there are three types of environmental concerns: egoistic, social altruistic, and biospheric. Egoistic environmental attitudes are based on beliefs about the adverse consequences (AC) of environmental destruction to the individual, for example, the environment should be protected because I don't want to breathe polluted air; social altruistic environmental attitudes are based on human benefits for example, the environment should be protected because of the long-term consequences it may have on other people; and lastly biospheric attitudes are based on concerning all living things for example, the environment should be protected because we are the part of environment (Schultz & Zelezny, 1999). In addition, as Schultz (2001) stated, VBN theory suggests the reason of concerns about specific environmental issues are because of an awareness

of harmful consequences of environmental problems to a value or valued object. Value-belief norm theory reported to link three theories; norm- activation theory, the theory of personal values, and the New Ecological Paradigm hypothesis. The most prominent measure of environmental attitudes was the New Environmental Paradigm (NEP) as stated by Schultz and Zelezny (1999). Although Stern and Dietz (1994) mentioned that NEP conceptually resemble with their notion of biocentrism, it is limited in that it measures general environmental concern. However, environmental attitudes are the resulting of a person's value system and the attitudes could be distinguished different clusters as Schultz and Oskamp (1997) claimed. Actually, according to the Stern (2005), VBN theory focused only on the role of personal influences on behavior. According to the VBN theory, personal norms determine the individual choice and this is the key element for this model. As Stern (2005) stated, if a person thinks the violating of personal norms for pro-environmental actions (recycling, reducing car use, producing less household waste, using resources carefully, active participation in a pro-environmental organization, etc.) they would have adverse effects on things the individual values, it is known as awareness of adverse consequences (AC) and if an individual believes that by taking action, they would hold significant responsibility for those consequences then it is known as ascription of responsibility (AR). Figure 1 shows the important personal influences. It can be inferred that influences that hold not only on single environmental behaviors, but also on broader classes of behaviors.

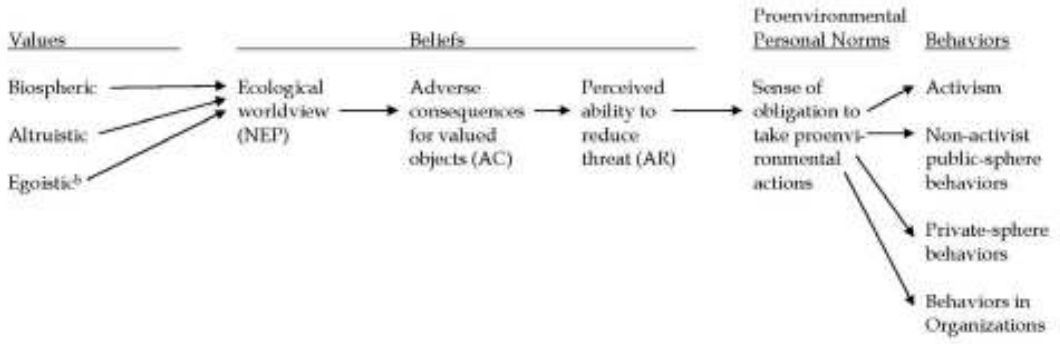

Figure 1.1. A schematic representation of variables in the VBN theory of environmentalism (Stern, 2000, p. 412)

In their study, Thompson and Barton (1994) suggested two motives or values (ecocentric and anthropocentric) that underlie support for environmental issues. In each motives individuals express positive attitudes toward environmental issues and an interest in preserving natural resources but fundamentally for different reasons. According to Thompson and Barton (1994), anthropocentric individuals support conservation because they believe if they preserve natural resources and have healthy ecosystem then the quality of life, human comfort, and health would be increase. On the other hand, ecocentric individual support environmental issues because according to them nature is worth to preserve without thinking about economic dimension or lifestyle while conserving. They stated that concerning for environmental issues is widespread among people but although there is a strong commitment to the environment and conservation and there are very positive views of the environment, it won't be translated into action to conserve resources. They explained this lack of translation of attitudes into action as reducing consumption includes sacrifice and inconvenience. In fact, they further stated that when people faced with higher prices or need to forego convenience then acting on the tendency to conserve would be difficult for them. As Thompson and Barton declared, since egoistic and social-altruistic values focus on outcomes for human, they are similar to anthropocentric attitudes, while, biospheric values are most similar to ecocentric motives.

Parallel to the changes in individuals' level of environmental concern all over the world, their optimism and pessimism level toward the environmental issues also started to change. Lionel Tiger (1979) defined optimism as: "a mood or attitude associated with an expectation about the social or material future-one which the evaluator regards as socially desirable, to his [or her] advantage, or for his [or her] pleasure" (p. 18) (Cited in Peterson, 2002, p.41). On the word of Peterson, optimism takes two forms; optimism as *human nature* (an inherent part of human nature, to be either *praised* or *decried*) and optimism as *an individual difference (*characteristic individuals have to varying degrees). He argued that two forms of optimisms are compatible. Gifford et al. (2009) stated that optimism may direct persons and societies towards success, as long as preferred goals are attainable and real risks are not overlooked and claimed that optimism is subject to self-favoring bias. In their

study, Gifford and others defined comparative optimism as "the belief that positive events are more likely, and negative events are less likely, to happen to oneself than to others" (p. 2). According to authors, comparative optimism gives emphases on both *self-other* (person-oriented) comparisons, and geographic distance. It was also stated that only the government is not enough to take actions but also the attitudes of individual citizens are important. For example, government may change the environmental policies according to the citizen's perceptions of environmental risk. At this point, being optimistic about environmental issues and the concern level of individual gains importance. In their study, Hatfield and Job (2001) maintained that optimism bias about environmental deterioration might impede pro-environmental behavior. They inferred that individuals seemed not to be optimistically biased about environmental deterioration due to the appropriate protective behaviors they think automatically benefit themselves and also others. For this reason, egocentric emphasis on individual' own behaviors appeared not to contribute to optimism bias. However, environment-related optimism bias, on the other hand, found to be increase when individual consider less globally effective behaviors (Hatfield & Job 2001). They further asserted that "Unless people recognize global effects of their local actions they are likely to be optimistically biased, and so be less likely to engage in these actions. (p.28).

While the studies related to environmental attitudes and concerns have been continuing, the potential roles that different variables play on these constructs have also been acknowledged by several researchers. Among them gender and age have received great attention by the researchers all over the world. Studies exploring the gender difference, for example produced mixed results; while some studies showed that there were significant gender difference in favor of girls (Bord & O'Connor, 1997; Cavas, Cavas, Tekkaya, Cakiroglu & Kesecioglu, 2009; Chu, Lee, Ko, Shin, Lee, Min &Kang, 2007; Huang & Yore, 2004; Karpiak & Baril, 2008, Riechard & Peterson, 1998; Tikka Kuitunen & Tynys, 2000; Worsly & Skrzypiec, 1998; Zelezny et al., 1994), others reported that there were significant effects of gender favoring boys (Arcury & Christianson, 1990; Macdonald & Hara, 1994, Shen & Saijo, 2006). However, Uyeki and Holland (2000) determined gender not be associated with

environmental concern. As Dunlap and Van Liere (1980) stated in the gender hypothesis that the direction of the relationship between sex and environmental concern was ambiguous. In literature, gender differences in environmental attitudes were generally explained by two theories (see Blocker & Eckberg, 1997). One of them was *socialization-based theory* which states that females tend to assume 'caregiver' roles more than males and that females socialized to be more interdependent, compassionate, nurturing, cooperative and helpful in care-giving roles, while, males are socialized to be more independent and competitive. Tikka et al. (2000) claimed that since the clean and safe environment is needed for welfare and survival, females' concern toward environment can be seen as a way of taking care of their offspring. The second theory was a *structural theory* which states that gendered segmentation of the economy and workplace has a direct influence on the environmental point of view of women and men. The theory claimed that in spite of having knowledge and acceptance on the purpose of economic growth, women are exposed to the results of economic growth more than men. The source of this argument is the women's active role in the workforce besides their caregiver role in the household. This role is in direct contrast to men's historical "breadwinner" role (Weaver, 2002; p. 83). According to Lai and Tao (2003), gender differences in favor of female regarding hazards related to the environmental value orientation, females being more concerned about environmental issues and holding a stronger belief that environmental quality would have important consequences for the well-being of human being.

Contrary to gender studies, studies about age difference reported, in general, opposite relation between age and environmental concern (e.g. Acury & Cristianson, 1990;Van Lieri & Dunlop, 1980), in line with the age hypothesis stating that younger people tend to be more concerned about environmental issues than older people (Dunlap et al., 1980). Some other researchers, on the other hand, found direct relation between these variables (Lyons & Breakwell, 1994; and Jiangang, 1993). However, Riechard and Peterson (1998) showed no association between perception-of-risk scores and grade level. Investigators proposed different explanations to this discrepancy. For example, according to Jiangang (1993), older individual have more

social and life experiences therefore express more concern about environment hazards in turn provided higher ratings to levels of threat from the risk items. Yilmaz, Boone and Andersen (2004) claimed that there is a positive relation between the students' attitudes toward the environment and their opportunities to discuss or learn about environmental concepts during their science courses. Moreover, Alp, Ertepinar and Tekkaya (2006) maintained that as the students grow older, their experiences with nature along with their knowledge about environmental issues also increase.

Acknowledging that the environmental problems are today's world most important social problems, and that these problems are the just in their beginning stage and would be intensified in the future as well as that human behavior is one of the most important reason for these problems, it is important for young generation to be aware of such problems in order not to contribute their occurrence. In line with this reasoning, the current study intended to examine the elementary students' value orientations, environmental optimism and environmental concern that play important roles in individuals' interaction with nature.

1.1. Significance of the Study

According to one adage "Earth is not the legacy to us from the past but it is entrust of the future." Protection of the nature and leaving a livable world for future generations give responsibility to everybody as being a human. Against the increasing environmental problems, some regulations have been made and protection of the environment is accepted as a citizenship duty. The most effective way seems to increase conscious and make individuals more concerned about the environmental issues. The studies on the environmental psychology showed that the negative effects of the environmental problems worries the individuals about themselves (egoist), others (altruistic) and the biosphere (biospheric). To understand the way individuals interact with environment, uncovering of their value orientation gain significant importance. Since value orientations that individuals adopted most probably will determined the way they interact with the environment.

In the last two decades, increasing concerns for the environment resulted in integration of environmental issues in education programs for the intension of increasing young peoples' environmental awareness. On the word of Lyons and Breakwell, (1994, p. 224) "studying young people is particularly important as they are the ones who will be affected by and will have to provide solutions to environmental problems arising from our current actions". According to Bogner and Wiseman (1997, p.120), young people are the future environment 'users'. In fact, much has been accomplished in the science curricula toward developing environmentally literate citizens. Parallel to the reform movements in science curricula around the world, recent science education reform in Turkey has been grounded in a constructivist approach to learning and environmental education has been viewed as an integral part of this curriculum. As stated by Erdogan, Marcinkowski, and Ok (2009) compared to past, current elementary science curricula gave more attention to environmental concepts and local and global environmental problems. A significant feature of the revised Turkish National Curriculum (Ministry of National Education [MONE], 2005), therefore, was the inclusion of the many environmental topics into different disciplines, such as life sciences, social sciences and other interdisciplinary courses (e.g., health education, citizenship and human rights education, and special education) across grade level (Erdogan et al., 2009). In addition, greater emphasizes was given the importance of the relationship between science-technology-society-environment (STSE). The revised curricula, thus, attempts to raise scientifically as well as environmentally literate individuals holding favorable attitudes, skills and behaviors in addition to having adequate knowledge (MONE, 2005).

For example, at the 7th grade curriculum, a unit called 'Human and Environment' included concepts of ecosystems, biological diversity and local and global environmental issues. To learn ecosystems and biological diversity, to be aware of extinct species, to realize local and global environmental problems, as well as to learn how to solve these problems are stated as the main objectives of the unit. Likewise, at the 8th grade curriculum, concepts such as energy flow in food chain, matter cycles, recycle and renewable and non-renewable energy resources exist in

the 'Living Creatures and Energy Relations' unit. The main objectives of the unit were determined to be learning and understanding the associations among these concepts as well as their relation to students' daily life experiences (MONE, 2005). At this point, there is a need to conduct a study to assess value orientations of the elementary students who are educated with the revised science curriculum. Determining young people's value orientations could provide science educators with valuable information about the prevailing situation, as well as strengthen the efforts for developing environmentally literate citizens. In addition to the importance of the education at the elementary level, the factors like age, gender, place that the people live, socio-economic status plays crucial roles in determining individuals' environmental attitude. As the review of related literature indicates there is no agreement on the direction of the relationship between gender, age, and environmental concern. In other word, it is not clear whether females and young people are more likely to be environmentally concerned than males, and older people. Besides, most of the previous studies were conducted with undergraduate and graduate students, much research study, however, is needed to understand young peoples' value orientations. Given the focus of earlier research inquiry into the area of gender and grade level differences on elementary students' value orientations and environmental optimism value orientations in is warranted. In addition, utilizing samples from rural areas (Kelkit, Gumushane) make the study unique among others.

1.2. The Main Problems, Sub-Problems and Hypotheses

1.2.1 The Main Problems

1. What are the value orientations of 6^{th}, 7^{th} and 8^{th} grade elementary school students in Kelkit?
2. What is the environmental optimism level of 6^{th}, 7^{th} and 8^{th} grade elementary school students in Kelkit?
3. What is the environmental concern level of 6^{th}, 7^{th} and 8^{th} grade elementary school students in Kelkit?

1.2.2 The Sub-Problems

1. Is there a significant gender and grade level differences on ecocentric, anthropocentric attitudes and environmental apathy of the 6th, 7th and 8th grade elementary school students in Kelkit?
2. Is there a significant gender and grade level differences on environmental concern and optimism levels of the 6th, 7th and 8th grade elementary school students in Kelkit?

1.2.3 Hypotheses

1. There is no statistically significant effect of gender and grade level on ecocentric, anthropocentric attitudes and environmental apathy of the 6th, 7th and 8th grade elementary school students.
2. There is no statistically significant effect of gender and grade level on environmental concern and optimism level of the 6th, 7th and 8th grade elementary school students.

1.3. Definition of Important Terms

In this section there are some important definitions related to study.

Ecocentrism

Ecocentric individuals value nature for its own sake and therefore, judge that nature deserves protection because of its intrinsic value (Thompson & Barton, 1994).

Anthropocentrism

The person having anthropocentrism (social- altruistic) environmental attitudes protect environment because of the long-term consequences it may have on other people (Schultz & Zelezny, 1999).

Apathy

To be less environmentally aware and concerned (Bjerke & Kaltenborn, 1999).

Environmental Concern

Environmental concern refers to a sympathetic perspective toward the environment (Hungerford & Volk, 1990).

Optimism

The belief that positive events are more likely, and negative events are less likely, to happen to oneself than to others (Gifford, 2008).

Environmental Attitudes

Attitude refers to set of values and feelings of concern for the environment and motivation for actively participating in environment improvement and protection (UNESCO, 1978).

Value Orientations

Value orientations effect beliefs about the consequences of attitude objects for the things an individual values and thus have consequences for that individual's attitudes and behavior (Stern & Dietz, 1994).

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter aims to present a brief review of related literature in three sections: research on value orientations, research on optimism and lastly environmental education research in Turkey.

2.1 Research on Value Orientations

Identify underlying values that provide a basis for environmental attitudes has had a long tradition in environmental education research (to as Schultz & Zelezny (1999). In their pioneering study Stern and Dietz (1994) proposed three distinct bases for environmental attitudes in their Value Belief-Norm theory of environmental attitudes which is an extension of Schwartz' (1977) Norm-Activation model. Stern, Dietz and Kalof (1993) stated that Schwartz' (1977) Norm-Activation model of altruism proposed that if a person is aware of harmful consequences (AC) of his/her pro-environmental behaviors to others and if that person ascribes responsibility (AR) to herself/himself because of changing awful environmental condition then that pro-environmental behaviors become more probable. They also debated that Schwartz' theory handles environmental concern only in terms of one value orientation which is an altruism value orientation. On the other hand, Stern and his colleagues' value-belief-norm theory proposed that there are two other value orientation apart from altruism such as; egoistic, person who protect the environment because of concerning for herself or himself, biocentric, person who protect the environment because of concerning all living things and also social- altruistic, person who protect the environment because of concerning other people (Schultz, Gouveia, Cameron, Tankha, Schmuck, & Franek 2005). In line with VBN theory, for many years researchers have focused on the individuals' value orientations (e.g., Bjerke & Kaltenborn, 1999; Dietz, Kalof, & Stern, 2002; Ewing, 2001; Gagnon Thompson &

Barton, 1994; Garling, Fujii, Garling, & Jakobsson, 2003; Hansla, Gamble, Juliusson, & Garling 2008; Milfont & Gouveia, 2006; Nordlund & Garvil, 2002; Schultz, 2001; Schultz & Zelezny 1999; Schult et al., 2005; Steg, Dreijerink, & Abrahamse, 2005). The majority of these studies demonstrated the presence of either two or three distinct value orientation or motives (Schultz & Zelezny, 1999).

Thompson and Barton (1994), however, suggested that there are at least two motives (i.e., eco-centric and anthropocentric) underling support for environmental problems and issues. Thompson and Barton contended that although eco-centric and anthropocentric individuals have favorable attitudes toward environment, they have different motives or orientations for supporting conservation. For example, eco-centric conserve environment since they perceive nature as worth preserving without considering the economic or lifestyle implications of conservation. Anthropocentric people, on the other hand, think that the environment should be preserved due to its value in sustaining or improving the quality of human life, human comfort and health (see Thompson & Barton, 1994). They reported that anthropocentric motives are similar to Stern et al.'s (1993) egoistic and social-altruistic values, whereas eco-centric motives are similar to biospheric values. To develop the distinction between two motives (eco-centrism and anthropocentrism) underlying environmental attitudes, Thompson and Barton developed a 25 item five likert-type scale to measure anthropocentric and eco-centric attitudes of adults (N= 115, 58 females and 51 males, average age of 43 years) as well as the relationships between scales and a measure of general apathy toward environmental issues and self-reported conserving behaviors were examined. To measure the conserving behaviors toward the environment, respondents were asked to rate the frequency of given conserving behaviors such as; recycling cans, reusing plastic bags, using public transportation instead of car and avoiding using aerosol sprays. Beside these, there was a question that asked whether the participant was membership in ecologically-oriented organizations or not. Lastly there was an open-ended question that requested to list participants' two most important reasons for being concerned about the environment. The results showed that, individuals who were more eco-centric tended to express less apathy about environmental issues, were more likely to have a conservation

behavior, belonged to more environmental organizations and gave more open-ended eco-centric reasons for their concern about the environment. On the other hand, individuals who were more anthropocentric tended to express more general environmental apathy and were less likely to have a conserving behavior. In the second part of their study, Thompson and Barton (1994) replicated the results of the first study with different sample, to improve the reliabilities by adding new items to the existing scale. Participants of the second study were 71 college students (42 were women, 29 were men, average age of 19 years) who enrolled in an introductory psychology course. As in the first study, eco-centrism, anthropocentrism and general apathy of the participants were measured with the same scale in their second study but to improve internal reliability 8 items were added but also 3 of the first used items were dropped. Similar to the study 1, eco-centrism was significantly correlated with environmental apathy, self-reported conservation behaviors and signing up for the environmental organization. The people who had more eco-centric also engaged in more conserving behavior while the people who held anthropocentric attitudes also expressed less conserving behavior. However, contrary to the first study, anthropocentrism was not found to be related to any of these variables. It is reported that while the results related to eco-centrism were replicated, the results for anthropocentrism were not replicated. Differences in age, socio-economic status, values and knowledge about environmental issues between two samples were considered as a possible interpretation of the different results.

In another study, Bjerke and Kalternborn (1999) examined the similarities and the differences in the value structure expressed by sheep farmers (N=853), wildlife managers (N=551) and research biologists (N= 379) in Norway. They hypothesized that, there was a positive relation between the scores of anthropocentric scale and scores on the scales which measure negative attitudes towards large carnivores and between the scores of eco-centrism scale as well as the positive attitudes towards large carnivores. To specify the degree of eco-centric and anthropocentric value orientations in the three respondent groups, ten eco-centric, ten anthropocentric and five environmental apathy items that were developed by Thompson & Barton (1994) were used. The survey also included the New

Environmental Paradigm (NEP) scale (Dunlap et al., 1992). The results showed that, sheep farmers had a lower eco-centric, higher anthropocentric and higher environmental apathy score while compare with wildlife managers and research biologists. Researchers' hypothesis was also confirmed.

In the same year, Schultz and Zelezny (1999) also conducted a study to measure environmental attitudes across a diverse set of English and Spanish-speaking countries. They also examined the relationship between these attitudes and values. Participants of their study were 120 undergraduates at colleges and universities from Argentina, Canada, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Mexico, Panama, Peru, Paraguay, Spain, the United States and Venezuela. Participants' environmental attitudes, values, self-reported pro-environmental behaviors were measured by Thompson and Barton's (1994) eco-centric and anthropocentric scale and the revised New Environmental Paradigm (NEP) scale (Dunlap et al., 1992). According to the findings, self-transcendent values (reflects the degree to which a person values goals and ideals that are not directly linked to self, includes Universalism; protecting the environment, a world of beauty, unity with nature, broad minded and Benevolence; helpful, honest, forgiving and loyal), particularly universalism, associated with NEP and eco-centrism positively. And also this is consistent across countries. In addition, the self-enhancement (reflects the degree to which a person goals and ideals that are directly linked with tangible rewards for self, includes Power; social power, authority, wealth and preserving my public image and Achievement; successful, capable, ambitious and influential) value of power was negatively related to NEP and eco-centrism, and positively related to anthropocentrism.

Later, Kortenkamp and Moore (2001) examined the ecological common dilemmas' moral reasoning to assess the eco-centrism and anthropocentrism in adults' reasoning about ecological moral dilemmas, to discover the influence of important aspects of the content of ecological dilemmas on moral reasoning and to investigate the function of environmental attitudes. In their study, they accessed 91 (70 females, 21 males) students from introductory psychology classes at the University of Wisconsin-Madison. The mean age of the participants was 18.95 years.

The study consisted of two parts; in the first part there were four dilemma topics; overgrazing a common, logging old growth stands, cutting firewood in a protected forest and building a new landfill. In the dilemmas participants could defend or not defend the actions of the main characters that damage the environment. The participants' moral considerations were coded into three categories such as; eco-centric, anthropocentric and non-environmental. In the second part a 17 item 9 point Likert-type Environmental Attitude Scale were used. Results showed that anthropocentric moral reasoning did not used significantly more than eco-centric moral reasoning; however, they used significantly more non-environmental moral reasoning than when compared with both anthropocentric and eco-centric reasoning. According to the results, Kortenkamp and Moore concluded that, when the dilemmas contained additional information about environmental impacts, participants used more eco-centric and anthropocentric moral considerations while used fewer non-environmental considerations. Furthermore, anthropocentric moral consideration was also used more than eco-centric consideration by the participants. The results also show a correlation between environmental attitudes and the type of moral reasoning used. There was a positive correlation between pro-environmental scores on the internal scale and eco-centrism and anthropocentrism but there was a negative correlation between use of non-environmental moral considerations and eco-centrism and anthropocentrism. According to the first study, overgrazing dilemma provided fewer eco-centric considerations than the other dilemmas also there was an environmental damage information. Because of that unexpected result, Kortenkamp and Moore conducted another study with 84 (36 females, 46 males, mean age=18.99 years) undergraduates from introductory psychology classes at the University of Wisconsin-Madison by manipulating both the social and land-use conflicts in the overgrazing dilemma and Environmental Attitude Scale. According to the second study results, participants reported to use less eco-centric moral reasoning when a social conflict was present than when it was absent. They also found that when a land-use conflict was emphasized using of eco-centric reasoning was more than when it was not use. In addition, no effect of land-use conflict on use of non-environmental or anthropocentric reasoning was demonstrated. As a result, the

presence of a social conflict and absence of an emphasis on land-use conflict caused less eco-centric reasoning used by participants. However, a dilemma with a land-use conflict and a social conflict had no effect on use of anthropocentric reasoning. In conclusion, both studies show that, at expressing the environmental ethical reasoning, personal differences and situational variables are important factors.

In a study with students from Jesuit University in Pennsylvania, Karpiak and Baril (2008) investigated the relationship between moral reasoning and environmental opinions. There were 158 students, 60% of them were females. Participants were from biological sciences, arts and humanities, social sciences, nursing, occupational and physical therapy, communication, business and education. The questionnaire was composed of three parts. In the first part there was a demographic information part, in the second part Rest's Defining Issues Test was used to measure participants' cognitive moral reasoning and in the third part to measure the participants' attitudes toward the environment Thomson and Barton's (1994) Eco-centric and Anthropocentric Scale was used. It was a five point likert-type scale with 30 statements. As a result, while eco-centrism correlated positively with principled moral reasoning (e.g. justice, fairness, rights and obligations), apathy toward the environment correlated negatively and also anthropocentrism was unrelated to principled moral reasoning. In addition, considering eco-centrism, women were higher but considering apathy they were lower than men. However, there was not a relation between gender and principled moral reasoning. On the other hand, students majoring in biological sciences evidenced higher principled moral reasoning and eco-centrism and lower anthropocentrism and apathy when compared with other majors. Karpiak and Baril explained the possible reason of this difference like that, the study of biology decreases anthropocentrism through enhanced understanding of nonhuman life or likely the self-selection of the biology field contribute this relationship.

In a separate study, Zelezny, Chua and Aldrich (2000) investigated the effects of gender on environmentalism and conducted two studies to examine if there is a gender effect on environmentalism in children or not by the first study and across countries by the second study. The first study was conducted by primary and

secondary school students from diverse socioeconomic strata in California. The survey took two years. In 1994 they reached 584 participants and in 1995 it was 709. The questionnaire was composed of 35 items by which students general environmental attitudes were measured by NEP scale, there were items about self-reported knowledge about the environment, feelings of personal responsibility for improving the environment, specific environmental and recycling attitudes, interest and intention to participate in school recycling and about demographic characteristics. As the results indicated in 1994, girls reported significantly stronger general environmental concern when compared with boys. Also girls expressed greater pro-environmental attitudes than did boys. Further girls had stronger intentions for participating in school recycling than did boys. Likewise in 1995 similar results were found. In their second study, Zelezny, Chua and Aldrich (2000) examined the gender differences in environmentalism across 14 countries; Argentina, Canada, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Mexico, Panama, Paraguay, Peru, Spain, the United States and Venezuela. A total of 2160 (781males, 1379 females) students participated the study. All participants were undergraduates and having a social or behavioral studies courses in their countries. Similar to the first study, students' general environmental attitudes were measured by 15-items NEP scale, value-based environmental attitudes were measured by 14 items from Thompson and Barton's (1994) scale, environmental behaviors were measured by 12 questions and also there were questions about demographic characteristics. According to the descriptive analysis, females' scores on NEP environmental attitudes were higher than males in 10 countries (Argentina, Canada, Costa Rica, the Dominican Republic, Mexico, Panama, Paraguay, Peru, Spain and the United States). While males had higher NEP environmental attitudes than females in Colombia, Ecuador, and El Salvador, males and females did not differ on NEP environmental attitudes in Venezuela. In addition, females reported significantly higher levels of value-based eco-centric environmental attitudes than males in 12 countries (Argentina, Canada, Colombia, Costa Rica, El Salvador, Mexico, Panama, Paraguay, Peru, Spain, the United States and Venezuela). Only in the Dominican Republic and Ecuador, males reported higher eco-centric environmental attitudes. Furthermore,

males in the Dominican Republic, Colombia and Panama reported greater participation in pro-environmental behavior than females. Apart from, it was found that, the effect of gender on environmental attitudes and behaviors was strongest among young people. In conclusion, the researchers explained the difference between genders with socialization-based theory. They argued that, "gender differences in environmentalism were likely due to socialization rather than inherent biological differences" (Zelezny et al., p. 455). Besides, researchers stated that although there was a significant effect of gender on environmental attitudes and behaviors within countries, females were consistently more pro-environmental than men, furthermore, among all countries females reported higher ratings on all variables including pro-environmental behavior.

In their study Stern, Dietz and Kalof (1993) developed a scale to measure beliefs about the consequences of pollution and environmental protection for self, others, and the biosphere. There were 349 undergraduate students from a public university in New York State participated in the study. Relationships of this scale with; political action and willingness to pay for improved environmental quality as well as the gender effect on beliefs about consequences to the three value orientations and to behavioral intentions were examined. According to their results, willingness to pay or to take political action for environmental protection was found to be related to value orientations. Each of the three value orientation found to predict action for a person who believe environmental conditions have adverse consequences for the relevant valued objects. Willingness to pay item was predicted by the egoistic value orientation. However, that item was not related to the social-altruistic value orientation. Moreover, there was a significant effect of biospheric values on the income tax item. In addition, researchers found a significant effect of gender in beliefs. Results revealed that women were considering the negative consequences of environmental decay for themselves, other human beings and the biosphere more than men.

Schultz (2000) conducted a survey with 245 undergraduates from the United States to assess how the environmental concern is divided into clusters. Participants have 21 items test in which varied established environmental attitudes measures

exist. Participants rate each item from 1 (not important) to 7(supreme importance). All the responses to the 21 items were factor-analyzed by the researcher and the researcher identified 12 items which generated a three-factor structure based on factor loadings. These three factors were biospheric (animals, plants, marine life, birds), egoistic (me, my future, my lifestyle, my health) and altruistic (all people, children, people in my community, my children) (Schultz, 2000 p. 396). By the result of that study the distinction among egoistic, altruistic and biospheric concerns was supported. Then, Schultz conducted a second study in the same year. To arouse different environmental concerns the researcher conducted a second study. In the second study, there were 180 undergraduates from the psychology department. At the beginning of the questionnaire participants were shown one of three sets of pictures: people engaging in recreational activities in a natural environment, animals in a natural environment or animals being harmed by nature. But before showing pictures participants assigned to group randomly. The first group was assigned to an "objective" condition, the second group assigned to a "perspective-taking" condition. The difference between the two groups was that before showing slides a person read different instructions to the groups. Following the slides show, participants completed a questionnaire in which environmental attitudes and concern measures exist. According to the results, there was a significant interaction between three dependent variables (picture type) and biospheric and altruistic concern but not with egoistic concern. When the participants were shown the picture of an animal crocked by pollution, people in the perspective-taking condition had higher score than the people in the objective condition for biospheric concerns. When the picture was animal in nature no significant differences were observed between these two groups. On the other hand, participants in the perspective-taking condition scored significantly lower than participants in the objective condition when the picture was a person in nature. Furthermore, for altruistic concerns, perspective-taking condition scoring found to be significantly higher than the objective condition when the picture was animals being harmed. However, no significant differences were reported between two conditions for both animals in nature and the people in nature conditions. Schultz stated one possible explanation according to the empathy-

altruism hypothesis was that altruistic motive activated by taking the perspective of a person being harmed. In addition, egoistic motive is dominant if the other's perspective is not considered. He added that, the perspective taking manipulation in the study may have raised the empathy and for the prosperity of animals and the biosphere it may manipulate a greater concern. According to Schultz his study's results suggest that "any activity that reduces an individual's perceived separation between self and nature will lead to an increase in that individual's biospheric concern" (Schultz, p.403).

After a year Schultz (2001) conducted other studies. For example, in the first study a questionnaire composed of 12 items; marine life, birds, animals, plants, my health, my future, my lifestyle, me, children, people in my country, all people, and my children (in a randomized order) were applied to 1010 undergraduates psychology students from several large universities in the United States to confirm the three distinct value orientations (egoistic, altruistic and biospheric). As a result of Confirmatory Factor Analysis, the three-factor model was found to be significant. In the second study, Schultz explored whether the results of the first study would change if it applied to the general public or not. He thought that college students may think different from the general public. Thus, in the second study the participants were 1005 California adults. They were reached by telephone. The same questionnaire with study one was applied but some items were modified slightly. The items were; marine life, plants, animals, birds, children, people in the United States, the human race, people in your community, your health, your future, your lifestyle and your prosperity. The results were very similar with the first study results. Again according to the results of Confirmatory Factor Analysis three-factor model provided a significantly better fit to the data than two and one-factor model. Mean scores for egoistic and altruistic were similar with the first study; however, for biospheric concern the mean score of college students was slightly lower than the mean score of the general public. In the last study, the researcher examined the relationship between the three environmental concern and Schwartz's higher order values. In this study, the participants were social science students from colleges and universities in 10 countries; Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador,

Panama, Paraguay, Peru, Spain and Venezuela, in Latin America. There were New Environmental Paradigm Scale, Thompson and Barton's eco-centrism and anthropocentrism scales, Schwartz's value items, the 15-item self-report pro-environmental behavior scale and the 12-item environmental concern scale that used in the first study in the questionnaire. According to the results, self-enhancement was demonstrated to be correlated positively with egoistic and negatively with altruistic and biospheric environmental concern. Self-transcendence while correlated positively with biospheric and altruistic correlated negatively with egoistic environmental concern. Furthermore, conservation was correlated negatively with biospheric and altruistic concerns. Schultz suggested that "the type of concerns an individual develops is based on the degree to which they perceive an interconnection between themselves and other people (altruistic) or between themselves and nature (biospheric)" (Schultz, 2001, p. 337).

Later, Snelgar (2003) explored if the most suitable scale was AC (Adverse consequences) Beliefs scale or ECs (Environmental concern) scale in terms of dimensionality and reliability of its sub-scales or not. In the study these two scales were used. AC Beliefs scale consists of 13-items. Four of them were egoistic AC sub-scale, five of them were altruistic AC Sub-scale and again four of them were biospheric AC sub-scale. This was a 7 likert-type scale. On the other hand, in EC scale there were 15 items which were me, my future, my lifestyle, my health, my prosperity for egoistic concern; humanity, children, people in the community, future generations for altruistic concerns and plants, whales, trees, marine life, birds, animals for biospheric concern. They were given in a randomized order. As the results showed EC scale was superior to the AC Beliefs scale in factor structure and sub-scale reliabilities. Thus, according to the results EC scale should be used instead of AC Beliefs scale to measure the egoistic, altruistic and biospheric value orientations of environmental concern.

Studying with car owners in Sweden, Garling, Fujii, Garling, and Jakobsson (2003) reported that intention to act pro-environmentally are related to both personal norm and ascribed responsibility and awareness of egoistic, social-altruistic, and biospheric environmental consequences. Garling et al.'s study revealed

association between social value orientation and awareness of egoistic and social-altruistic environmental consequences. Furthermore, compared to pro-self car owners, pro-socials tended to be affected by awareness of social-altruistic consequences however, both pro-self car owners, pro-socials reported equivalent as far as awareness of biospheric consequences are considered.

Like Snelgar, Garling, Hansla, Gamble and Juliusson (2008) examined the relationship between AC beliefs and EC attitudes of 494 (242 males, 252 females) Swedish residents whose mean age was 48.9 years. The questionnaire included environment-related questions and divided into three sections as environmental concern for self (ECself), environmental concern for others (EChum), and environmental concern for the biosphere (ECbio). The items of these three groups were the same with those utilized by Schultz (2001). Participants also requested to indicate their awareness of consequences for self (ACself), others (AChum) and the biosphere (ACbio). In conclusion, it was found that each of the EC scales was significantly related to only one AC belief, ECself to ACself, EChum to AChum and ECbio to ACbio. In fact, environmental concern (EC) for self, others and the biosphere were related to awareness of consequences (AC) beliefs for oneself, others and the biosphere respectively.

In their study, de Groot and Steg (2003) examined if a newly developed value instrument could reliably distinguish three value orientations especially biospheric value orientation from altruistic one, as well as the relationships between values, environmental concern, problem awareness and ascription of responsibility. A total of 112 respondents (58 females and 52 males with an average age of 39.82) from the different locations in Groningen, a city in the northern part of the Netherlands participated in the study. One of the scales that used was Schwartz's value scale to measure value orientations which consists of totally 12 items, 4 items for each value, egoistic, altruistic and biospheric. The other one was the revised New Environmental Paradigm scale used to measure environmental concern. Lastly, respondents asked to rate to what extent they agreed with six items reflecting awareness of environmental problems related to energy use to measure behavioral specific beliefs. The results showed that the altruistic value items correlated positively with the biospheric value

orientation, however, both the altruistic and biospheric value orientation correlated negatively with the egoistic value orientation. De Groot and Steg stated that, egoistic and altruistic value orientations were found to be negatively related to environmental concern; besides egoistic value orientation had negative relationships especially with the environmental problems about energy use. On the other hand, biospheric value orientation was found to be positively related to environmental concern. Also, respondents who have biospheric value orientation reported to feel more responsible for problems related to energy consumption when compared with the people who have weaker biospheric value orientation. In attempt to increase the internal consistency of the egoistic value scale, their second study, they added an extra egoistic value item to the original scale. In this study, participants (N=490) were from Austria, Czech Republic, Italy, the Netherlands and Sweden. The results were reported to be the same with the first study. They concluded that they clearly distinguished egoistic, altruistic and biospheric value orientations. De Groot and Steg (2005) conducted internet-based another study to replicate the clustering of 13 values into three value orientations to examined the relationship with the environmental concern and recycling behavior. There were 184 respondents (94 males, 89 females) from the University of Groningen and from the different faculties and departments. A 13-item value orientation scale, the revised NEP scale and a 6 item recycling attitudes scale were used. Firstly their study demonstrated the presence of the three value orientations. Similar to the first study, biospheric value orientation contributed significantly to the explanation of environmental concern positively while the egoistic value orientation contributed in an opposite direction. In addition, respondents who scored high on egoistic values reported to have a more negative attitude toward recycling. In their more recent study, Groot and Steg (2010) compared the predictive power of egoistic, altruistic and biospheric value orientations and the six types of self-determined motivations (i.e. intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation, and amotivation) in explaining pro-environmental intentions (p 3). Participants were undergraduates from the University of Groningen. There were 304 participants whose mean age was 20 years. In the questionnaire, value

orientations were measured by Schwartz's value scale developed by De Groot and Steg, self-determined motivational types measured with motivation toward the environment scale and pro-environmental behavior were measured by two instrument; first instrument measured the consumer task developed by Verplanken and Holland (2002) and the second one measured the participants' donation intention which was developed by De Groot and Steg (2008). According to the correlations results, there was a medium to strong correlations between biospheric values with self-determined motivational types (intrinsic motivation, integrated regulation, identified regulation and introjected regulation) as well as significantly negative correlations with amotivation. Moreover, there was a negative correlation between the egoistic value orientation and intrinsic motivation, integrated regulation, identified regulation and introjected regulation. In contrast, the egoistic value orientation was positively correlated to the less autonomous, extrinsic motivational types. The results revealed that by supporting intrinsic motivation and integrated regulation, or by lowering amotivation and external regulation, pro-environmental behaviors can be enhanced.

Dervisoglu, Menzel, Soran and Bögeholz (2009) conducted a study with 499 third grade high school students in various geographical regions of Turkey during the 2006-2007 academic years. The aim of their study was to identify factors influencing personal norms for biodiversity protection. A questionnaire that was about the danger of biodiversity and its protection, which was developed by Menzel & Bögeholz, was used. By this questionnaire beliefs, the "New Ecological Paradigm" (Dunlap et al., 2000), an "awareness of altruistic, biospheric and egoistic consequences" of biodiversity loss, an "ascription of responsibility" and the "perceived ability" to preserve biodiversity were examined. According to the results among values, only universalism had a significant influence on personal norms for biodiversity protection. Also, among the values, only universalism, which is part of a biospheric-altruistic value orientation, had a significant influence on personal norms for biodiversity protection. Moreover, values and beliefs were found as central constructs in explaining the personal norms for the biodiversity protection. In addition, it can be concluded that the influence of socio-economic problem

perception on personal norms is higher than ecological problem perception. Another study by Dervisoglu (2010) on value orientations of living species indicated the prevalence of an "anthropocentric environmentalist" value orientation among the Turkish university students.

2.2. Research on Sociodemographic Variables and Environmental Attitudes

Another line of research tended to investigate people's environmental attitudes and concern and its relation with respect to several variables such as gender, age, residence, education level, and income.

The study conducted by Stern et al. (1993) emphasizes probable associations between gender and value orientations originating from shared experience rather than resulting from innate differences. Stern et al. said that "women tend to see environmental quality as more likely than men to have consequences for personal well-being, social welfare, and the health of the biosphere" (p. 338). According to them "women are more active on environmental issues, it is because of an increased likelihood to make connections between environmental conditions and their values, rather than because they have different value structures from men" (p.339). The studies exploring the possible relationship between concern for the environment and gender, presented mixed results, with some research studies finding that males are more environmentally concerned than are females (Mac Donald & Hara, 1994; Shen & Saijo 2007), while others found the opposite to be true (Chu, Lee, Ko, Shin, Lee, Min &Kang, 2007; Huang & Yore, 2004; Flynn, Slovic, & Mertz, 1994; Riechard & Peterson, 1998; Tikka, Kuitunen & Tynys, 2000; Worsly & Skrzypiec 1998; Zelezny, Chua, & Aldrich, 2000) and still others have determined gender to not be significantly associated with environmental concern (Uyeki & Holland 2000). In one of the earlier studies, Lyons and Breakwell (1994) examined the effects of socio-demographic, knowledge and attitudinal variables on young people' (N= 1089, age range 13-16 years old) environmental concern related to the industrial pollution in U.K. According to the results, a large number of the sample found to be in favor of controlling the industrial pollution and the emission of chlorofluorocarbons (CFC). While age found to be positively correlated with environmental concern, it is

unrelated to environmental knowledge. The possible explanation for that was stated by the authors like that, when the younger children compared with the older ones, younger have more tendencies to overestimate their environmental knowledge. In terms of sex differences there were no differences found in environmental concern, however, there was a statistically significant difference in the level of environmental knowledge in favor of boys. Authors explained that result like that, environmental knowledge can be seen as scientific and technological therefore, girls tend to claim less knowledge. Apart from, according to the results, the participants who have higher social class backgrounds were reported to be more environmentally concerned compared to others. Authors attributed these results to the parental differences. According to authors, higher class parent may have more knowledgeable and discuss these issues with their children. Or, it may be resulted from the academic achievement. As stated by other researchers (Dunlap and Van Liere 1978; Makki et al. 2003; Carlisle 2007; Chu et al. 2007; Pe'er, Goldman, and Yavetz 2007), more educated parents might provide their children with rich scientific and environmental resources and spend more time with them by playing, reading and studying at home. Besides, more educated parents might have more knowledgeable about environmental concepts through education, mass media, and personal interest, and probably share their knowledge with their children, discuss with them about local and global environmental problems, and also be a model for their children to involve activities related to the environment. However, in Shen and Saijo's (2007) study in Shanghai, men were reported to be more concerned about environment than women. Their study also showed that high household income and high education level had positive effect on individuals' environmental concern. Employment status and household size, on the other hand, were not found to be related to environmental concern.

In their study, Tikka, Kuitunen and Tynys (2000) investigated the attitudes of the students from different educational establishment toward the environment. The study was conducted with 454 students from ten different educational establishments in the central part of the Finland at 1994. The questionnaire used in the study composed of four parts. One of the parts was the demographic information part, the

other one included questions about the students' participation in any nature or environment related activities, questions in the third part were about students' knowledge of environmental facts or biological phenomena in nature and in the last part students' attitudes toward the environment were evaluated. Among the all groups students majoring in biology and forestry were found to score highest on attitudes toward the environment, have highest score on environmental knowledge and also have highest level of environmental activities. According to the authors students majoring in those departments participated in many courses related with environment and needed to spend a lot of time outdoors. When the results examined in terms of gender, it can be said that females have more positive attitudes toward environment while males gave more correct answers to the knowledge questions. Besides, there were no difference between genders on the quantity of nature related activities; however the types of activity may differ. It can be concluded that although they have less environmental knowledge than males; females have more positive attitudes toward environment when compared with males. Thus, as the authors stated their attitudes were independent from their knowledge and may be explained by culture and evolutionary history. Besides, according to the authors because of having some values like helpfulness, responsibility, concern for the well-being of nature and appreciation of a healthy environment, females may have positive attitudes toward the environment. Moreover, Tikka et al. examined the effect of location on the results. They obtained that, the students living in a metropolitan area have more positive attitudes. The possible reason of that result are explained by authors like that because of living in urbanized area, students become more aware of existing environmental problems. And lastly similar with the result of Lyons et al. (1994) study older students were more active and aware of biological and environmental facts but also with different reason. Tikka et al. thought that older students often live in their own houses and consume and recycle independently while younger students live with their parents and having no responsibility such as choosing the detergent. And may be this effect their attitudes and concerns toward environment.

Olli, Grendstad and Wollebaek's (2001) study assessed the effects of correlates of environmentally friendly behavior and examined the effects of age and

gender on the environmental behavior. Participants of the study were 2000 Norwegians and 12 samples from environmental organizations in Norway. In the questionnaire there was a demographic information part, a part for measuring the political view of the participants. Their environmental attitudes and knowledge were measured by NEP, Ecocentrism and the Compost Knowledge scales and environmental behavior was measured by 16 private individual environmental behaviors. According to the results, high age was consistently related to environmental behavior. Moreover, in terms of gender it was found that women exhibited more environmentally friendly behavior than men. On the other hand, no effect of education on environmental behavior was found. Olli et al., found no significant or negative relationships between income and environmental behavior. However, some relations between environmental behavior and political attitudes, environmental concern and environmental knowledge were demonstrated.

Eisler, Eisler and Yoshida (2003) conducted a cross-cultural study to explore the gender differences on environmental beliefs, opinions, knowledge and behavior. The participants were 1317 university students from Germany, Japan, Sweden and the United States. Data were gathered through Attitudes towards environmental issues scale In addition, participants' perceptions about 34 serious risk factors (e.g., deforestation, air pollution, overpopulation, river pollution, desertification, hunger and poverty, territorial problems) were collected. The results showed that, the German, Swedish and United States students were very similar in their environmental attitudes and environmental knowledge while Japanese students were different from them. According to the Eisler et al. this difference were not resulted from the perceiving less *beauty* of the Japanese than the other cultures but it was resulted from the *lens* of culture. On the contrary, Japanese have the highest score from the environmental knowledge. Moreover, Japanese students were choose nuclear weapons, energy problems, and an aging population as a high risk factors; German students chose ozone hole, industrial waste, hunger and poverty and unemployment; Swedish students chose air pollution, industrial waste, racial segregation, overpopulation and hunger and poverty and also students from the United States chose air pollution, ethnic conflict, racial segregation and

overpopulation as the high risk factors. In terms of gender the results showed that males have higher environmental knowledge, however, females were more aware of the environmental damage. Authors explained that gender differences like that because females were more aware of the importance of the protection of the environment and nature for people more than men. In another study on environmental risk, by Lai and Tao (2003) reported Hong Kong Chinese females, older individuals, and less educated participants to be perceiving hazards more threatening to the environment compared to men, younger individuals, and more educated participants. The attributed this difference to the possible effect of the Confucian heritage on the perception of risks. Most recent study by Huang and Fortner (2010) indicated that females living in the US and China perceived the risks to be higher to human health and to the environment compared to males.

Likewise, Huang and Yore (2003) studied the cultural differences on the students' self-reported environmental actions and behavior. They compared the Canadian and Taiwanese Grade 5 children's environmental actions and behavior. The questionnaire was composed of seven parts. In the first part there were demographic information questions, in the second part Responsible environmental behavior scale, consist of 10 items was exist, in the third part environmental attitudes was measured by 9 Likert-type items, similarly environmental concern was measured with 12 Likert-type items, in the fifth part there was an Emotional disposition toward the environment scale with 6 items exist and finally there 16 items to measure the environmental knowledge and 4 items to measure the situational factors exist in the questionnaire. According to the analysis television was found to be the major source of obtaining environmental information for participants of both countries. Therefore authors mentioned the importance of media and the necessity of controlling the programs. In addition, as the results showed Taiwanese children have significantly higher environmental concern than Canadian children. One of the possible reason of the result that explained by the authors was Taiwanese children's dissatisfaction with their current surroundings. Those children were living in an industrial city and so suffered from local environmental problems. As a result as the authors stated Taiwanese children worry about environmental problems more. Moreover they have

more positive environmental performances than the Canadian children. Authors explained that result with the different natural context of the countries. The Canadian participants live in abundant natural surroundings, however, participants from the Taiwan surrounded by people-built environment. Furthermore, there was a gender influence on most environmental performances of both Canadian and Taiwanese children except environmental knowledge. According to the results the gender difference was in favor of girls such as; girls acted more responsibly, had more positive attitudes and were more worried about environmental problems.

Another study that examined the effects of socio-demographic variables on environmental concern was conducted by Shen and Saijo (2007). There were 1200 participants (583 men, 617 women) with a mean age of 36 from an urban area in Shanghai in the study. Results of the study showed that men were more concerned about the environmental issues than women. As the authors mentioned, altruism is related with environment and increase the demand of an individual for environmental quality. According to the authors Shanghai men were more altruistic thus, more concerned about environment. Another explanation is that; Shanghai men were more interested in maintenance activities such as child education and involvement in neighborhood, as well as engaged in economic activities more than women. As far age difference is considered, older participants were reported to be more concerned toward the environmental issues than females. One of the possible reasons of this difference according to Shen et al. is that older generations faced with serious environmental problems about 20-30 years ago so they were more likely to be concerned. The other possible reason was stated as the Chinese parents' tradition. They care about their children more than themselves so they wanted to portion a better environment for the next generation. Furthermore, according to the results full-time or self-employed persons were found to have more environmental concern than others. They mentioned that those people should care their jobs and economic more than the environment by authors.

In her cross-cultural study, Sarigollu (2009) conducted a cross-cultural (Turkey versus Canada) research to investigate the effect of cultural, socio-demographic, and contextual characteristics in consumers' attitudes towards

environment. Sarigollu demonstrated differences in environmental attitudes between consumers living in Turkey (collectivist, past oriented, materialist and more polluted country) and Canada (individualistic, future oriented, post-materialist and relatively less polluted country). She reported that residents of more-polluted Turkey expressed more concern about environment, believed in preserving nature and showed stronger attitudes towards environment than those living in Canada. Consumers living in Turkey reported to perceive the state of the environment unsatisfactory. Turkish females reported to display more favorable attitudes towards environment than that of Turkish males.

Studies conducted in Turkey also tended to examine elementary and high school students' and also pre-service teachers' attitudes toward the environment and environmental knowledge with respect to certain demographic variables. For instance, Yilmaz, Boone and Andersen (2004) conducted a study to evaluate the role of gender, age and education level on elementary and middle school Turkish students' environmental attitudes. A total of 458 students (251 female, 206 male) in grade four to eight classrooms were participated the study during 2001 spring semester. Participants were from the public schools and locations of them were from the urban and suburban areas in Ankara. The questionnaire was consisted of a 51-item Attitude toward Environmental Issues scale. As a result of the analysis authors found that Turkish students were aware of the importance of recycling since the early grades and they found a positive relationship between the students' science course success and their environmental attitudes. In fact, a student with high science achievement also had more positive environmental attitudes. In terms of grade level the analysis showed that the students in the 4^{th}, 7^{th} and 8^{th} grades had more positive attitudes toward the environment when compared with 5^{th} and 6^{th} grade students' attitudes toward the environment. According to Yilmaz et al. by increasing the opportunities of the students' discussion and learn of the environmental concepts, their attitudes toward environment becomes more positive. On the other hand, they explained the reason of the 4^{th} grade's attitude with the first introduction to the environmental concepts in their early science classes. Moreover Yilmaz et al. examined the gender differences on environmental concern. They found a significant

gender differences in middle school students in favor of females while there were not a significant gender differences in elementary school students. As the authors argued by increasing the knowledge of female students from elementary classes to middle school classes their positive environmental attitudes were also increased. In that study the results also revealed that, students in elementary schools with a high socio-economic status and living in an urban area had more positive environmental attitudes. On the other hand, there were no significant socio-economic status and location differences in middle school students. Authors explained the reason of no difference at middle school students with having more science courses and also gaining more environmental knowledge in middle schools than in elementary schools and so there won't be a difference among students.

Another study investigating elementary school students' environmental knowledge and attitudes as well as their locus of control is initiated by Alp, Ertepinar, Tekkaya and Yilmaz (2004). A total of 1140 (562 girls, 578 boys) elementary public school students with an average age of 13.2 years were involved in the study. Environmental attitudes and knowledge scale with 36 items and locus of control scale with 9 pairs of statements were used. According to the results, students found to have little willingness to make sacrifices or spending extra efforts for the environmental protection. However, they felt concerned about environmental problems and reported that they were actively involved in the resolution of some of these problems. In addition, the results of locus of control scale revealed that the elementary school students have not a strong internal locus of control. In fact, they ascribe their future successes, chances or failures to their own actions weakly. Moreover, the internal locus of control of girls were more than boys'. Also students who have higher educated parents were found to have a tendency toward an internal locus of control. In conclusion, the locus of control was significantly related to students' environmentally friendly behaviors actually, higher internal locus of control was positively correlated friendly behaviors toward the environment.

Tuncer, Ertepinar, Tekkaya and Sungur (2005) investigated the effect of school type (private and public) and gender on students' environmental attitudes. The participants of the study was composed of 1497 six, 7^{th}, 8^{th} and 10^{th} grade students

(765 girls, 715 boys; 603 attending public schools, 892 attending private schools) in Ankara. Students' attitude toward the environment was measured by a 45-item Likert type questionnaire with four dimensions such as; awareness of environmental problems, national environmental problems, solutions to the problems, awareness of individual responsibility exist in that questionnaire. According to the results of the analysis there were statistically significant differences between students in public and private schools and also between boys and girls with respect to scores on each dimension of the questionnaire. Authors concluded from their study that there were differences among students with respect to school type and gender, however, the results also showed the students' high concern toward the conservation of the environment in Ankara.

Taskin (2008) investigated high school students' environmental attitudes by using over nine hundred students from different school types, geographical regions, and socioeconomic backgrounds. Results indicated that high school students' environmental attitudes vary with respect to gender, school type, parents' education levels, parents' political views, professions, and household income. Girls, students attending public high schools, coming from lower and middle class as well as, well educated parents in white-collar professions and having liberal parents reported to hold more pro-environmental attitudes compared to the others.

In a recent study by Varıslı (2009) evaluated students' environmental literacy level and the effects of socio-demographic variables on the students' environmental literacy level. There were a total of 437 (212 girls and 225 boys) 8^{th} grade public school students participated to the study. An Environmental Literacy Test, including 61 items and the knowledge test, was administered to the participants. The test was composed of four parts namely; knowledge, attitude, sensitivity and concern. The results revealed that although the participants have low to moderate levels of environmental knowledge, they have positive environmental attitudes and their environmental concern and sensitivity levels were high. According to the results of the multivariate analysis of the variances there were statistically significant effects of parents' educational level, mothers' work status and gender on students' environmental literacy. Also gender effect was in favor of girls. On the other hand,

no significant effect of source of information on students' environmental literacy was found.

In 2008, İstanbullu conducted a study with 681 sixth grade elementary students from a private school in Ankara. She used an Environmental Literacy Test as a questionnaire. There were self-assessment part about environmental concern and knowledge, knowledge part, attitude part, use part and concern part in the questionnaire. As the results revealed that, more than half of the students were not very much concerned about environmental problems, did not regard environment even as a problem and also they were not familiar with environmental issues and problems. In addition, the most favorite outdoor activity reported as 'hunting' while the least favorite activity was 'hiking'. Besides, according to the results, students had a passing grade from the questions about environmental knowledge. When the results of environmental concern part was looked, it can be said that, 'global warming', 'water pollution' and ' ozone layer depletion' were the most concerned issues while 'noise pollution' was the least concerned issue among 6th grade students. According to İstanbullu students were faced with the favorite environmental concerns, however, she stated that, inefficiency of curriculum context about environmental facts and knowledge caused the unaware students about environmental problems and knowledge.

Similarly, Okesli (2008) conducted a cross-age study to investigate environmental literacy level of 848 sixth, 7th and 8th grade students (402 male, 446 female) living in Bodrum by using the Environmental Literacy Test. In their study, while about half of the students evaluated themselves as having 'a fair amount of' concerned about environmental problems, about 60% of the participants evaluated their level of environmental knowledge as 'a fair amount'. In addition, 62% of the students view environment as the most important problems that humans face with currently and also Moreover, while 'hunting 'was reported as the most favorite outdoor activities, 'walking' as reported as the least favorite activity. The result of environmental knowledge questions revealed that more than 60% of the students have inadequate level of knowledge about environment. On the other hand, the mean scores indicated that students have positive attitudes toward environment and also

seem to have eco-centric world view. In addition, air pollution, water pollution and global warming were the most concerned environmental issues of the students. The researcher also examined the effect of gender and found that, female students were found to have positive attitudes towards environmental issues, more positive views on environmental use and more concern about environmental problems than male students' have but have same level of knowledge on environmental issues.

Likewise, Sagır, Aslan and Cansaran (2008) examined seventh and eighth grade students' environmental knowledge and their attitudes toward environment by using different variables in 2005-2006 academic years in Amasya. The effects of gender, age, grade level, parents' education level on the knowledge and attitudes of the students also analyzed. A total of 525 (272 females, 253 males) students participated in the study. Leeming et al Environmental Attitude Scale was used that composed of 24 items. And also there was an Environmental Knowledge Test with a 17 items. As the results showed, there was a significant difference between the participant environment knowledge and their class level whereas no difference between their attitudes and class level. The mean score of attitudes of females were higher than males but there was no statistically significant difference. Similarly, the knowledge scores of male students were higher than females but there was no meaningful difference. On the other hand, there was meaningful difference in environmental knowledge and attitudes relating to their school. In terms of their parents' education level there was no significant difference between student's environment attitude and knowledge scores. Whose mothers graduated from university had higher mean score from Environmental Knowledge. Also, whose mothers graduated from primary school had higher mean score on the attitude toward environment. Environmental knowledge's and the attitude toward environment's mean scores of the students were high for participants whose fathers graduated post graduate and graduated high education faculty. In conclusion according to the researchers to acquire environment conscious and to feel responsibility to the world they live the school education has a great importance. In addition they mentioned the necessities of teaching subjects about environment from kindergarten to the university.

There were also some studies with pre-service teachers in Turkey (Özden, 2008; Tuncer, Tekkaya, Sungur, Cakiroglu, Ertepinar & Kaplowitz, 2009; Tuncer, Tekkaya & Sungur, 2006). For example, Tuncer, Tekkaya and Sungur (2006) examined the beliefs on sustainable development of Turkish pre-service teachers. A total of 334 university students were enrolled in the study. The instrument was a 45-item Environmental Attitude Questionnaire developed. Participants were found to be conscious about environmental problems, they were aware of the importance of conserving for the next generations. Moreover consistent with the previous studies there was a statistically significant gender difference on the beliefs of sustainable development in favor of girls. Actually, girls found to be more concerned about sustainable development than boys. Besides, authors found an effect of the environmental course on the awareness of the sustainable development. According to the results environmental course affected the conscious toward the environment positively. Therefore authors suggested that if the number of students taking environmental related courses increases then the environmental conscious of the university students would be also increase.

In another study, Tuncer, Tekkaya, Sungur, Cakiroglu, Ertepinar and Kaplowitz (2009) evaluate the relationship of pre-service teachers' environmental knowledge, attitude, and concerns of their interests in environmental problems, involving outdoor activities, parents' interest and involvement in environmental activities. To conduct the study they reached 684 (427 females and 249 males) pre-service teachers at one of the largest public university of Turkey. The questionnaire was composed of the closed-ended questions which were about the environmental knowledge, attitudes, uses and concerns. There were totally 45 items in the questionnaire and also it was a five-point likert type scale. In addition there was a part about demographic information. In that part participants' gender, grade level, parent's education level and work status and also participants' interest and view on environmental problems were asked. According to the results, when the environmental knowledge of participants examined it can be said that the largest majority (90%) of respondents answered the definition of biodiversity correctly. On the other hand, the least correct responses (34%) were about concerned for motor

vehicles as the major contributor to carbon monoxide and also more than 60% of the participants gave wrong answer to the questions that identified factories and businesses as the major source of carbon monoxide. In terms of environmental attitudes the participants were found to have an 'eco-centric worldview'. For example, majority of the respondents support the statement such as: ''Plants and animals have as much right as humans to exist'' (94%). Likewise, majority of the respondents did not support the statement such as: ''the so-called 'ecological crisis' facing humankind has been greatly exaggerated'' (78%). In addition, according to the results it can be concluded that pre-service teachers were aware of the importance of interaction between humans and the environment. For example, more than 90% of respondents support the idea that if an individual cause an environmental damage then that individual should be held responsible for his/her action. Similarly, more than 90% of them agree on the item that an individual should feel his/herself responsible toward the environment for solving its problem. On the other hand, as the results revealed, the pre-service teachers were not 'very concerned' about many environmental problems. Moreover, although there was no significant correlation between participants' environmental knowledge and their attitudes, there was a positive correlation between participants' environmental knowledge and their environmental concern and environmental use. However, there was a positive correlation between environmental attitudes and environmental use. When the results examined in terms of gender, the results showed that among four sets of environmental literacy items, female participants' scores were more for three of those items than the male participants' scores. According to the findings, the attitudes of female pre-service teachers in Turkey were more positive and also undertake more pro-environmental actions considering the environment when compared with male pre-service teachers.

To be brief, the link between value orientations and environmental concern with various environment related variables have been studied extensively by researchers in many different countries. Participants of the studies were different from each other. For example, some of them were undergraduates while the others were graduates and also the age and culture of them were distinct from each other. In

some studies the effects of gender and socio-demographic variables on individuals' value orientations were examined. Stern at al. (1993) stated that a person's environmental concern can be shaped by socialization and social structure that can affect the value orientations or alter a person's information attentiveness. Furthermore, as the cross cultural studies represented socio-demographic characteristics of individuals and also economic, cultural, social and political factors may affect individuals' perceptions and concern about environment. In addition, Stern et al. (1993) also argued the gender differences by feminist theory. They suggested that men are less careful at linking the environment and the things they value than women even both gender hold the same values.

Parallel to ongoing research efforts on environmental attitudes, some of the researchers addressed the individuals' points of view about the future of environmental issues In their study, Duan and Fortner (2003) analyzed Chinese college students' perceptions about global versus local environmental issues. There were a total of 108 college students from Beijing Normal University and Beijing Language Institution participated in the study. Participants' ages were between 21 and 35 years old. The internal features and external characteristics of environmental issues were examined by 17 items. Nine of these items were for global issues; climate change, freshwater pollution and scarcity, deforestation and desertification, loss of biodiversity, ozone depletion, waste disposal, and marine pollution, and eight of them for local (Chinese) issues; water pollution in major rivers, coastal pollution, eutrophication and pollution in most lakes, air pollution in industrial cities, soil erosion, and loss of farmland. Moreover, perception of the five internal characteristics for each environmental issue was measured by using 5-point scales. Similarly, external issue characteristics of the same issues were assessed by 5-point scale. Desertification was considered as the most certain and significant issue among the nine global environmental issues. Also global climate change was perceived as the most complicated global issue. On the other hand, deforestation in tropical areas was seen as least certain, significant, and dangerous, solid-waste transit between nations and ozone depletion were viewed as the least complex and least tangible issues. Furthermore, among the local (Chinese) issues, students perceived air

pollution in major cities as the most certain, complicated, tangible, significant, and dangerous issue. Lastly, eutrophication of major lakes was scored as the least certain, complicated, tangible, significant, and dangerous issue. According to the Pearson Correlations result, for the five internal characteristic for global and local issues, there was a positive correlation between significance and danger for local issues and moderate correlation for global issues. Means of participants' perceptions of how each issue would change over the next 20 years were lower than 3 on a 5-point scale for all global issues and for 7 local issues except white pollution and sandstorms. In addition, participants thought that local issues were changed their lives more than global issues, and they also considered that global issues would get worse compared with local issues in the next 20 years. Participants' prediction of a worsening environment shows a pessimistic attitude toward future environmental change.

Pahl, Harris, Todd and Rutter (2005) conducted a study to examine if people were comparatively optimistic for adverse effects of environmental risks of nuclear power, air pollution and water pollution. There were 101 (40 females, 60 males) students from a British university. Mean age of the participants was 22 years. In the questionnaire, people were asked to rate about three hazards. And they were asked to imagine the cause of the threat to be local. Also participants made two comparative ratings for each of the environmental risks, one for the normal context and one for the accident context. As a result of analysis, it can be said that people were comparatively optimistic for the normal context; however, they were not comparatively optimistic for the accident context.

Gifford et al. (2008) assessed the current and expected future condition of the environment by 3219 (1802 females, 1417 males) participants with a mean age of 40.52 years from 18 different countries. Environmental futures scale was used to measure spatial and temporal environmental comparative optimism or pessimism by 20 aspects of environment. These items include both the natural and the built environment and the society's ability to address environmental issues. Each item was assessed at three spatial levels; my area, my country and globally. And also it was the five-point scale. Items ranged from 1 (very bad) to 5 (very good) and those for the future state (i.e., 25 years from now, as compared to today) ranged from -2 (much

worse) to 2 (much better). The results showed that in general participants think pessimist about the future state of the environment. Moreover, almost all (17 of 18) countries found to have temporal pessimism. According to the pairwise comparisons among countries, some countries were found to be more (or less) optimistic than many others. For example, participants from Finland, Germany, and Canada revealed to be significantly more pessimistic than the participants from five other countries and also participants from Australia were more temporally pessimistic than the other 12 countries. Respondents from Russia and Portugal were found to be less temporally pessimistic than the other seven countries. Finally, Romania was the only country that was found to be temporally optimistic for their environmental future state. In addition, as the results showed there was a negative correlation between current environmental conditions and geographical distance from the person.

In their study Teksoz, Tekkaya and Erbas (2009) investigated the regional differences on students' awareness and optimism level. They used the data of Programme for International Students Assessment (PISA) 2006. There were 4942 (2290 girls and 2652 boys) 15 year-old students at 7^{th}, 8^{th}, 9^{th},10^{th} and 11^{th} grade levels and from seven different region of Turkey exist in that study. Data were analyzed by using frequency distributions and multivariate analyses of variance. Findings revealed that there was an effect of region on the students' environmental awareness, concern and optimism. Students from Southeast and East Anatolia, the least industrialized regions of the country, showed a lower environmental awareness and concern while their optimism level was the highest for the next 20 years. Moreover, students living in Aegean region revealed more responsibility toward the environment while the students living in Mediterranean region revealed the least. Besides students living in Marmara region had the highest level of concern but lower level of optimism. Authors explained the reason by being an industrial, commercial and tourism region. Because of those characteristics people living in Marmara region faced with the environmental problems more and so they were more pessimists about the future situation of the environment. Ozden (2008) conducted a study with 830 student teachers (344 girls, 486 boys) from different majors at Adıyaman University. There were 30 items in the questionnaire. Eight of them measured the student

teachers' awareness of individual responsibilities about environmental issues, seven of them determined the student teachers' awareness of individual responsibilities about environmental issues, ten of them determined the student teachers' ideas on the solutions about environmental problems and five of them determine the student teachers' ideas of the effect of environmental issues in life. Researcher examined the effect of gender and grade level on attitudes of participants toward environmental problems. According to the results, female student teachers had higher mean scores on each dimension than male student teachers. In addition, fourth year student teachers have more positive attitudes towards environmental issues than first year student teachers. The researcher linked this result with the lessons about environment and environmental problems.

To sum up, review of the related literature on the relationship between environmental attitudes, and socio demographic produced mix results. This inconsistency, as suggested by other researchers, may arise from the use of different age groups, differences in school science curricula, cultural difference, and cognitive development of students, urban-rural differences, experience, awareness level and home environment (Lyons, & Breakwell, 1994; Riechard & Peterson, 1998).

CHAPTER III

METHOD

The present chapter is devoted to information about the study context, population and sampling, description of variables, measuring instruments, data collection and statistical techniques utilized in the analysis of data, assumptions and limitations of the study.

3.1 Study Context

Kelkit is a town and district of Gumushane Province in the Black Sea region of Turkey. According to the 2000 census, population of the district is 63,510 of which 19,090 live in the town of Kelkit. The district covers an area of 1,438 km2 (555 sq mi), and the town lies at an elevation of 1,377 m (4,518 ft).

The name "Kelkit" comes from the Kelkit River, a major tributary of the Green River, which flows into the Black Sea. Kelkit's population is around 20,000 and it has 105 villages. People are either farmers or small business owners. Kelkit's neighbor cities are Erzincan, Gumushane and Bayburt. The city is around 30 miles from each city. Kelkit district of Gumushane has been established at the junction of rivers forming Kelkit creek over the plain named also as Kelkit. Altitude of the district is 1400 meters above sea level.

Kelkit is constituted of 6 municipal organizations and 77 villages. Land area of the town is 1505 km^2 and the population density is 32. Lands of Kelkit are surrounded by Bayburt at east, Siran at west, Gumushane and Kose at north and Erzincan at south. Kelkit district is settled down over the valley in between the mountains Gumushane and Kose at north and Sipikor, Cimen and Poske at south. Beyond the Kelkit River and its branches, district has many water sources and also the nature of Kelkit with the colorful flowers, poplar and willow trees have a big attraction as a scene of a national park.

Kelkit takes place in between the 39-40 longitude and 40-41 latitudes. Climate can be summarized as hot and little rainy summers, rainy autumns and springs and finally cold, rainy and long winters. Although the Kelkit district is seemed to belong to the Black Sea region, it is interesting to see the geographical and climatic properties match up with the Eastern Anatolian Region not only with the properties of Black Sea region. This opinion can be reinforced by the geographical properties like; wider plains of Kelkit as compared to Gumushane (Kelkit plain and Mormoç plain), the altitude reaching 1350 meters, a little amount of annual rainfall, the dominance droughts of summer, wider steps holding large areas, mostly products growth in terrestrial climatic conditions like barley, wheat, sugar beet and potatoes are grown. This is because the Gumushane mountains, laying parallel to the sea and reaching 2500 meters height, prevents the climatic effect of the sea reaching beyond Gumushane. The altitude of the Kelkit district is so much higher as compared with the average of Turkey that is resulting a 7 degree temperature difference below the sea level. Generally, the humidity is in between the Eastern Anatolia and Black Sea regions. Kelkit River is the longest tributary of the Yesılırmak River with a length of 320 km. Kelkit is located in the first degree earthquake zone. East Anatolian Fault Line is an extension of only 70 kilometers away from Erzincan to the Kelkit. Recently, in the Erzincan earthquake in 1992 in the loss of life has been in the Kelkit.

Livestock breeding takes an important place nearby the agricultural activities those which define the economical status and sources of revenue of the district. The population of district is decreased in other seasons then summer because of the migration of the people leaving in other countries (especially European countries). (http://tr.wikipedia.org/wiki/Kelkit, http://www.kelkit.gov.tr)

3.2 Population and the Sample

This research was desired to be a national study and as the target population all sixth, seventh and eighth grade public schools' students in Turkey were identified. However, an accessible population was compulsorily determined, since it is not feasible to study with this target population. All sixth, seventh and eighth grade public schools' students in Kelkit districts of Gumushane were defined as the

accessible population of this study. The participants of the study were volunteers and had permission from their parents. A total of 938 6th, 7th and 8th grade students participated in the study. Among them 308 students were 6th graders, 305 were 7th graders and 325 students were 8th graders. To obtain a representative sample of the population 14 elementary schools out of 18 were selected by Cluster random sampling.

There were totally 491 (52.3%) girls and 447 (47.7%) boys. Among them 162 (33%) of the girls were from the 6th grade, 156 (31.8%) of them were from the 7th grade and also 173 (35.2%) were from the 8th grade. On the other hand, there were 146 boys (32.7%) participated from the 6th grade, 149 (33.3%) were from the 7th grade and 152 (34%) of boys were from the 8th grade level. The range of ages was from 11 to 16 years with a mean of 13.07 (SD=0.923). Furthermore, When we look at the report card grade for Science 33.9% of the participants have "5", 36.3% have "4", 23.9% have "3", 5.1% have "2" and only 0.8% of the students have "1" as a grade. Moreover, information about the students' mothers' educational level (MEL), fathers' educational level (FEL), mothers' work status (MWS) and fathers' work status (FWS) were obtained for the current study as indication of socioeconomic status (see Table 3.1). As is displayed in the table, 65.5% percent of mothers graduated from primary school, while 13.8 % graduated from middle school. About 6.5% had attained high school education. In addition only 1.3% of mothers reported to have graduated from university. While 47.5% of fathers graduated from primary school, 22.4% graduated from middle school. Nearly 17% graduated from high school. Of the fathers, 10.8% had university degree. There were 115 illiterate mothers and 17 illiterate fathers in the sample. In brief, fathers' educational level was higher than mothers' educational level. As far as parents' work status is concerned, majority of students reported their mothers (95%) as housewife, about 1.4% was indicated as employee, and 1.2% was worker while 2% were self-employment. On the other hand, only 3.5% of fathers were reported to be unemployed. Of the working fathers, 26.8% were farmer, 30% were self-employment while 16.4% were employee and 21.4% were worker. As the statistics show, majority of the mothers were unemployed in contrast to fathers.

Table 3.1. Demographic Characteristics of Students

Variable		*Percent (%)*
Gender	Girl	52.3
	Boy	47.7
Age	11	1.8
	12	28.4
	13	30.6
	14	31.7
	15	3.5
	16	0.1
Science report Card Grade	1	0.8
	2	5.1
	3	23.9
	4	36.3
	5	33.9
Number of Siblings	1.	10.5
	2	28.1
	3	24.6
	4	17.9
	5-11	18.9
Mother Work Status	Housewife	95
	Employed	1.4
	Worker	1.2
	Self-employment	2.0
	Other	0.3
Father Work Status	Farmer	26.8
	Employee	16.4
	Worker	21.4
	Self-employment	30.0
	Unemployed	3.5
	Other	1.9
Mother Education	Illiterate	12.9
	Primary School	65.5
	Secondary School	13.8
	High School	6.5
	University	1.3
Father Education	Illiterate	1.9
	Primary School	47.5
	Secondary School	22.4
	High School	17.3
	University	10.8
Number of Books	0-10 books	23.7
	11-25 books	42.9
	26-100 books	21.4
	101-200 books	5.8

Table 3.1 Demographic Characteristics of Students (continued)

Variable		*Percent (%)*
Number of Books	More than 200 books	6.2
Separate Study Room	Have a separate study room	47.3
	Do not have a separate study room	52.7
Buying Newspaper	Never	19.9
	Sometimes	63.2
	Always	16.9
Computer	Have a computer	33.9
	Do not have a computer	66.1

3.3 Variables

In this study variables considered are labeled as independent and dependent variables.

3.3.1 Independent Variables

Independent variables are variables that are controlled or manipulated in accordance with the purpose of the investigation. In this study there are two independent variables: grade level (GRADE) and gender (GENDER). Grade Level: This variable is discrete and in ordinal scale of measurement. It labels the educational level of subjects: 6^{th}, 7^{th} and 8^{th} grade students.

Gender: This variable is nominated dichotomous variable with categories of girls and boys.

3.3.2 Dependent Variables

A dependent variable is a measure of the effect of the independent variable. This study includes six dependent variables: eco-centrism, apathy, anthropocentrism, environmental concerns and optimism (National, Global).

3.4 Instruments

In this study the instrument, composed of 6 parts, was used to collect data from students.

3.4.1 Demographic Questionnaire

The Demographic Questionnaire was composed of fifteen questions, which was designed to provide information about students' grade level, gender, age, Science report card grade, parents' educational level, parents' work status, number of siblings, number of books in their houses, how often they get newspaper to their home, whether they are possessing a computer as well as a room for studying or not. Furthermore some questions related to school environment, such as whether they have a recycle bin in their school or if they have made any activity about environment in their school.

3.4.2 Awareness Questionnaire

Twelve questions were composed the awareness questionnaire. These questions were designed for providing information about the students' general consciousness about environmental issues. Questions were about students' opinions about the environmental education in the elementary and secondary schools' curriculum; interest in environmental problems and view on the importance of environmental problems and whether the environmental problems are exaggerated or not; self-assessment of environmental knowledge; sources of information about environment; and involvement in outdoor activities. Also there were 4 open-ended questions about assessing students' awareness about global, national and local environmental problems. And the last question was asking the students' opinion about the reason that why the environment should be preserved.

Source of information about environment was measured with the 'Source of Environmental Information Scale'. It consists of 7 five-point Likert-type items (strongly agree, agree, undecided, disagree, strongly disagree). These items are newspaper and magazines, parent, school, television and radio programs, internet, friend and nongovernmental organizations about environment.

Involvement in outdoor activities was measured with the scale. The purpose of the scale is to detect the rate of the elementary students' involvement in outdoor activities. Fishing, gardening, camping, planting are some examples. This scale is four-point Likert type scale (never, sometimes, occasionally, and always)

A Self-reported recycling behavior was measured with 'Conserving Behavior Scale'. It contained 6 four-point Likert-type items (never, rarely, often, always). The items were; newspapers and magazines; glass bottles and jars; plastic bottles and jugs; aluminum bins; and batteries. The internal reliability of the scale was found as 0.83 by using Cronbach's alpha.

3.4.3 Environmental Attitudes and Apathy Scales

A 38 five-point Likert type instrument was used to examine students' ecocentric and anthropocentric attitudes as well as their environmental apathy. For the present study items developed by Thompson and Barton (1994) were adopted. Items assessed participants' ecocentric and anthropocentric attitudes as well as their environmental apathy. Eco-centric attitudes were measured with thirteen items reflecting the intrinsic value of nature, feelings of relaxation pertaining to being out in nature, and being aware of a connectedness between humans and nature. Concerning the assessment of anthropocentric attitudes, most of the eleven anthropocentrism items emphasizes a concern associated with the decreased quality of human life as a result of environmental degradation. Only three items that refer to nonhuman animals were added to the instrument which also appeared to increase the internal consistency of this scale. These extra items were adapted from 'Environmental Use Scale' by NEETF/Roper (Coyle, 2005) and a scale used by Ryan and Spash (2008), and Snelgar (2006). All other items were adopted verbatim from Thompson and Barton (1994), except in two incidences where minor changes have been made. Eleven items were used to measure the environmental apathy. These items emphasize a lack of interest in the environmental issues and an idea that environmental threats have been exaggerated. The items on environmental attitudes and apathy were rated on a 5-point Likert-type scales in which the choices ranged from 1 to 5. Five points were assigned to "strongly agree", 4 to "agree", 3 to "undecided", 2 to "disagree" and 1 to "strongly disagree". Items in the scale were translated in Turkish by researchers.

The scale was also pilot tested with 100 elementary school students. Then, reliability analysis and factor analysis were employed. According to the reliability analysis results the item-scale correlations of seven items was less than 0.3,

indicating that it was measuring some other concept irrelevant to the original scale (Field, 2005).The results of the principal component factor analysis showed that items in the Turkish-adapted scale loaded on three factors. As presented in Table 3.2, factor 1 consisted of items of eco-centric attitude dimension, factor 2 consisted of items of anthropocentric attitude dimension and factor 3 consisted of items of apathy dimension.

Table 3.2 Varimax Rotation of Three Factor Solution for Environmental Attitudes and Apathy Scales Items

Items	Factor 1	Factor 2	Factor 3
14	.753		
7	.709		
8	.712		
27	.679		
10	.678		
4	.660		
19	.660		
35	.622		
2	.549		
1	.525		
34	.512		
21	.443		
23	.359		
29		.590	
30		.568	
12		.565	
9		.525	
28		.510	
32		.469	
31		.463	
22		.465	
6		.487	
18		.450	
15		.379	
20		.406	
16		.396	
3		.284	
38			.704
25			.669
33			.651
24			.638
13			.569
11			.566
37			.535
36			.405
17			.379
5			.332
26			.270

For this study, the reliability coefficient values were found as .85 for ecocentric attitudes, .73 for anthropocentric attitudes and 74 for environmental apathy items.

3.4.4 Environmental Concern Scale

Participants' concerns about environmental problems and issues were measured by 21-items, which were industrial pollution, water shortage, extinction of agricultural area, desertification, energy shortage, ozone depletion, overhunting, and destruction of plant and animal generations. Environmental Concern Scale was prepared by considering the items previously used by NEETF/ Roper (Coyle, 2005) and also some other local and global environmental problems of the country. Participants were rated 21 items on a 5-point rating scale ranging from (1) not at all concerned to (5) very concerned.

The Cronbach's alpha coefficient was calculated as 0.95 for environmental concern scale.

3.4.5 Environmental Optimism Scale

The Environmental Optimism Scale used for this study was developed in the light of related literature (Gifford et al. 2008; OECD, 2006) to measure the students' environmental optimism level about the current and future state of 21 aspects of the environmental issues and problems. These items were similar to those used in Environmental Concern Scale. These 21 items encompass the quality of natural environment, built environment and the society's ability to address the environmental issues. Each item was assessed at two spatial levels: national and global. Items were rated by participants on a 3-point rating scale in which the choices for the future state (i.e., 25 years from now, as compared to today) ranged from '(1) for much worse' to '(3) for much better'. Cronbach's alpha coefficients were found to be as 0.93 for national and global levels.

3.4.6 Locus of Control Scale

The Locus of Control (LOC) Scale originally was developed by Rotter (1966) to form an opinion of the extent to which individuals have internal control. In the original scale there were 29-items but in this study only 9 of them were used. The scale was translated into Turkish and standardized on a Turkish sample by Dag (1991). "It is impossible for me to believe that chance or luck plays an important role

in my life", can be provided as an example statement that reflects an internal locus of control. On the other hand, "Many times I feel that I have little influence over the things that happen to me", is an example statement indicating an external locus of control. The participants were asked to select one statement from each pair which best reflected their opinion. The statements of each pair indicating an internal control were scored as 1 and a score of 0 reflected an external control. Sum of these scores for LOC scale ranged from 0 (internality) to 9 (externality).

3.5 Procedure

In this research the elementary students' value orientations, environmental optimism, conserving behavior and environmental concern were examined. The effects of gender and grade level on elementary students' value orientations and environmental optimism were also investigated. Thus literature review was the first step to carry out the study. Educational Resources Information Center (ERIC), International Dissertations Abstracts, EBSCO host, Science Direct, dissertations and other studies conducted in Turkey were searched by the help of a keyword list. All the articles and thesis were read. The instruments developed by the other researchers, measuring environmental attitudes of students toward environment were obtained from these articles or thesis. These measuring instruments were administered in different countries and developed for different grade level students. According to the environmental education program in elementary school curriculum in Turkey the most appropriate instruments measuring environmental attitudes of students was selected. After selection and development of measuring instruments nine page questionnaire was prepared. The detailed information about the preparation was given in section 3.3. With the necessary permission from Ethical Committee of Graduate School of Social Sciences at the Middle East Technical University and Directorate of National Education of Gumushane, in February 2010, nine-page questionnaire were administered to 938 elementary students who both were volunteers and had permission from their parents for the study. Completion of the questionnaire took nearly 45 minutes. Because of the lack of time, teachers were requested to help the researcher during the administration. The participant students

were informed about the purpose of the study and the administration process. Directions were made clear and necessary explanations were done by the researcher or classroom teachers. Students were told about that their scores would not affect their science grades. The questions in the questionnaires would not measure their knowledge level and they do not have right and wrong answers. It would only reveal their local and global environmental consciousness. Students were informed not to write their names on the instruments and that their answers were important for a scientific study and the answers would be kept secret. In addition the students were warned about to read all items carefully and answer according to what they really thinks and do, not what should be. It was also emphasized that students had the right to withdraw from the study if they did not want to complete the instruments. During the administration of the instruments, no specific problems were encountered.

The data obtained from the study were entered in statistical package for the social sciences program (SPSS) coding all the categories of the variables in data by the researcher. Female students were coded as 1, and male students were coded as 2. Sixth grade students were coded as 6, seventh grade students were coded as 7 and eighth grade students were coded as 8. For the mother's and father's educational level items, "illiterate" was coded as 1, "primary school" was coded as 2, "elementary school" was coded as 3, "high school" was coded as 4, "university" was coded as 5. For the responses to the environmental attitude subscale, "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 locus of control test intrinsic items were coded as 1, extrinsic items were coded as 0. The data entry procedure took one month.

3.6 Statistical Techniques Utilized in the Study

Statistical Package for Social Sciences (SPSS) for Windows software program was used for statistical analysis. The data obtained in this study were analyzed in two parts; in the first part, descriptive statistics and in the second part, inferential statistics were used.

3.6.1 Descriptive Statistics

For all instruments in the questionnaire frequency, mean, range, standard deviation, minimum, maximum, skewness, and kurtosis were used as descriptive statistics.

3.6.2 Inferential Statistics

Two separate MANOVAs were conducted to analyze the effect of gender and grade level on environmental concerns and attitudes of the 6^{th}, 7^{th} and 8^{th} grade students. Independent variables for MANOVAs were gender and grade level. Dependent variables for first MANOVA were ecocentric, apathy and anthropocentric dimensions of students. In the second MANOVA dependent variables were environmental concerns and optimisms of students.

3.7 Assumptions and Limitations

3.7.1 Assumptions

1. The administration of the Questionnaire was done under standard conditions.
2. The items of scales were answered sincerely by the subjects of the study.

3.7.2 Limitations

1. This study is limited to public elementary schools located in a rural area. Data from other school districts and from different school types might provide different results.
2. This study conducted in a rural area. Studies with urban students might produce different results. To get a whole picture of the trends of elementary students' value orientations, concern and optimism levels, students from different geographical regions should be included in future studies.
3. The number of items found in the questionnaire may not be sufficient to grasp the students' views related to environmental related attributes.
4. Self-report measure was used so the data might not represent the complete objectivity.

5. Only a small size effect was found for gender and grade level differences in students value orientations, concern and optimism levels.

3.8 Threats to Internal Validity of the Study

3.8.1 Subject Characteristics Threat

Subject characteristics threat is a threat which is occur during the selection of the participants. The selection of the participants for a study may result in the individuals or groups differing from one another in unintended ways that are related to the variables to be studied and this is called as subject characteristics threat (Fraenkel and Wallen, 2006).

In order to minimize this threat, characteristics of the participants such as age, gender, socioeconomic status should be controlled. In the current study; all students were sixth, seventh and eighth grade public school students. The number of students is not the same but near between the grade levels. In addition, their socio-economic status was nearly similar.

3.8.2 Lose of Subjects (Mortality)

Although the subject of the study is selected carefully, it is common to lose some as the study progresses. This is known as the mortality threat (Fraenkel and Wallen, 2006).

This study was began and completed with 937 students so mortality could not be a threat to internal validity of the study.

3.8.3 Location

The particular locations in which data are collected, or in which an intervention is carried out, may create alternative explanations for results and this named location threat (Fraenkel and Wallen, 2006).

The location could not be threat in the current study because data collection instruments were administrated in classrooms under similar conditions.

3.8.4 Instrumentation

During the study, changes in the instruments cause a threat to internal validity of the study which is an instrument decay threat (Fraenkel and Wallen, 2006). Because the data collection and scoring were scheduled instrument decay could not be threat in the current study. Data collectors' characteristics can affect results of the study, which is called as data collector characteristics threat (Fraenkel and Wallen, 2006). In the current study, teachers were requested to help the researcher during the administration so there could be a data collector characteristics threat. Data collector bias threat may occur when a data collector distort results of the study unintentionally (Fraenkel and Wallen, 2006). Data collectors were given information about the study so it was not a threat for the current study.

3.8.5 Testing

If the practice on the pretest by itself is responsible for the improvement than testing threat occur (Fraenkel and Wallen, 2006).

In the current study there could not be a testing threat to internal validity of the current study because of the fact that instruments were used only once.

3.8.6 History

If unanticipated and unplanned events occur and affect the results of the study than history threat takes place (Fraenkel and Wallen, 2006).

Unexpected events did not happen during the study so in the current study history threat could not be threat.

3.8.7 Maturation

Sometimes because of the time passing changes in participant may cause changes in participant's behaviors to study. This is known as a maturation threat (Fraenkel and Wallen, 2006).

The current study was lasted about a month and this time was not enough for changes in participants' behaviors to study so maturation could not be a threat in this study.

3.8.8 Attitude of Subjects

Attitude of subject threat can be explained as the attitude of participants toward a study can cause a threat and this is called attitude of subject threat (Fraenkel and Wallen, 2006).

Attitude of subjects could not be a threat for the current study because students thought that the study was a part of their lesson and the result of their answers would impact them such as changing in the science curriculum.

3.8.9 Regression

A regression threat may be occur whenever change is studied in a group that is extremely low or high in its pre-intervention performance (Fraenkel and Wallen, 2006).

There was no intervention in the study so regression threat could not occur in the current study. In addition, due to the lack of intervention, there could not be an implementation threat.

3.8.10 Ethical Issues in the Study

In the current study, the participants were elementary school students so consent forms, which provided with information about the purpose of the study, were given both to students and their parents. In consent forms, it was emphasized that students should participate in the study voluntarily. It was also stated that students would not face any physical and psychological harm and they had the right to withdraw from the study if they did not want to complete the instruments, which satisfied the fundamental responsibility of every researcher, protecting participants from harm (Fraenkel and Wallen, 2006). In addition, communication phone number and e-mail address were added in case students or their parents would like to ask any questions about the study, which satisfied another fundamental responsibility, deception (Fraenkel and Wallen, 2006). Also some parents have make contact with phone to ask questions about the questionnaire and the study. Moreover, in consent forms it was stated that the answers of students were kept secret and the answers were used for only scientific studies or purposes. During the administration, students

did not write their names on the instruments so confidentiality of research data was also guaranteed, which is the last fundamental responsibility, ensuring confidentiality of research (Fraenkel & Wallen, 2006)

CHAPTER IV

RESULTS

This chapter consists of the results of descriptive statistics and inferential statistics. While descriptive statistics were used to provide information about the students' environmental concern and behavior, inferential statistics were used to determine the effects of gender and grade level on students' environmental concern and behavior. For the descriptive statistics, frequency analyses, the mean scores and standard deviation were used. For inferential statistic, multivariate analysis of variance (MANOVA) was used.

4.1 Descriptive Statistics

In this part, frequency, mean, range and standard deviation were reported.

4.1.1 Awareness Questionnaire

The awareness questionnaire composed of four parts which were; self evaluation part, open-ended questions part, conserving behavior, involvement in outdoor activities and source of information part.

4.1.1.1 Responses to self evaluation

In the questionnaire there were some questions to detect the participants views about the necessity of environmental education in the elementary and secondary schools' curriculum; interest in environmental problems, view on the importance of environmental problems in Turkey, and self-assessment of environmental interest and knowledge. Furthermore two questions related to school environment, such as whether they have a recycle bin in their school or if they have make an activity about environment in their school.

A majority of respondents (60.2%) reported that the environmental education must be included in the primary and secondary education curricula.

However about 20% of them indicated their disagreement on this item. On the other hand, 17 % were undecided about the environmental education must be included in the primary and secondary education curricula (*M*= 3.60; *SD*= 1.40).

Participants' self-assessment related to their environmental concern level revealed that more than half of the respondents (59.2%) evaluated themselves as having 'a fair amount' of concern while only 25.1% of respondents reported having 'a great deal' of concern about environmental problems. On the other hand, only 1.4% of the participants responded as 'not interesting' with environmental problems. Furthermore, there were four statements asking participants' opinion about the participants' perception of environment as a problem. More than half of the respondents (57%) reported the environment to be one of the two or three most important problems currently being faced. Only 3.6% of the participants did not evaluate environment as a problem. In other question, students were asked the level of their knowledge about environment. According to the results 20.4% of the participants responding that they are 'quite knowledgeable about environment'. A slight majority (56.2%) of the elementary school students responded that they have 'a fair amount' of environmental knowledge (*M*= 2.06, *SD* =.71). Another question, assess participants' ideas about whether the environmental problems in Turkey is exaggerated. About 17% thought that environmental problems in Turkey are exaggerated while sixty percent thought just the opposite. In addition, when the questions related to participants' school environment examined, it was found that, 74.6% of the students stated that they do not have a recycle bin in their school. In the last awareness question students were asked whether they make environmental activities in their schools or not. More than seventy percent of the participants pointed that they have make environmental activities in their schools.

4.1.1.2 Responses to open-ended questions

In the present study, participants were asked to list which global, national and local environmental problems they experienced currently and were they requested to give three reasons why they protect the environment. Generally they listed the global warming, greenhouse gases, ozone layer depletion, drought, melting of polar

glaciers, destruction of living things, animal extinction, natural disasters, nuclear facilities and depletion of energy resources as global environmental problems. Majority of the participants mentioned pollution as the main problems in Turkey. Specifically they perceived water pollution, air pollution, industrial pollution, dangerous gasses that were emitted from the factories and leaving the factory wastes into the sea, nuclear and industrial wastes, forest fires, deforestation, radiation, as national environmental problems. Besides, river pollution, water pollution, air pollution, throwing litter, animal wastes, cutting down trees, irregular settlement, destruction of agricultural land, lack of recycling, were listed as the common environmental problems of their district (i.e. local environmental problems). One of the 6th grade students stated that "after wedding ceremony people do not pick up their trash". Students reported that they protected their environment mainly for (a) living healthy (for their well being), (b) providing better future to their children, (c) preserving water resources, (d) preventing extinction of species, (e) providing the balance of nature and (f) having a cleaner environment. Besides, some participants responded this question by taking their religious belief into consideration. They stated that they protect the environment because religion has commanded to be clean. These results generally imply that participants held both eco-centric and ego-centric views to some extent.

4.1.1.3 Responses to Involvement in Outdoor Activities Scale

The participants were asked to indicate their level of activities that they involve in their daily life. The most frequently reported outdoor activity was feeding and caring of animals (35.9%) followed by gardening (28.6%) and reading book about environment (26.8%). Next frequent activity was planting tree (22.4%), bird watching (10.4%) and hunting (2.9%) were the activities they involved least. In conclusion, this finding is not surprising as far as participants' life styles and living areas are considered. Agriculture and livestock were the major source of income of the people living there. Also in that region children provide more contribution to the works of their parents, in fact, caring animals were the after school work for them.

Table 4.1 Percentage of Environmental Activity Scale

	Never	Rarely	Sometimes	Frequently
Fishing	51.9	20.1	20.1	4.8
Hunting	77.0	8.2	7.4	2.9
Gardening	11.5	23.2	32.5	28.6
Camping	65.6	14.1	12.0	3.7
Planting tree	8.8	23.9	40.9	22.4
Reading book about environment	9.1	27.0	32.7	26.8
Hiking	24.0	21.5	27.6	22.7
Boating	65.1	11.9	11.9	6.3
Bird watching	52.0	17.8	15.1	10.4
Dealing with animals	15.9	18.4	26.0	35.9

4.1.1.4 Responses to Sources of Environmental Information Scale

In the questionnaire, there were items asking about the participants' source of information about the environment. Table 4.2 demonstrated that school (67.2%) together with television programs (65.2%) were the most utilized sources of environmental information. The next source was newspapers and magazines with 59.7% agreement followed by internet and friends (54.6%). The least chosen source was Non-Governmental organization's event with 47% agreement of the participants.

Table 4.2 Percentage of Source of Environmental Information Scale

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Newspapers and magazines	13.2	11.8	11.3	31.6	28.1
Internet	10.8	16.3	14.5	27.5	27.1
Television programs	8.8	8.6	12.6	24.8	40.4
Non-Governmental organization's event	13.0	14.6	20.0	24.4	22.6
School (teacher, lessons, lesson book)	8.1	8.6	10.9	29.4	37.8
Family	7.6	7.2	14.9	31.8	33.2
Friends	9.2	11.6	20.8	33.7	20.9

As the results show, the mass media and school were the leading source of information for elementary students living in Kelkit. In the following part descriptive statistics for the Environmental Attitudes and Apathy Scale, Measuring Environmental Motive Concern Scale, Environmental Concern Scale, Environmental Optimism Scale and Locus of Control Scale were presented separately

4.1.2 Responses to Environmental Attitudes and Apathy Scale

Environmental Attitudes (i.e. eco-centric and anthropocentric) and Apathy Scale addressed three dimension of participants' environmental attitude with distinct sets of questions for each dimension; eco-centric, anthropocentric and apathy.

Table 4.3 presents mean scores and standard deviations of environmental attitude dimensions with respect to gender and grade level.

Table 4.3 Mean and Standard Deviation of Environmental Attitudes and Apathy Scale with Respect to Grade Level and Gender

		Eco-centrism		**Anthropocentrism**		**Apathy**	
Grade Level	**Gender**	**M**	**SD**	**M**	**SD**	**M**	**SD**
6th Grade	Girl	3.87	.773	2.89	.668	2.56	.652
	Boy	3.66	.891	2.90	.654	2.68	.722
	Total	3.77	.836	2.89	.661	2.62	.688
7th Grade	Girl	3.99	.781	2.74	.674	2.35	.749
	Boy	3.71	.856	2.97	.635	2.67	.755
	Total	3.85	.829	2.85	.664	2.51	.767
8th Grade	Girl	4.00	.714	2.82	.680	2.41	.723
	Boy	3.93	.772	2.93	.635	2.60	.811
	Total	3.97	.741	2.87	.661	2.50	.770
TOTAL		3.86	.805	2.87	.661	2.54	.744

As presented in the Table 4.3 students had higher scores on eco-centric attitudinal items (*M*= 3.86) when compared with the mean scores of anthropocentric attitudes *M*= 2.87 and apathy dimension *M*= 2.54, which mean they were having a serious concern for environmental issues for all living things. In other words, predominantly, elementary school students have an "eco-centric worldview". With respect to gender, girl had higher scores on the eco-centric dimension with a mean

score of 3.96 while boys' mean score was 3.77. On the other hand, boys had higher scores from anthropocentric and apathy items than girls had (*M*= 2.93 for boys and *M*= 2.82 for girls at anthropocentric dimension; *M*= 2.65 for boys and *M*= 2.44 for girls at apathy dimension). In fact, boys believe to protect environment for enhancing the quality of human life as well as their lack of interests were more in environmental issues and also they believe that the environmental problems have been exaggerated more than girls. Regarding grade level, it can be concluded that 8th grade students were more eco-centric (*M*= 3.97) than both 6th (*M*= 3.77) and 7th grade (*M*= 3.85) students. As grade level increases, the concern levels of students to the environmental issues for all living things also increase. To be short, it can be said that girls thought that the environment should be protected solely because of its value in maintaining, however, boys thought this protection solely because of enhancing the quality of human life. Furthermore, 8th grade students have more "eco-centric worldview" compared to lower grade levels. Thus, these findings revealed that elementary school students in Kelkit as holders of eco-centric attitudes tend to believe that nature has an intrinsic value and deserves protection because of its transcendental dimension (Thompson & Barton, 1994). A clear picture can be seen from the Figure 4.1.

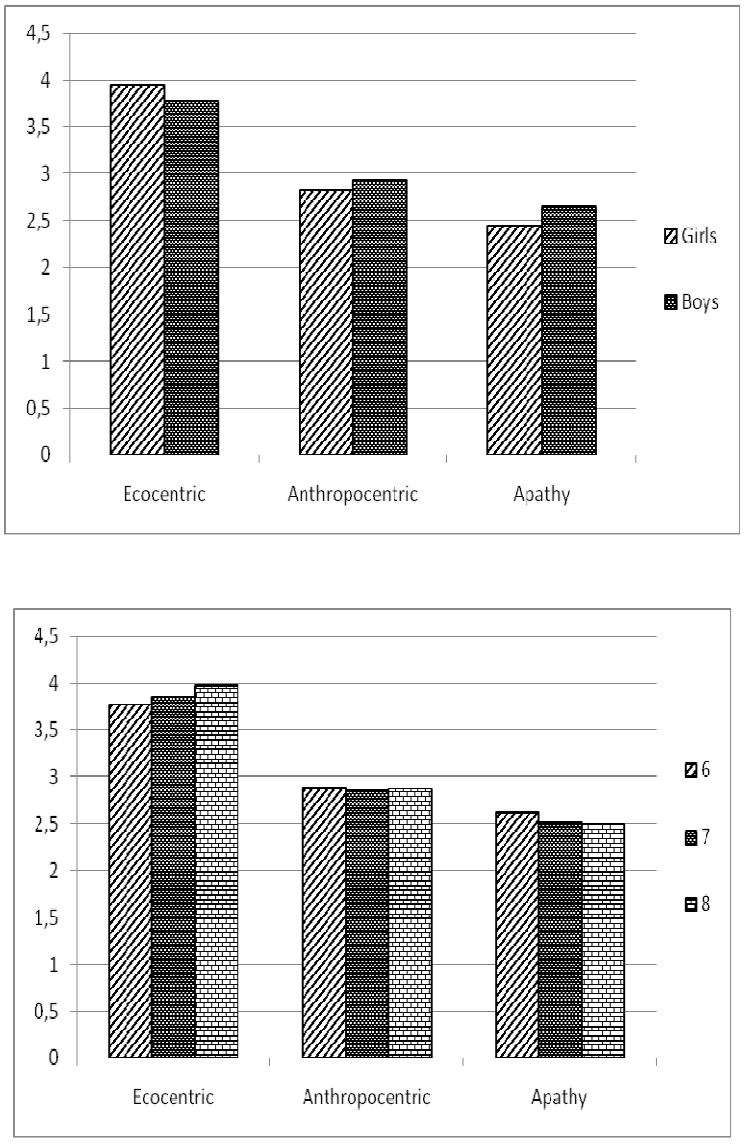

Figure 4.1 Bar Diagrams for the Ecocentric, Anthropocentric Attitudes and Apathy With Respect To Gender and Grade Level

Table 4.4- 4.6 shows the participants level of agreements, in percentages, to the statements in environmental attitudes scale. Concerning the eco-centric items, there were 13 five-point likert type items which measure the eco-centric attitudes. Participants' responses to the eco-centric attitudinal items reveal that elementary school students held favorable eco-centric attitudes (the mean score on eco-centric attitude scale was calculated as 3.86 with a standard deviation 0.81). Majority of the participants supported the statements such as "It makes me sad to see natural

environments destroyed" (82%); "Plants, animals have as much right as humans to exist" (79.3%); "Special areas should be set aside for endangered species" (76.1%); and "I need time in nature to be happy" (75.8%). On the other hand, disagreement appears at most in the item stated that "Sometimes animals seem almost human to me" (31.8%) and "One of the most important reasons to conserve is to preserve wild areas" (27%). In addition, participants were undecided with the statements "We all should care about the deforestation of the rainforest even though they are not within our geographical region" (18.8%). As can be concluded from this result, the participants of the current study did not concern the issue which was not local. In addition, 17.5% of the participants are also undecided with the statement of "One of the worst things about overpopulation is that natural areas are getting destroyed for development". All eco-centric items can be seen from Table 4.4.

Table 4.4 Frequency Distributions of Participant Agreement with Eco-centric Attitudinal Statements and Corresponding Item Means and Standard Deviations

	S D	D	U	A	S A	M	SD*
One of the worst things about overpopulation is that natural areas are getting destroyed for development.	12.4	9.6	17.5	24.0	36.6	3.63	1.38
I can enjoy spending time in natural settings just for the sake of being out in nature.	8.1	11.2	16.3	27.0	37.4	3.74	1.29
Sometimes it makes me sad to see forests cleared for agriculture.	10.8	6.4	10.9	20.3	51.7	3.96	1.36
Special areas should be set aside for endangered species.	9.7	5.3	8.8	15.9	60.2	4.12	1.33
I need time in nature to be happy.	8.7	6.5	9.0	28.3	47.5	3.99	1.27
Sometimes when I am unhappy I find comfort in nature.	9.1	8.0	10.2	27.2	45.5	3.92	1.30
It makes me sad to see natural environments destroyed.	8.7	4.7	4.6	16.4	65.6	4.25	1.27
Being out in nature is a great stress reducer for me.	9.0	6.4	14.4	22.9	47.3	3.93	1.30
One of the most important reasons to conserve is to preserve wild areas.	20.3	6.7	12.6	17.5	43.0	3.56	1.57
Sometimes animals seem almost human to me.	17.0	14.8	19.8	28.5	19.9	3.20	1.37
Plants, animals have as much right as humans to exist.	8.6	3.4	8.7	15.4	63.9	4.22	1.26
We all should care about the deforestation of the rainforest even though they are not within our geographical region.	13.6	6.3	18.8	21.6	39.7	3.67	1.40
It is my individual responsibility to conserve the environment in place where we live.	8.2	6.0	10.9	23.6	51.4	4.04	1.27
Total Scale						3.86	0.81

(Note: SD: Strongly disagree, D: Disagree, U: Undecided, A: Agree, SA: Strongly agree, M: Mean, SD*: Standard deviation).

Regarding anthropocentric attitude scale, there were 14 five-point likert type items to measure the anthropocentric dimension. The mean score on anthropocentric attitude scale was calculated as 2.87 with a standard deviation 0.66. Concerning the anthropocentric attitudes of elementary school students toward the environment it can be said that, students hesitated about the reason of the protection of environment, such that, protect the environment because of its value in maintaining or because of

enhancing the quality of human life. As can be seen from the Table 4.5 relatively a large group of participants were undecided about the items related to continued land development for the sake of human life (41.5%), the worst thing about the loss of the rain forest (35.7%), the most important species to protect is wild animals that provide meat for people (34.5%) and using animals in scientific experiments to save human life (32.9%). In addition, more than half of the elementary school students (57.6%) supported the idea that "for maintaining the high quality of life, resources should be preserved", 56% of the participants agreed on the importance of nature for the sake of human life. On the other hand, more than half of the elementary school students did not prefer to support the statements such as "Only the plants and animals having economical value should be conserved" and "Humans have the right to modify the natural environment to suit their needs". Moreover, more than a half (56.9%) of the elementary school students opposed to kill the poisonous snakes and insects that pose a threat to people.

Moreover, there is not a distinct difference between the percentages of the agreement and disagreement especially among statements reflecting anthropocentric view, such as "Wild animals that provide meat for people are the most important species to protect" (32.3% agree; 33.2% disagree), "One of the most important reasons to keep rivers and lakes clean is so that people can have a place to enjoy water sports" (35.6% agree; 38.5% disagree).Humans are more important than the other living" (34.4% agree; 35.6% disagree).

Table 4.5 Frequency Distributions of Participant Agreement with Anthropocentric Attitudinal Statements and Corresponding Item Means and Standard Deviations

	S D	D	U	A	S A	M	SD
The worst thing about the loss of the rain forest is that it will restrict the development of new medicines.	15.6	12.9	35.7	18.9	17.0	3.09	1.27
The best thing about camping is that it is a cheap vacation.	30.1	20.9	19.1	14.9	15.0	2.64	1.43
The thing that concerns me about deforestation is that there will not be enough lumber for future generations.	31.7	14.5	19.2	16.5	18.1	2.75	1.50
One of the most important reasons to keep rivers and lakes clean is so that people can have a place to enjoy water sports.	22.3	16.2	25.9	19.1	16.5	2.91	1.38
Wild animals that provide meat for people are the most important species to protect.	19.1	14.1	34.5	16.4	15.9	2.96	1.31
Nature is important because of what it can contribute to the pleasure and welfare of humans.	12.4	11.8	19.8	24.2	31.8	3.51	1.37
We need to preserve resources to maintain a high quality of life.	12.2	11.6	18.6	23.1	34.5	3.56	1.38
One of the most important reasons to conserve is to ensure a continued high standard of living.	10.6	9.5	30.8	23.2	25.9	3.44	1.26
Continued land development is a good idea as long as a high quality of human life can be preserved.	16.2	13.3	41.5	17.7	11.3	2.95	1.19
Animals could be used in scientific experiments to save human life.	26.1	16.7	32.9	12.7	11.5	2.67	1.30
Humans have the right to modify the natural environment to suit their needs.	41.9	17.3	19.5	9.6	11.7	2.32	1.40
Only the plants and animals having economical value should be conserved.	49.1	14.7	12.5	9.9	13.8	2.24	1.48
Humans are more important than the other living.	20.1	15.5	30.1	15.5	18.9	2.97	1.37
Poisonous snakes and insects that pose a threat to people should be killed.	35.4	21.5	20.9	10.3	11.8	2.42	1.37
Total Scale						2.87	0.66

Concerning the elementary school students' apathy about the environmental issues it can be concluded from the mean score that the participants hold low level of apathy about the environmental issues (*M*= 2.54, *SD*= 0.74). In other words, they were interested in environmental issues. For example, majority of the students disagreed on the items stated that "I don't care about environmental problems". (78.6%) and "I don't worry much about environmental issues" (61.4%). Although, less than half support the idea that "too much emphasis has been placed on conservation" (44.4%), and "conservation of the environment where we live is under the responsibility of other people" (45.5%), more than half of the participants disagree that environmental threats such as deforestation and ozone layer depletion have been exaggerated (57%). In addition, a relatively large group of participants' indicated their disagreement on items such as "I don't feel that humans are dependent on nature to survive" (76.3%) and "I am opposed to programs to preserve wilderness, reduce pollution and conserve resources" (56.1%) which reflect the participants' opinions about the significance of interaction between nature and human. Furthermore, many participants were uncertain about the idea that whether the most conservationists are pessimistic and somewhat paranoid (39.3%). Although 25.7% of the participants were unsure about the statement that "Most environmental problems will solve themselves given enough time", 66.3% of the participants disagreed on the statement that "There is no need to be concerned about environmental problems, in any case science and technology will solve these problems". All apathy items can be seen from Table 4.6.

Table 4.6 Frequency Distributions of Participant Agreement with Environmental Apathy Statements and Corresponding Item Means and Standard Deviations

	S D	D	U	A	S A	M	SD
It seems to me that most conservationists are pessimistic and somewhat paranoid.	18.9	15.0	39.3	15.6	11.2	2.85	1.22
I don't care about environmental problems.	65.5	13.1	5.7	4.5	11.3	1.83	1.37
I am opposed to programs to preserve wilderness, reduce pollution and conserve resources.	41.8	14.3	18.7	10.6	14.7	2.42	1.48
Too much emphasis has been placed on conservation.	20.1	18.1	17.4	17.5	26.9	3.13	1.49
Environmental threats such as deforestation and ozone depletion have been exaggerated.	36.1	20.9	17.5	13.9	11.6	2.44	1.40
I don't feel that humans are dependent on nature to survive.	64.9	11.4	6.9	4.5	12.3	1.88	1.41
Most environmental problems will solve themselves given enough time.	19.6	15.6	25.7	19.9	19.2	3.04	1.38
I don't worry much about environmental issues.	37.8	23.6	15.1	11.1	12.4	2.37	1.40
Conservation of the environment where we live is under the responsibility of other people.	21.7	17.2	15.6	18.4	27.1	3.12	1.52
Conservation of the environment where we live is under the responsibility of authority.	28.5	20.6	18.6	15.7	16.7	2.72	1.45
There is no need to be concerned about environmental problems; in any case science and technology will solve these problems.	49.3	17.0	14.3	7.4	12.2	2.16	1.41
Total Scale						2.54	0.74

To conclude, descriptive statistics revealed that majority of the participants were protect the environment for concerning all living things while a relatively small percentages of them protect the environment for enhancing the quality of human life. Furthermore, mean scores also reflect that the participants were seemed to interest in environmental issues.

4.1.3 Responses to Environmental Optimism Scale

By the Environmental Optimism Scale, participants' view about the state of 21 aspects of the environment (see table 4.9) at two spatial levels such as; National and Global were measured. Participants rated 21 items, encompass the quality of natural environment, built environment and the society's ability to address the environmental issues, on a 3-point rating scale in which the choices for the future state (i.e., 25 years from now, as compared to today) ranged from '(1) for much worse' to '(3) for much better'. Table 4.7 presents mean scores and standard deviations of Environmental Optimism Scale with respect to gender and grade level.

Table 4.7 Mean and Standard Deviation of Environmental Optimism Scale with Respect to Grade Level and Gender

		National		**Global**	
		M	**SD**	**M**	**SD**
Grade Level	6th Grade	-0.20	0.53	-0.33	0.52
	7th Grade	-0.43	0.48	-0.48	0.47
	8th Grade	-0.48	0.49	-0.56	0.46
Gender	Girl	-0.40	0.50	-0.45	0.50
	Boy	-0.35	0.53	-0.47	0.49
TOTAL		-0.37	0.51	-0.46	0.49

As presented in the Table 4.7, students have thought that in 25 years the situations about environmental problems would be "further than now", which indicated that participants were more pessimistic about the future for both global (*M*= -0.46) and national (*M*= -0.37) levels. Compared to national level, they were more pessimistic about the future state of the environment for Global level. Regarding gender, it can be said that girls were more pessimist than boys about the future state of the environment for national level (*M*= -0.40 for girls and *M*= -0.35 for boys), on the other hand, boys were slightly more pessimistic than girls at the global level (*M*= -0.47 for boys and *M*= -0.45 for girls). In addition, with respect to grade level, 8th grade students were more pessimistic (*M*= -0.48) when we compare

with 6th grade (*M*= -0.20) and 7th grade (*M*= -0.43) students. In other words, as grade level increases, the pessimism level of students about the future state of the environment for both national and global level also increase. To be short, 8th grade students thought that in 25 years environmental problems would be further and worse than now at National and Global dimensions. Furthermore, also girls and boys thought the environmental situations would be further and worse than now in 25 years especially at the Global dimension.

Table 4.8 presents the frequency distribution of participant responses on Environmental Optimism Scale. From the table it can be inferred that, more than half of the students have thought that in 25 years the situations about environmental problems would be "further than now" both in National and Global dimension. As seen from the mean values, participants were more pessimistic about the future environmental condition of the World than Turkey.

Table 4.8 Frequency Distributions of Participant Responses on Environmental Optimism Scale

	NATIONAL			GLOBAL		
	Less than now	**Not change considerably**	**Further than now**	**Less than now**	**Not change considerably**	**Further than now**
Air pollution	27.7	13.5	58.7	21.9	10.7	67.5
Noise pollution	24.5	20.5	55.0	19.7	16.6	63.6
Worsening the quality of drinking water	25.4	14.9	59.7	21.9	14.3	63.9
Increasing vehicle traffic	17.4	15.9	66.7	15.2	13.4	71.3
Industrial pollution	22.3	22.0	55.8	17.3	17.8	64.9
Radiation	17.6	20.8	61.6	16.8	17.0	66.2
Nuclear waste	20.1	16.2	63.6	17.7	13.0	69.3
Water shortage	19.7	14.0	66.3	17.5	12.7	69.8
Destruction of the forest	21.0	13.2	65.8	19.1	11.8	69.1
Destruction of agricultural area	24.3	18.3	57.4	19.6	17.5	62.9
Desertification	22.6	17.8	59.6	19.5	14.7	65.8
Energy shortage	26.4	23.2	50.3	21.9	19.2	59.0
Ozone depletion	16.8	16.6	66.5	14.8	14.7	70.5
Global warming	17.2	13.4	69.4	14.8	11.8	73.3
Overhunting	28.8	22.9	48.3	25.2	21.5	53.3
Acid rain	22.8	25.7	51.5	19.5	22.7	57.8
Extinction of plants and animals	20.8	13.2	66.0	18.1	12.3	69.6
Human population increase	18.9	16.6	64.5	16.0	13.6	70.4
Pollution caused by garbage	24.1	14.6	61.3	19.7	13.3	67.0
Quality of agricultural soil	30.3	25.5	44.2	27.2	22.0	50.9
River and lakes pollution	22.2	16.1	61.7	20.4	12.7	67.0

4.1.4 Responses to Environmental Concern Scale

Elementary school students were also asked to state their level of concern about current environmental issues by using Environmental Concern Scale. The mean scores and standard deviations of Environmental Concern Scale with respect to gender and grade level are presented in Table 4.9.

Table 4.9 Mean and Standard Deviation of Environmental Concern Scale with Respect to Grade Level and Gender

		M	**SD**
Grade Level	6^{th} Grade	4.05	0.86
	7^{th} Grade	4.12	0.81
	8^{th} Grade	4.22	0.73
Gender	Girl	4.24	0.74
	Boy	4.02	0.86
TOTAL		4.13	0.80

Regarding, Environmental Concern Scale, the total mean score was *M*= 4.13 with a standard deviation of *SD*= 0.80. This means that, majority of the students are 'very concerned' about many of the environmental problems and issues presented in the questionnaire (see Table 4.9**)**. With respect to gender, it can be said that girls held feeling of concern toward environmental issues and problems more than boys (*M*= 4.24 for girls and *M*= 4.02 for boys). On the other hand, in terms of grade level, it is seen that as the grade level increases the mean score of the participant also increases (*M*= 4.05 for 6^{th} grade, *M*= 4.12 for 7^{th} grade and *M*= 4.22 for 8^{th} grade). In other words, as the students grow up, their concern levels about environmental issues and problems increase.

When the frequency distributions of participant responses on Environmental Concern Scale are considered (Table 4.10), participants found to be concern mostly with such items "deforestation" "water shortage" "poor drinking-water quality" "river and lake pollution", "desertification" and "extinction of animals and plants" On the other hand, the students were relatively less concerned about industrial

pollution, overpopulation, overhunting, noise pollution, traffic jam, acid rain and radiation when compared with the responses to the rest of the environmental issues. As a result, majority of the mostly concerned items were the problems of the district that the participants live. These findings were also parallel with findings of the open-ended questions in which they reported the same environmental issues as a problem of their local environment. They seemed to be concern less some of the environmental issues which were not exist mainly in their living environment.

Table 4.10 Frequency Distributions of Participant Responses on Environmental Concerns

	Not at all concerned (1)	**(2)**	**(3)**	**(4)**	**Very concerned (5)**	**M**	**SD**
Air pollution	6.3	8.5	6.9	17.4	60.9	4.18	1.25
Noise pollution	4.2	11.0	11.3	27.2	46.4	4.01	1.18
Poor drinking-water quality	3.5	7.4	10.1	13.1	65.9	4.30	1.13
Traffic jam	6.4	7.7	14.8	24.0	47.1	3.98	1.23
Industrial pollution	6.0	7.7	21.4	20.8	44.1	3.89	1.22
Radiation	6.5	9.1	14.5	20.7	49.3	3.97	1.26
Nuclear wastes	6.3	8.2	15.4	15.6	54.6	4.04	1.26
Water shortage	4.9	7.5	7.2	11.9	68.4	4.32	1.18
Deforestation	3.7	6.4	6.3	12.7	70.9	4.41	1.10
Extinction of agricultural lands	3.3	7.2	9.5	19.9	60.0	4.26	1.10
Desertification	4.1	6.3	10.4	14.6	64.6	4.29	1.13
Energy shortage	5.7	7.4	13.8	19.2	54.1	4.09	1.21
Ozone depletion	4.8	6.3	13.5	15.8	59.6	4.19	1.18
Global warming	3.8	6.8	10.2	15.1	64.0	4.29	1.13
Overhunting	6.8	8.6	16.7	22.6	45.2	3.91	1.26
Acid rain	6.9	9.0	14.7	20.5	48.9	3.96	1.27
Extinction of animals and plants	5.0	6.3	9.5	14.6	64.6	4.28	1.17
Overpopulation	9.7	9.4	12.6	24.1	44.2	3.84	1.34
Waste pollution	4.1	6.9	10.6	17.2	61.3	4.25	1.14
Soil quality of agricultural lands	5.9	8.2	15.2	22.3	48.4	3.99	1.22
River and lake pollution	3.2	6.5	8.5	15.9	65.9	4.35	1.08

4.1.5. Responses to Conserving Behavior Scale

Since preserving the earth's resources is vital to a sustainable future and it helps to conserve the earth as a habitat and to prevent degradation of the environment (Oskamp, 1995), it is important to assess young students` Conserving Behavior. In the study, Conserving Behavior Scale was utilized to obtain information about elementary school students` self-reported recycling behavior. Recycling is crucial because it conserves valuable resources as well as reduces the amount of solid waste that must be deposited in landfills as stated by Hopper and Nielsen, (1991). Table 4.11 presents mean scores and standard deviations of Conserving Behavior Scale with respect to gender and grade level.

Table 4.11 Mean and Standard Deviation of Conserving Behavior Scale with Respect to Grade Level and Gender

		M	**SD**
Grade Level	6th Grade	2.15	0.81
	7th Grade	2.12	0.79
	8th Grade	2.15	0.77
Gender	Girl	2.06	0.77
	Boy	2.22	0.81
TOTAL		2.14	0.79

According to the Table 4.11 the total mean score of the participants was 2.14 with a standard deviation of 0.79, indicating that participants of the current study often do not engage in recycling behavior. With respect to grade level, it is seen that 6th and 8th grade students have the same mean scores (*M*= 2.15), however, 7th grade students' mean score (*M*= 2.12) was slightly lower than 6th and 8th grade students. . Thus, it can be concluded that 6th and 8th grade students have more tendency to conserve than 7th grade elementary students. Besides, regarding gender, as the Table 4.10 indicates that boys (*M*= 2.22) had higher mean scores than girls (*M*= 2.06). In other words, boys were more likely to engage in conservation when compare with girls.

Frequency distributions on conserving behavior scale showed that (see Table 4.12), great majority of the participants never or rarely recycle many of the recyclable materials. Indeed relatively small percentage of the participant reported that they participated in recycling process.

Table 4.12 Frequency Distributions of Participant Responses on Conserving Behavior Scale

	Never	**Rarely**	**Often**	**Always**
Paper (Newspaper, Magazines, paper box)	25.2	35.5	22.1	17.3
Glass (Bottles and jar)	39.0	28.7	19.1	13.2
Plastic	38.8	28.5	18.0	14.7
Aluminum box	42.3	28.0	16.2	13.4
Battery	25.5	35.5	20.0	19.0

When self-reported recycling behavior was correlated with presence of recycle bin in schools, it was found that although low in magnitude, they correlated positively with other, ($r=.07$, $p<.01$).

4.1.6. Responses to Locus of Control Scale

The Locus of Control Scale was used to measure whether the participants have external or internal locus of control, Table 4.13 presents mean scores and standard deviations of Locus of Control Scale with respect to gender and grade level.

Table 4.13 Mean and Standard Deviation of Locus of Control Scale with Respect to Grade Level and Gender

		M	**SD**
Grade Level	6^{th} Grade	0.52	0.17
	7^{th} Grade	0.55	0.16
	8^{th} Grade	0.56	0.17
Gender	Girl	0.55	0.16
	Boy	0.54	0.18
TOTAL		0.54	0.17

According to the Table 4.13 participants' total mean score was 0.54 with a standard deviation of 0.17. From the mean score it can be said that participants were not likely to have a strong internal locus of control. Participants believe that their actions do not necessarily determine the events outside them.

The relatively small standard deviation reflects that participants did not have widely spread scores on the Locus of Control Scale. In addition, it can be concluded that, as the grade level increase the mean score of the participants also increase (at 6th grade M= 0.52, at 7th grade M= 0.55 and at 8th grade M= 0.56) actually, the strength of their internal locus of control increase. Although the mean scores of girls and boys were very close to each other (M= 0.55 for girls and M= 0.54 for boys), girls' mean score was slightly higher than that of boys. One can concluded that girls have stronger internal locus of control compared to boys.

Overall, descriptive results pointed out that, girls were more eco-centric and highly concerned about environmental issues, at the same time were more pessimists about the environmental problems at National level, as well as have strong internal locus of control when compared with boys. On the other hand, boys were more anthropocentric, more apathetic to the environmental problems; more pessimists about the future environmental problems at Global level as well as give more importance to conservation as compared with girls. Besides, 8th graders were found to be more eco-centric, highly concerned about environmental issues, more pessimist about the future both at National and Global levels, highly engaged in conserving behaviors and finally possess a strong tendency to ascribe their chances of future successes or failures to their own actions (see Table 4.14)

Table 4.14 Overall Mean Scores and Standard Deviations with Respect to Gender and Grade Level

	Eco-centric Attitude		Anthropocentric Attitude		Apathy		Egoistic motive		Biospheric motive		Altruistic motive		Optimism_ National		Optimism_ Global		Environmental Concern		Conserving Behavior		Locus of Control	
GENDER	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
Girl	3.96	.76	2.82	.68	2.44	.71	4.58	.68	4.44	.83	4.58	.72	-.40	.50	-.45	.50	4.24	.74	2.06	.77	.55	.16
Boy	3.77	.85	2.93	.64	2.65	.76	4.42	.87	4.29	.93	4.40	.88	-.35	.53	-.47	.49	4.02	.86	2.22	.81	.54	.18
GRADE LEVEL																						
6th Grade	3.77	.84	2.89	.66	2.62	.69	4.49	.83	4.32	.94	4.33	.94	-.20	.53	-.33	.52	4.05	.86	2.15	.81	.52	.17
7th Grade	3.85	.83	2.85	.66	2.51	.77	4.41	.83	4.38	.81	4.55	.69	-.43	.48	-.48	.47	4.12	.81	2.12	.79	.55	.16
8th Grade	3.97	.74	2.87	.66	2.50	.77	4.61	.65	4.40	.89	4.59	.74	-.48	.49	-.56	.46	4.22	.73	2.15	.77	.56	.17
TOTAL	3.86	.81	2.87	.66	2.54	.74	4.50	.78	4.37	.88	4.49	.80	-.37	.51	-.46	.49	4.13	.80	2.14	.79	.54	.17

4.2 Inferential Statistics

Multivariate analysis of variance is conducted in order to compare groups, if there is more than one dependent variable which should be related in some way (Pallant, 2001). This analysis tells us whether the differences between the groups on the dependent variables. In this study, two separate two-way MANOVAs were conducted to analyze the effect of gender and grade level on environmental attitudes and apathy and environmental optimism and concern level of elementary school students.

4.2.1 Assumptions of Multivariate Analysis of Variance (MANOVA)

Assumptions were checked before conducting MANOVA. MANOVA has six assumptions, namely, sample size, normality, outliers, linearity, multicollinearity and singularity, and homogeneity of variance-covariance matrices. Sample size, normality, outliers and multicollinearity and singularity assumptions should be checked only once, however, linearity and homogeneity of variance-covariance matrices assumptions should be checked for each MANOVA separately (Pallant, 2001).

Sample size

In order to provide MANOVA, the cases in each cell should be more than the numbers of dependent variables (Pallant, 2001). The minimum required number of cases in each cell in this study was six (the number of dependent variables). We have enough cells (independent variables are gender and grade level which consists of three levels). Therefore the sample size (N=938) assumption was met in this study.

Normality

Univariate and multivariate normalities were checked for each MANOVA. Skewness, kurtosis, and histograms were examined to check univariate normalities. As presented in Table 4.13, skewness and kurtosis values were in acceptable range being between -2 and +2 for all the dependent variables indicating univariate normality. In addition, histograms for apathy and anthropocentric item indicated that the scores were reasonably normally distributed and the histogram for the ecocentric, concern, global and national items indicated that there was a non-normal distribution.

Moreover, the skewness and kurtosis values for the ecocentric, concern, earth and turkey items were acceptable for the normal distribution. When Normal Q-Q Plots of all the dependent variables were inspected, almost straight lines were observed suggesting a normal distribution. In addition, to check multivariate normality Mahalanobis distances was calculated as 34.448. This value was compared with critical value given in the Chi-square table (Pallant, 2001). For six dependent variables, the critical value was found as 22.46, since 34.448 exceeded the critical value, it was considered an outlier.

Table 4.15 Skewness and Kurtosis Values of the Dependent Variables

	ECO	ANTH	APA	National_Opt	Global_Opt	Concern
Skewness	-1.220	0.152	0.572	0.744	1.006	-0.862
Kurtosis	1.435	-0.008	0.447	-0.122	0.520	0.005

Outliers

In order to find out univariate outliers, cases with standardized scores which exceed 3.29 are inspected as outliers according to Field (2005). In this study, fourteen cases were detected and deleted from the data file. Moreover, fifteen cases removed from the data set, these cases' Mahalanobis distance were larger than critical value (22.46). So, there was no threat of outliers any more. Therefore, the sample size of the study decreased from 938 to 909, which was still suitable for the MANOVA.

Linearity

In order to check linearity assumption scatterplots were generated for each pair of dependent variables and these scatterplots showed that there was no violation of the linearity assumption for the each MANOVA.

Multicollinearity and Singularity

In order to check multicollinearity and singularity assumption, correlation coefficients between dependent variables were calculated. As indicated in Table 4.14, Pearson correlation coefficients between six dependent variables ranged from -0.261 to 0.651, smaller than 0.8, so it can be concluded that dependent variables were moderately correlated.

Table 4.16 Pearson Correlations between Students Eco-centric, Apathy, Anthropocentric Concerns, Environmental Concerns and National and Global Optimism

	APA	ANTH	Global_Opt	National_Opt	Concern
ECO	-0.152	0.1	-0.033	-0.104	0.3
APA		0.651	0.158	0.109	-0.173
ANTH			0.112	0.059	-0.056
Global_Opt				0.630	-0.189
National_Opt					-0.261

Homogeneity of variance-covariance matrices

In order to check homogeneity of variance assumption, a separate MANOVA was conducted for each independent variable. The results of the Box Test of Equality of Covariance Matrices showed that the assumption of homogeneity of variance-covariance matrices was violated. According to Pallant (2001), if the significance value is greater than .001, the assumption is not violated. There were violation of the assumption of homogeneity of variance covariance matrices for both of the MANOVAs (p = 0.000 for the first MANOVA, p = 0.000 for the second MANOVA). But Tabachnick and Fidell (2007, p.281) stated that Box's M can tend to be too strict when we have a large sample size.

Hypothesis 1: There is no statistically significant effect of gender and grade level on students' ecocentric and anthropocentric attitudes and apathy.

Two-Way MANOVA was conducted to investigate the effect of gender and grade level on students' ecocentric and anthropocentric attitudes and apathy. The results showed that there was a statistically significant multivariate effect of gender (Pillai's Trace = 0.038, F = (3, 901) = 11.839, p< 0.05, $\eta^2 = 0.038$) and grade level (Pillai's Trace = 0.014, F = (6, 1804) = 2.103, $\eta^2 = 0.07$ $p \leq 0.05$). The multivariate η^2 value of 0.038 and 0.007 indicated that 3.8% and 0.7% of multivariate variance of the dependent variables was associated with the gender and grade level respectively. Hence, there was a statistically significant difference, although small in magnitude, between girls and boys and between grade levels in terms of their eco-centric and anthropocentric attitudes and apathy. The results also revealed that there was no

interaction between gender and grade level, that is, the grade level effect does not depend on the gender (and vice versa) with respect to collective dependent variables (Pillai's Trace = 0.011, F= (6,1804) = 1.605, p> 0.05).

Table 4.17 MANOVA Results for Gender and Grade Level

Effect	Pillai's Trace	F	Hypothesis df	Error df	*P*	Partial η²	Observed Power
Gender	.038	11.839	3.000	901	.000	.038	1.000
Grade Level	.014	2.103	6.000	1804	.050	.007	0.761
GenderXGrade Level	.011	1.605	6.000	1804	.142	.005	0.622

In order to investigate whether girls or boys differed on all of the dependent variables or not and 6th, 7th and 8th grade students differed on all of the dependent variables or not Between-Subjects Effects test should be considered (Table 4.16). Bonferroni adjustment should be applied in order to control Type I error. The original alpha level of 0.05 was divided the number of dependent variables, (i.e. three), and obtained a new alpha level of 0.017. The follow-up analyses for pair wise comparisons showed that the mean scores on ecocentric items (F = 10.650, p < 0.017), on anthropocentric items (F = 13.381, p < 0.017) and on apathy items (F = 28.298, p < 0.017) were significantly different with respect to gender. While for eco-centric dimension, girls were found to be significantly different from boys (M = 3.95 for girls; M = 3.77 for boys), for anthropocentric (M = 2.82, for girls; M = 2.93 for boy) and apathy items (M = 2.44 for girls; M = 2.65 for boys), this difference were found to be in favor of boys. This result implies that girls have eco-centric worldview. No statistically significant grade level effect, however, was found for the eco-centric, anthropocentric and apathy dimensions. This result shows that students across grade level were not differ with respect to their environmental attitudes (eco-centric, anthropocentric and apathy).

Table 4.18 Follow-up Pairwise Comparisons

Source	Dependent Variables	Df	F	Sig. (p)	Partial Eta Squared
Gender	ECO	1	10.650	0.001*	0.012
	APA	1	28.298	0.000*	0.030
	ANTH	1	13.381	0.000*	0.015
Grade	ECO	2	3.637	0.027	0.008
	APA	2	3.642	0.027	0.008
	ANTH	2	0.536	0.536	0.001
Gender x Grade level	ECO	2	1.599	0.203	0.004
	APA	2	2.754	0.064	0.006
	ANTH	2	2.621	0.073	0.006

In order to evaluate effect size, Partial Eta Squared results should be considered. The values were 0.012 for eco-centric, 0.030 for anthropocentric and 0.015 for apathy dimensions. These values were considered quite small effect according to generally accepted criteria (Cohen 1988, pp. 284-287).

Hypothesis 2: There is no statistically significant effect of gender and grade level on students' environmental optimism and environmental concern.

Two-Way MANOVA was conducted to investigate the effect of gender and grade level on students' environmental optimism both national and global levels, and environmental concern. The results showed that there was a statistically significant multivariate effect of gender (Pillai's Trace = 0.020, $F = (3, 901) = 6.086$, $\eta^2 = 0.020$ $p < 0.05$) and grade level (Pillai's Trace = 0.062, $F = (6, 1804) = 9.565$, $\eta^2 = 0.031$, $p < 0.05$) with respect to collective dependent variables. The multivariate η^2 value of 0.020 and 0.031 indicated that 2% and 3.1% of multivariate variance of the dependent variables was associated with the gender and grade level respectively. Partial Eta Squared values were calculated as 0.019 for environmental concern, 0.048 for global level of environmental optimism and 0.051 for national level of environmental optimism. These values were considered between small and medium according to generally accepted criteria (Cohen 1988, pp. 284-287). The results also revealed no interaction between gender and grade level, that is, the grade level effect does not depend on the gender (and vice versa) with respect to collective dependent variables (Pillai's Trace = 0.013, $F = (6, 1804) = 1.959$, $p > 0.05$).

Table 4.19 MANOVA Results for Gender and Grade Level

Effect	Pillai's Trace	F	Hypothesis df	Error df	*P*	Partial η²	Observed Power
Gender	.020	6.086	3.000	901	.000	.020	0.961
Grade Level	.062	9.565	6.000	1804	.000	.031	1.000
GenderXGrade Level	.013	1.959	6.000	1804	.068	.006	0.726

In order to investigate whether girls or boys differed on all of the dependent variables or not and 6th, 7th and 8th grade students differed on all of the dependent variables or not Between-Subjects Effects test should be considered (Table 4.18). Bonferroni adjustment should be applied in order to control Type I error. The original alpha level of 0.05 was divided the number of dependent variables, (i.e. three), and obtained a new alpha level of 0.017. The follow-up analyses for pair wise comparisons showed that the mean scores on environmental concern of the questionnaire ($F = 17.268$, $\eta^2 = 0.019$, $p < 0.017$) were significantly different with respect to gender. For environmental concern girls were found to be significantly different from boys (M = 4.24 for girls; M = 4.02 for boys).

Table 4.20 Follow-up Pairwise Comparisons

Source	Dependent Variables	df	F	Sig. (p)	Partial Eta Squared
Gender	Concern	1	17.268	0.000*	0.019
	Global	1	0.012	0.912	0.000
	National	1	1.276	0.259	0.001
Grade	Concern	2	2.697	0.068	0.006
	Global	2	22.626	0.000*	0.048
	National	2	24.414	0.000*	0.051
Gender x Grade level	Concern	2	4.746	0.009	0.010
	Global	2	1.132	0.323	0.003
	National	2	2.066	0.127	0.005

Concerning grade level, it was found that mean scores on global and national items of the optimism scale were significantly different with respect to grade level; ($F = 22.626$, $\eta^2 = 0.048$, $p < 0.017$) and ($F = 24.414$, $\eta^2 = 0.051$, $p < 0.017$) respectively. On global dimension 8th grade students had lower mean scores (M= - 0.56), compared with the 6th grade students (M= - 0.33). Similarly, 7th grade students had lower mean scores on global dimension (M= - 0.48), compared with the 6th grade

students (*M*= - 0.33). There was also statistically significant difference between 8th grade students mean scores on national dimension (M= - 0.48) and 6th grade students (M= - 0.20). Likewise, 7th grade students had lower mean scores on national dimension (M= - 0.43), compared with the 6th grade students (M= - 0.20). There was not a statistically significant difference between 7th grade students and 8th grade students on both global and national dimensions. Table 4.19 shows detailed information about post hoc test. According to these results it can be said that, students' environmental optimism on both national and global level changes across grade level. At both levels 8th grade students were more pessimists about the future environmental situation at national and global levels than 6th grade students. Similarly, 7th grade students were more pessimists when we compare with 6th grade students for both levels.

Table 4.21 Post-Hoc Comparisons of the Mean Differences

Dependent Variable	**Grade Level**	**Grade Level**	**Mean Difference**	**Significance(*p*)**
Global_Opt	6	7	0.17	.000*
		8	0.25	.000*
	7	6	- 0.17	.000*
		8	0.08	.109
	8	6	- 0.25	.000*
		7	-0.08	.109
National_Opt	6	7	0.21	.000*
		8	0.25	.000*
	7	6	-0.21	.000*
		8	0.04	.753
	8	6	0.25	.000*
		7	0.04	.753

4.3 Summary of Results

The results of the current study can be summarized as follows:

1. Descriptive results of the Environmental Attitudes and Apathy scale showed that, elementary school students were more ecocentric. On the other hand, girls had higher mean score on ecocentric attitudes and also 8th grade students were holders of ecocentric attitudes. They tend to believe that nature has an intrinsic value.

2. Descriptive results of the Environmentally Optimism Scale revealed that elementary school students were pessimistic about the future of the national and global environmental issues.

3. According to the descriptive results of the Environmental Concern scale, it was detected that elementary school students were concerned about environmental issues. Besides, girls were found to be more concern about environmental issues when we compare with boys.

4. Two-way MANOVA results showed that, there was a statistically significant effect of gender on students' ecocentric, apathy and anthropocentric attitudes.

5. Two-way MANOVA results indicated that, there was a statistically significant effect of gender and grade level on students' optimism scale and environmental concern.

CHAPTER V

CONCLUSIONS, DISCUSSION AND IMPLICATIONS

This chapter includes discussion of the results, implications of the study and recommendations for further research.

5.1 Discussions of the Results

In this study a cross age study was conducted to investigate 6th, 7th and 8th grade elementary students' value orientations, environmental optimism, and environmental concern. The f gender and grade level differences on students' value orientations, environmental concern and environmental optimism levels were examined.

In general, students who participated in the current study appeared to hold eco-centric attitudes and express a high degree of concern about environmental problems. They also seemed to be interested in environmental issues and problems and perceived environmental problems as one of the two or three most important problems currently being faced.

5.1.1 Discussion of Descriptive statistics

5.1.1.1. Discussion on Elementary Students' Value Orientations

Particularly, descriptive statistics regarding the Environmental Attitudes and Apathy scale pointed out that, elementary school students held each value orientation to some degree. However, as mean scores indicated they appear to be more responsive to ecocentric arguments (*M*= 3.86) compared to anthropocentric (*M*= 2.87) arguments. This result indicates that participants of this study generally valuing nature for its own sake and express concern for nonhuman objects and ecosystems even if protection of nature requires human sacrifice and decreased their living standard (Kaltenborn & Bjerke, 2002; Stern & Dietz, 1994; Thompson & Barton,

1994). Some of the students also found to held anthropocentric views. Those students perceived human needs all above other values, and they conserve the environment if it fulfills human needs. In other words, they valuing nature because of the benefits nature can provide for human beings (Kaltenborn & Bjerke, 2002; Thompson & Barton, 1994). Few individuals, however, expressed a lack of interest in environmental issues, and thought that environmental problems have been exaggerated (M= 2.54). To be brief, elementary students living in Kelkit expressed a concern and an interest in conserving environment but for different reasons. In fact, participants' responses to open-ended questions also confirm this assertion. They reported that they protect their environment for the sake of living healthy (e.g. for their well being), providing a better future to their children, to conserving water resources, preventing extinction of species, the balance of nature and having a cleaner environment.

As far as results of frequency distribution were considered, it was concluded that, while students agree to many ecocentric items (such as 'It makes me sad to see natural environments destroyed' and 'Sometimes it makes me sad to see forests cleared for agriculture'), they generally undecided to the statements favoring anthropocentric attitudes. For example, 'Continued land development is a good idea as long as a high quality of human life can be preserved' and 'The worst thing about the loss of the rain forest is that it will restrict the development of new medicines'. In addition, participants disagree on some statements such as 'I don't care about environmental problems', 'I don't feel that humans are dependent on nature to survive' and 'I don't worry much about environmental issues'. In fact, students disagreements on such items further indicated that elementary school students in the north-east region of Turkey see nature as worth conserving regardless of the human basic needs like food consumption and students hesitated to protect the environment because of its value in maintaining or because of enhancing the quality of human life, besides, the participants were seem to interested in environmental issues.

Higher agreement on some items, on the other hand, indicated that young people support conservation taking human comfort, quality of life, and health into consideration. For example, more than 30% of the students indicated their agreement

on the items stated that “The thing that concerns me about deforestation is that there will not be enough lumber for future generations”, that “The worst thing about the loss of the rain forest is that it will restrict the development of new medicines” and that “Wild animals that provide meat for people are the most important species to protect”. More than half of the participants agree on preservation of nature but their motives for this interest are different from those reported by ecocentric students. Such students though perceived nature as important because it can contribute to the pleasure and welfare of humans, they believe that resources should be preserve in order to maintain a high quality of life and only the plants and animals having economical value should be conserved. Almost half thought that “One of the most important reasons to conserve is to ensure a continued high standard of living”. As far as items related to apathy about environmental issues are considered, it was found that a relatively low mean score attained by the students (M= 2.54, SD= 0.74), implying their interest and care on environmental issues. For instance, most of the students indicated their disagreement on the item stating that “There is no need to be concerned about environmental problems, in any case science and technology will solve these problems” and that “I don’t worry much about environmental issues”. However, they were not sure whether or not environmental problems would solve themselves given enough time.

Although related literature tended to report somewhat similar results, slight variations can be found with respect to age, socio-economic status, values, culture, location, occupations, and knowledge about environmental issues. For example, in their two studies, Thompson and Barton (1994) found their participants (mean age of 43 years old) to be more eco-centric, less anthropocentric and expressing less apathy about environmental problems and issues. They also reported a positive association between eco-centric attitudes and pro-environmental behavior. However, they reported contradicted results related to the association between anthropocentric attitude and pro-environmental behavior. While in one study demonstrated a negative association, another study produced non-significant association between anthropocentric attitudes and pro-environmental behavior.

In their study with farmers, managers and biologists in Norway, Bjerke and Kalternborn (1999) found that they endorsed more eco-centric view. While the mean scores for managers and biologists were the same (*M*= 3.9), it can be concluded that farmers also expressed anthropocentric attitudes to some extend (*M*= 3.7 for eco-centric, *M*= 2.9 for anthropocentric). Besides, as the results revealed the participants were not expressed apathy toward the environment except farmers. Sheep farmers responded neutrally to environmental apathy items. Actually, their mean score from apathy items was more than managers and biologists (*M*= 2.6 for farmers, *M*= 1.6 for managers and biologists). As Bjerke and Kalternborn stated, farmers were neither agree nor disagree to environmental apathy items. According to the researchers, farmers both enjoy time in nature and agree that environmental protection for human benefits is important. They attributed the differences in values to the controversy between the utility of natural resources and future economic prospects.

However, according to nature exploitation theory, it has also been assumed that residents of rural areas generally tended to express utilitarian attitudes toward the environment and that rural occupations, such as farming, are often regarded as *nature-exploitive (or extractive),* since they involve the direct use of natural resources (Hines, Brown & Zimmer,1975 cited in Tremblay & Dunlop, 1977). Therefore, individuals relied on such occupations tended to perceive nature as something *to be used*, *not appreciated* (Hendee, 1969 cited in Tremblay & Dunlop, 1977). They further indicated the probability of farmers' transmitting their utilitarian attitudes to children.

In the Karpiak and Baril (2008) study, university students reported to had more eco-centric views and held an anthropocentric views to some extend (*M*= 3.85 for eco-centric items, *M*= 3.17 for anthropocentric items). However, they found not to be apathy toward environment with the mean score of 2.02. According to the results, students majoring in the biological sciences expressed less anthropocentric and more eco-centric attitudes than the students in other majors. Researchers explained this difference like that studying biology may be decreases the anthropocentrism by understanding of nonhuman life. Schultz (2000; 2001) studies found that, individualists (maximize their own outcomes with little or no regard for

others' outcomes) and competitors (maximize their own outcomes relative to others' outcomes) have significantly higher scores on egoistic environmental concerns than did people with a pro-social (maximize their own outcomes for both themselves and others and to minimize differences between outcomes) value orientation. Schultz suggested that "the type of concerns an individual develops is based on the degree to which they perceive an interconnection between themselves and other people (altruistic) or between themselves and nature (biospheric)" (Schultz, 2001, p. 337). Moreover, author proposed that objects such as; plants, animals and other people were valued because they were included in the individuals' cognition. Studying with undergraduate students from14 different countries (i.e., Argentina, Canada, Colombia, Costa Rica, the Dominican Republic, El Salvador, Ecuador, Mexico, Panama, Peru, Paraguay, Spain, the United States and Venezuela), Schultz and Zelezny (1999) reported that participants from all of the countries had more eco-centric world view, with a mean scores above 4.0.

In one of the study with young children, Bonnet and Williams (1998) revealed that children living in England were aware of potential conflicts of interest between nature and human needs, this awareness, however, found to be rather academic and abstract quality. Barrett, Kuroda and Miyamoto's study (2002) found that Japanese young individuals had diverse expectations related to the future quality of the environment, believing that environmental protection entails changes in life styles, values and human behaviour. Although their participants perceived environmental protection more important than economic growth, they were hesitant about how it might be possible to balance both growth and environmental conservation

In conclusion, environmental attitude study can be mainly explained by value-basis theory. This theory suggests the reason of concerns about specific environmental issues is because of an awareness of harmful consequences of environmental problems to a value or valued object. Actually in the present study, it was found that participants were more eco-centric which means that they protect the environment because of thinking all living things and also concern more about the environmental deterioration. Indeed, as Thompson and Barton claimed, both

ecocentric and anthropocentric individuals endorse favorable environmental attitudes and show support for the environment, however their underlying motives are different. They stated that "because the values underlying anthropocentrics' support of the environment are human-centered and basically utilitarian, they will be less likely to act to protect the environment if other human-centered values such as material quality of life or the accumulation of wealth interfere. Ecocentric individuals, however, will act to support the environment even if these actions involve discomfort, inconvenience, and expense that may reduce their material quality of life" (Thompson & Barton, 1994, p.150).

5.1.1.2. Discussion on Environmental Concern and Optimism

Participants' responses to environmental concern scale revealed that they were highly concerned about many of the environmental problems and issues. They reported that they were generally concerned about deforestation followed by water shortage, poor drinking-water quality, river and lake pollution, desertification, extinction of plants and animals, global warming, and ozone layer depletion. Results of open-ended questions regarding the most important environmental problems existing in their local area also confirmed these findings. For example, river pollution, water pollution, air pollution, clearing of forests for other land use, and destruction of agricultural land stated as the common local environmental problems by the participants. Consequently, students seemed to be more pessimistic about the future situations of environment concerning above-mentioned environmental issues and problems. According to the participants, in 25 years period the situation of global warming, ozone layer depletion, water shortage, river and lake pollution, pollution caused by garbage, extinction of plants and animals, worsening the quality of drinking water, nuclear waste, destruction of forest would be worse than now. In fact, the elementary school students living in that region were mostly concerned and pessimistic about the problems they faced the most in their environment. In recent years students living in Kelkit experienced with water shortage, water pollution, river and lake pollution, and pollution caused by garbage in their life. Formerly, however, there were no such problems in Kelkit. In addition, they felt the effect of global

warming in their life. As they stated, formerly winter in the region were very harsh and the weather was very cold and snow lasting for a long time. However, compared to past, now the amount of rainfall and snow decreased dramatically, winters are not so cold anymore, and also summers are passing warmer. Furthermore, deforestation was another most important problem as reported by the students. Similar with the other issues, students in Kelkit also faced with deforestation. For instance, most of the trees in the students' nearby environment have been cut and many of the existing agricultural lands have been used for constructing buildings. These results can also be supported by the favorite outdoor activities which participants involved in. They rated the most frequent activities as gardening, hiking, and planting tree which appeared to be the part of their everyday life and their life style. Livestock breeding and agricultural activities take an important place in the economical status of the district; therefore, people living in Kelkit mostly deal with animals and with plants. In addition, sometimes there are planting tree organizations organized by schools and by township. On the other hand, some environmental issues like noise pollution, industrial pollution, traffic jam and overpopulation were reported as least concerned issues. According to Hsu and Roth (1999), one possible explanation for this finding is that; since these students living in a rural area, they probably could not face with such environmental problems. These finding would seem fairly reasonable as far as characteristics of the region are taken into consideration, although comparing the relation of rural-urban differences to environmental values is beyond the scope of this analysis.

Overall, these findings can be attributed partly to the characteristics of living area, and to life style of the students. The particular area where the participants of the present study live is largely characterized by the willow and poplar as well as hills where pine forests are found. Moreover, agricultural land, farms and streams are the other characteristics of the participants living environment. In that district, the amounts of modern buildings are much when compared with old traditional buildings. Actually this issue was one of the issues that participants complained about. Thus, they concerned more about destruction of forest and agricultural lands for constructing building (about 70% for deforestation and about 60% for agricultural

lands). To be short, in the current study, participants were concerned about the issues they faced recently. In fact, they did not aware of such problems formerly because they did not face with. Therefore, it can be said that Turkish elementary school students also preferred the former situation of their living environment. In their residence hypothesis Dunlap and Van Liere (1980) stated that the people living in urban area are more likely to be environmentally concerned than the people living in rural area. Dunlap et al. have made two possible explanations to the hypothesis. The first one was because the people living in an urban area were more exposed to higher levels of pollutions and environmental deterioration urban residents were more concerned. The second possible explanation was that people living in a rural area were more likely to involve in farming, logging, mining and etc. therefore, they were dependent on the natural environment and that dependence assumed to have less environmental concern. Besides, as cited in Dunlap and Van Liere (1980, p. 185) Murdock and Schriner (1977) explained the third possible explanation of the hypothesis like that, because the small-towns were not grow enough economically people living in rural area want to maintain their economic growth so they were assumed to be less concerned toward environmental issues. However, the present study was conducted in a rural area and according to the results the participants were concerned about the environmental issues. In fact the main source of income of the people living in the area of the current study was conducted was livestock and agriculture, people in that region was subjected to interested with living things and so environment. As Kalternborn and Bjerke (2002) stated in their study conducted with adults whose age was above 15 years in southern part of Norway, that the participants were attracted from the picture of pristine wild land and traditional human activity. There were pit-falls, reconstructed log flume and log cabins in the wood exist in the picture. On the other hand, the picture with more modern farms of agriculture, newly cleared land, flat and open farm fields and with modern buildings were the least attractive picture. As a result of their study, old cultural landscapes were seen as more attractive than recent agricultural land. Studying with 11-16 years old children, Bogner and Wiseman, (1997) reported urban and suburban children holding a stronger verbal commitment to their environment compared to rural

children. Rural children' self-reported verbal commitment to their environment was also found to be significantly lower than their self-reported environmental action. However, urban and suburban children reported to be similar in their verbal commitment and their environmental action. They concluded that their results in agreement with the findings supporting vanishing of rural-urban difference.

Similar finding were also reported by other studies conducted in Turkey (İstanbullu, 2008; Okesli, 2008; Teksoz, Tekkaya & Erbas, 2009; Tuncer et al., 2009; Varisli, 2009). By using data obtained by PISA-2006, Teksoz, Tekkaya and Erbas (2009) revealed that 15 years old students' responsibility towards resources and environment changed with respect to socio-demographical variables such as region, gender, economic, social and cultural status, school activities for learning of environmental topics, parents' level of concern and their optimisms regarding environmental issues. As far as regional differences are considered, authors concluded that the place where individuals live influences their level of awareness, concern, optimism and responsibility for sustainable development. In their study, while students living in the least industrialized regions (i.e., Eastern Anatolia and South-eastern Anatolia) expressed lower awareness and concern toward environmental issues, they showed highest level of optimism concerning the development over the next 20 years of the problems associated with air pollution, energy shortages, extinction of plants and animals, clearing of forests for other land use, water shortages and nuclear waste. They argued that these regions are not industrialized and also not urbanized; students living in the Eastern part may not possibly practice with these environmental problems. As a result, they are not pessimistic about their future state of the environment than students living in the other regions. Students living in Marmara region, expressed greater environmental concern, responsibility but low level of optimism compared to students living in other regions. Authors attributed this finding mainly to the feature of Marmara region (i.e., presence of heavily advanced industry, commerce, tourism and transportation facilities). Being both industrialized and agriculturalized as well as having cities on the coast line, students living in Aegean region held very high environmental awareness, concern, responsibility toward environmental issues and expressed

greater degree of optimism. Students from Mediterranean region, a trading and tourism centre, reported to have both high level of awareness and concern, but hold lowest optimism toward environmental issues. A parallel trend was also observed for the students living in Black Sea region. Their study highlights the crucial factors shaping 15 years old students' responsibility towards resources and environment. Moreover, presence of significant differences between environmental attitudes and geographical region was reported by Özden (2008). In his study, while student teachers living in Marmara region found to have more positive attitudes toward environmental issues, student teachers living in Southeastern Anatolia region reported to have the least favorable attitudes toward environmental issues. Author explained that difference with the property of Marmara region that having improved industry. They stated that people living in that region faced with many environmental problems compare with the other six regions. In a separate study, Tuncer, Sungur, Tekkaya and Ertepinar (2004) found that the students living in an urban area were aware of the environmental problems in more academic way while those living in rural area were aware of the problems in more unsophisticated way. In her study with elementary students in Ankara, İstanbullu (2008) found the most concerned environmental issues as global warming, water pollution and ozone layer depletion. Varisli (2009) reported that 8th grade students in Ankara mostly concerned with water shortage, deforestation and global warming. In addition, Okesli reported that students in Bodrum rated air pollution, water pollution, global warming, poor drinking water quality, and ozone layer depletion as the most concerned environmental issues. Likewise, Tuncer et al.'s (2009) research with pre-service teachers indicated that they were very concerned about poor drinking water quality followed by indoor air pollution, ozone layer depletion and global warming.

As far international studies are considered, Duan and Fortner (2003) found that Chinese college students thought that global issues would be worse when compared with issues in 20 years. They also believed that their lives were changed more by local issues than by global issues. Their mostly concerned issues for global dimension were reported to be global warming and desertification. Chinese students also found to be concerned about solid-waste transit between nations. In addition, at

local dimension they were reported to be concerned mostly with river pollution. In another study, Worsley and Skrzypiec, (1998) found in their study with Australian high school students that; students living both in rural and urban regions were concerned about the environmental issues, and also pessimistic about such environmental issues. Especially, participants from rural schools expressed more concerned and greater optimism about environmental issues than the participants from urban schools. Authors argued that an individual can be worried about the current state of the environment independent of their views about its future, and vice-versa. On the other hand, they found no significant differences between rural and urban school students with respect to their environmental attitudes. Authors claimed that, students living in rural area had more opportunity to care directly for the environment and that environmental pessimism may be related to environmental education received at school. In addition, studying with Taiwanese teachers, Hsu and Roth (1999) suggested that while developing and implementing environmental education, rural-urban differences should be taken into consideration. They found that teachers living in urban areas take more environmental action compared to those living in rural areas. Researchers associated these result with future of the area: people living in urban area are more often expose to environmental degradation than those living in rural areas. Similarly, Tikka, Kuitunen and Tynys (2000) mentioned that one's attitude toward environment can be shaped by the size and location of his/ her hometown. In their study, students living in more crowded, metropolitan area were found to have worry about environment, expressed more positive attitudes toward environment and more aware of existing problems than those living in the central part. They also stated that individuals raised in farmlands spend most of their time on nature related activities. Authors stated that individuals coming from the dense and urbanized environment tended to be aware of existing problems and therefore adopted sympathetic attitudes toward nature and conservation of the environment. However, Bogner and Wiseman (1999) alleged that their study supported the research trend related to the disappearance of rural-urban differences regarding environmental behavior and attitudes.

Although found to be highly concerned on environmental problems, the participants reported to be not engaging recycling frequently. This finding is at least partly attributed to absence of recycle bin in their schools. Since great majority (more than 70%) indicated that they do not have a recycle bin in their schools. Since, according to the correlation result, recycling behavior and possession of recycle bin in schools were dependent on each other. It is reasonable that students having recycle bin in their schools are more like than others to engage recycling behavior. In fact, it was expecting to find out a strong relationship between self-reported recycling behavior and presence of recycle bin in schools. Further research should ask students whether they have recycling in their home and also gather data about the reasons for not recycling. Therefore this finding should be interpreted with caution.

5.1.2 Discussion on Gender and Grade Level Differences

Current study revealed a statistically significant gender difference on students' value orientations, and environmental concern level, in favor of girls. These findings can be explained in terms of Socialization-based theories and Structural theories (Blocker & Eckberg, 1997). According to the Socialization-based theory, females socialized to be more expressive and tend to assume caregiver roles more than males. As Zelezny, Chua and Aldrich (2000) mentioned females are socialized to be more interdependent, nurturing, cooperative, compassionate, altruistic and helpful in care giving roles. By internalized this 'motherhood mentality' protective attitude toward the environment developed as Blocker and Eckberg is mentioned. On the other hand, males are socialized to be more independent, rational, masterful, accumulative and competitive than females. By internalized this 'marketplace mentality' unecological attitude that gives priority to economic growth, technical mastery of the earth and exploitation of the resources regardless of environmental destruction is developed. Likewise, Structural theory also focused on the nature of the occupational and economic position which resulted in gender differences in environmental attitudes of females and males (Blocker & Eckberg, 1997). Females kept their nurturance roles with the responsibility of housework and child-care, on the other hand, males were assigned to the breadwinner role and controlled the techno-scientific realm. As a

result, males held favorable orientations toward economic growth which resulted in lower levels of environmental concern while females' nurturance role made them more likely than males to favor health and safety issues and in turn enhance their environmental concerns (Blocker & Eckberg, 1997; Zelezny, Chua, & Aldrich, 2000). Tikka et al. (2000) stated that there would be no division of labor between genders, however, traditional views of gender roles would be continue and would be effect the actions and attitudes of the people. Tikka et al also reported that women take care to their offspring and so they want to provide a clean environment for welfare and survival as a result women concern level for nature and environment is more than men. Eisler, Eisler, Yoshida, (2001) proposed the reason for gender differences in attitudes and beliefs toward the environment as the differences in perception about the importance of nature and environment. In fact, as they stated males perceived environment as less important than females. Also they explained the differences as having a different threshold for risk avoidance. Actually as Eisler et al. said males may accept a higher degree of environmental damage. In their study Schahn and Holzer (1990), stated that most environmentally relevant behavior such as recycling takes place at home and also women have experience much more housework than men so women confronted with environmentally appropriate behavior more than men. Olli et al. (2001) also found women that they exhibited more environmentally friendly behavior than men. Olli and others explained that result by more private and household behaviors that their analysis included while the other studies included more public behaviors. In Blaikie's (1992) study, Australian girls found to be more ecological, less confidence about the role science and technology than boys. Riechard and Peterson's (1998) study indicated that girls (10-17 years of age) perceived greater risk than that of boys. Studying with young children, Bogner and Wilhelm, (1996) found gender related to environmental perspectives with girls expressing higher concern level for environment than boys. They attributed this result to the "differing levels of social desirability which could well be counteracted by the anonymosity of the test situations girls are thought to possess a stronger emotional relationship to nature and to be more strongly pro-environmentally motivated by caring feelings in general" (p.107). They further stated

that girls are considered to have a strong emotional association with nature and also be strongly pro-environmentally motivated by caring feelings. Stern et al., (1995) attributed to women's stronger biospheric-altruistic values to the beliefs and values. According to Taskin (2007), on the other hand, a feminist view is one of the most important determinants of environmental attitudes. Dietz, Kalof and Stern (2002) demonstrated in their study that women in United States were more altruistic than men. As the researchers explained the reason of that difference may be resulted from engagement in life maintenance activities like child rearing, engagement in the neighborhood and community. Women were more engaged with those activities. On the other hand, men engaged in market and in activities such as sports which require a limited engagement and competition with all others. In contrast, working with adults in Kentucky, Acury and Cristianson, (1990) reported that men adopted more environmentalist view compared to females. Shen and Saijo, (2007) also found that men in Shanghai concerned more toward environment when compare with women. They listed the possible reasons like that man in Shanghai are likely to be more altruistic, more politically active and have higher levels of education than women. As the authors stated that altruism increases the demand for environmental quality and also increase the one's concern toward environment. Actually Shen & Saijo explained the reason for being altruism like that; in Shanghai, men are not more engaged in only economic activities but also life maintenance activities like child education, involvement in the neighborhood and community issues than women or at least at the same level with women. Likewise, Macdonald and Hara (1994) found that men were environmentally more concerned than women. The authors connected that difference with having better education of men and being more politically aware than women. In Worsley and Skrzypiec's (1998) study, level of students' interest in environmental issues reported to be also changing across gender. Compared to males, females reported to be less optimistic and less supportive of science solutions for environmental problems.

As Dunlap and Van Liere (1980) stated according to the gender hypothesis there is an ambiguity at the direction of the relationships between gender and environmental concern.

Although opposite relation between age and environmental concern is well documented (e.g. Acury & Cristianson, 1990; Bogner & Wilhelm, 1996; Van Lieri & Dunlop, 1980), finding of the current study found older students to be more environmentally concerned than younger ones. Similar finding was also reported by Lyons and Breakwell, (1994) and Jiangang (1993). This inconsistency, as suggested by other researchers, may arise from the use of different age groups, differences in school science curricula, cognitive development of students, urban-rural differences, experience, awareness level and home environment (Lyons, & Breakwell, 1994; Riechard & Peterson, 1998). Riechard and Peterson's (1998) study indicated that in addition to exposing to more education, older children also tended to aware of *environmental facts* more than younger one. Working with children in five age groups, 3-6, 7-8, 9-10, 11-12 and 14-15 years, in Germany, Szagun (1992), reported older participants describing sympathy as a multi-dimensional emotional experience comprising sadness, desire to help, and preoccupied thoughts about the other in distress. Younger participants, however, gave emphasis to the emotion of sadness. In a separate study with 12, 15, and 18 years old German and Russian students, Szagun, and Pavlov (1995) reported that environmental awareness level decline with age. They attributed this findings to the conflict between environmental and consumer values, especially for the Russian students, engagement in the extracurricular activities. Olli et al. (2001) stated that the correlation between age and environmental behavior is not an age effect but an effect of generational experiences (i.e., a cohort effect).

Specifically, in the present study, grade level found to be influential on value orientations and optimism level of the elementary school students. As grade level increased, eco-centric view, concern level and pessimism level of the participants also increased. Eighth grade students expressed more eco-centric world view when compared with sixth and seventh grade students. Also 7^{th} grade students hold more eco-centric view than 6^{th} grade students. In addition, 8^{th} and 7^{th} grade students worried more than 6^{th} grade students that in 25 years environmental problems would be further and worse than now both at National and Global dimensions. However, there was not a statistically significant difference between 7^{th} grade students and 8^{th}

grade students on both global and national dimensions. Moreover also as the grade level of the participants increase the concern level of the students increase. The findings can be explained, partly, by taking the science curriculum into consideration. For example; environmental related topics such as; global warming, ozone layer depletion, pollution caused by garbage, extinction of plants and animals, nuclear waste, destruction of forest are presented to students more at grade 7 and 8. Exposure too much information about environmental problems and issues probably make higher graders more pessimists and more concerned about environmental issues than lower graders. The other possible explanation for this finding might be that maturation levels can be effect the attitude and concern toward the environmental issues. In fact, intellectual development may provide the increase in understanding of some concepts and as a result ecologic world view of the students may change as growing. Likewise, Alp, Ertepinar and Tekkaya (2006) found in their study that the students having higher grade level also have higher levels of environmental knowledge. In fact, in their study, a grade level was found to be the determinant of environmental knowledge as well as environmental friendly behaviors. They explained this relation like that, as the students grow older, their experience with nature and so their knowledge about environmental issues also increase. On the other hand, positive attitudes of students toward environment reported to decrease as the grade level increase. According to the researchers, the possible explanation of that result was because of the way environmental issues presented. Similarly, Yilmaz, Boone and Andersen (2004) found in their study that 4^{th}, 7^{th} and 8^{th} grade students had more positive environmental attitudes when compared with 5^{th} and 6^{th} grade students. They explained this result like that, if the students can discuss or learn environmental concern more in their science courses then their attitudes toward environment become more positive. In Yilmaz et al. study, 4^{th} grade students found to express more positive environmental attitudes than 5^{th} and 6^{th} grade students. They explained this finding as a result of the first introduction to environmental concepts during their early science classes. In Tikka et al.'s (2000) study, older students found to be more active and aware of environmental facts than younger ones. Likewise, in Blaikie's (1992) study in

Australia, compared to older people, younger people are reported to be *marginally* less concerned about the influence of economic growth on environment. Szagun, and Pavlov **(**1995) study, young females found to be more environmentally aware than that of males. In addition, females reported having stronger environmental feelings and behavioral tendency. They attributed this finding to the higher emotional level and more caring attitudes of females.According to Bogner and Wilhelm (1996, p.107) even though younger students tended to favor human-altered nature and adopt a more environmental view of living in harmony with nature, they are more likely to express a favorable environmental world view compared to older ones. However, Riechard and Peterson, (1998) indicated no association between perception-of-risk scores and grade level

According to the age hypothesis, age is negatively correlated with environmental concern. In fact, younger people tend to be more concerned about environmental deterioration than older ones (Van Liere & Dunlap 1980). Van Liere and Dunlap (1980) stated a possible reason to explain this situation like that, younger persons are less integrated into the dominant social order and because of the solutions to environmental problems often are viewed as threatening to this social order then it is logical to expect younger persons supports of actions against environmental deterioration are more than older persons. Van Liere and Dunlap (1980) also mentioned about Mannheim's theory "This theory would lead us to expect that continued exposure to alarming information on environmental deterioration (via the news media, environmental education courses, etc.) has left an indelible imprint on many young people during the past decade, forming an ecology-minded generation whose commitment to environmental reform should not disappear as they move into adulthood" (Van Liere & Dunlap, 1980, p. 183). Contrary to the age hypothesis, in the present study, as the age increased, eco-centric view, concern level and pessimism level of the participants also increased. Older students expressed more eco-centric attitudes, and highly concerned about environmental issues and problems as well as more pessimistic when compared with younger ones.

5.2 Implication of the Study

This study was designed to add to the growing body of literature regarding gender and age difference on young students' value orientations, environmental concern and optimism levels. To this end, findings of the current study provide educators, teachers, curriculum developers, textbook authors and parents with suggestions that contribute to the improvement of the quality of environmental education in Turkey. Participants appeared to endorse each type of value orientation, while some of them perceived nature as worth conserving regardless of the human basic needs like food consumption, others valuing nature because of the benefits nature can provide for human beings (Kaltenborn & Bjerke, 2002; Gagnon Thompson & Barton, 1994). In most of the items reflecting the utility of natural resources and future economic prospects, they found to be undecided. Considering the importance of holding ecocentric attitudes, not only teachers, textbook authors and curriculum developers, but also parents should make a concentrated effort to enhance young peoples' attitude towards environment as well as try to create awareness about the consequences of their personal interaction with nature. In other word, they should be well aware of the interactions between humans and the nature and the consequences of this interaction. In a similar vein, school programs should give greater emphasis on the importance of human-nature relations as well as the associations between environmental values, and economical growth. These issues appeared to be well integrated into STES objective presented in the recently revised science education curriculum. By this way, young children provided some opportunities to realize, analyse, and synthesize information about environmental problems and their consequences not only for themselves and other humans, but also whole ecosystems. While dealing with human beliefs and values, importance of affective domain should not be underestimated. Cognitive improvement alone may not be enough to stimulate young peoples' awareness, concern, interest, beliefs and attitudes towards environment. Several topics related to environment successfully infused to the mainly Science and Technology and Social Sciences curricula. In the science and technology curriculum, environmental concepts mainly emphasized within the ecological concepts. That may be the reason why most of the students

mistakenly equate ecology with environment. In line with the constructivist approach, instructional strategies recommended by the MONE are activity-based. At this point, teachers can make a concentrated effort to improve the materials with a new approach in order to promote meaningful learning of the environmental concepts and awareness about current environmental problems and issues. Science instruction using these suggested activities and materials (e.g. Projects) may lead to improvements in students' understanding. For example, establishment of eco-clubs, nature camps, and field trips (for example to industrial areas and recycling center) which involve direct contact with diverse learning environments and made young people familiar with existing environmental problems, in turn increase improve their sensitivity and awareness about environmental problems. At this point, current study has some implications for teacher education as well. Since such learning in science requires well trained teachers. They should be informed about effective use of these strategies and corresponding assessment and evaluation techniques. However, instructional treatments, as suggested by prior studies, may have had different effects for girls and boys due to difference in their motivation and interest (Chambers & Andre, 1997; Wang & Andre, 1991). This claim is especially important as far as results of studies conducted in Turkey are considered. These studies consistently reported that girls exhibit more positive attitudes towards environment than boys (e.g., Alp et al., 2006; 2008; Ozden, 2008; Taskin, 2009; Tuncer et al., 2005; 2009; Yilmaz et al., 2004). Our findings are also in line with this trend. At this point, finds must be found to strengthen boys' attitudes towards environment. Science teachers, for instance, may re-consider the perception of boys in depth and try to find ways to increase their interest, motivation as well as their participations in environmental issues. Not to promote further gender inequity, as a first step, science teachers should be informed about this gap so that they treat girls and boys equally. In other world, equal participation should be encouraged not only in but out of class activities. One of the other important outcomes of the study is the source of the elementary school students' environmental information. The leading source of environmental knowledge was reported as school in addition to television. Therefore, important role that school play in development of students' relation with their environmental should

not be ignored. For example, Kollmuss and Agyeman, (2002) alleged that traditional environmental education depending on indirect experiences is not effective in enhancing students' environmental attitudes. Likewise, Palmerg and Kuru (2000) reported that students experienced in outdoor activities tended to show better social behavior and higher moral judgment since such activities offer great possibilities for the development of a strong empathic relationship to nature. Some studies indicated that schools having environmental policies might help students to develop a better comprehension of the environmental crisis, enhance their knowledge, and acquire favorable attitudes towards environment (see Barraza & Walford, 2002). Similarly, Chu et al. (2007) reported that children who obtained information from field trips had better environmental knowledge, skills, as well as attitudes.

Findings related to source of environmental knowledge was consistent with many other studies which reported media and school as the leading sources of environmental information across countries and grade levels (e.g. Chu et al. 2007; Huang and Yore 2004; Lee 2008 Michail, Stamou, and Stamou 2006; O'Brein 2007; Varisli, 2009). For example the mass media was reported to be leading source of environmental knowledge for the Turkish eighth graders (Varisli, 2009). Specifically, majority of the students reported to be depending on mainly television, newspapers and internet to obtain their environmental knowledge. However, only less than ten percent of the students identified school as the main source of environmental information. Chu et al.'s study (2007) reported a significant effect of source of information on Korean students' environmental literacy. Korean students identified school as a main source of information followed by field trips, television, internet, and newspaper/magazines. However, students obtaining environmental information from school found to have least environmental knowledge and behavior. Students obtaining information from newspaper/magazines or books reported to have better environmental behavior. Authors believe that these results were reasonable due to the fact that environmental education taught in schools generally depended on "indirect experience" such as textbooks. Studying with Greek teachers, Michail, Stamou and Stamou (2006) reported mass media such as newspapers, news magazines, and television as main source of information. However, Greek teachers

rarely obtain information from radio, the internet, specialized magazines, seminars, and nongovernmental organizations. Television and internet were reported to be the favorite source for environmental information among African American college students by Lee (2008). However, Carlisle (2007) indicated that television watching was negatively associated with environmental knowledge, in other words, the more one watched television the less he/she was being exposed to and able to select for retention, environmentally-related information. She mentioned that, students who spend more time watching television spend less time doing homework, reading and conversing with their parents about environmental issues. The data obtained by NEETF/Roper, over the last decade, also pointed out the importance of media and suggested that "impact of media on environmental knowledge should be taken more seriously and not ignored or underestimated by educators".

Overall the findings of the current study have important implications for teachers, teacher training institutions, curriculum developers, and textbook authors. First of all, teachers should have sound understanding of environmental and concepts and appreciated the interdisciplinary nature of environment. In addition, they should be well prepared to teach these concepts to their students. They should be aware of instructional strategies and their applications in science classes. In other word, they should be well equipped to address the environmental issues as well as to learn how to deal with student' lack of knowledge, awareness, concerns about the environment.In short, they should be enhanced their PCK regarding environmental topics. Curriculum and textbooks should be revised by taking the findings of the study into consideration. In addition, television and newspapers were also reported as a source of environmental information. This result supported the growing influence of mass media on environmental education. Therefore such programs should be prepared under the supervision of scientist/ environmental educators to prevent occurrence of misconceptions and to raise the concern and awareness level of the young generation.

The present study indicated a statistically significant effect of gender on students' value orientations, environmental concern and optimism level in favors girls, implying a probable gender bias on environmental concern. Therefore, in order

to prevent gender inequity, educators should focus on how they improve boys' concern about environmental problems. Age/grade level was another variable determined to play an important role in students' environmental concern level. This finding partly attributed to the current science curriculum in which less emphasis was placed on environment-related topics compared to higher grade levels. Therefore, more effort should be needed to include related topics to improve environmental concern level of lower graders.

5.3 Recommendations for Further Research

This study is limited to sixth, seventh and eighth grade students attending public schools in Kelkit district of Gumushane. For the further research, sample, school type, district size and variety can be increased in order to generalize the results of the present study. Future research should explore the effect of some other variables such as school type (private vs. public), age, residence (urban vs. rural), income and parents' political orientations on students' value orientation. In addition, it can be studied with more than one groups of sixth, seventh and eighth grade students from different regions of Turkey in order to see the effects of regions on students' environmental attitudes and concerns or it can be studied with two groups one of the groups from the urban area and the other from the rural area of the same region and it can be examined the effects of socio-demographic variables on students' environmental attitudes and concerns. The present study did not examine the affect of parents' occupation on students' environmental attitudes. Further studies, thus, may specify parents' occupation. In addition, this study denoted the probable gender bias as girls being concerned more for environmental issues compared to boys. Therefore, not only teachers but also parents have to make additional efforts such as; motivating boys engaging in environmental-related activities in order to increase their concern for environment. Moreover, since teachers play a crucial role in developing students' knowledge, attitudes, sensitivity, and concern, and also teachers have adequate knowledge, positive attitude, high level of sensitivity and concern is a key factor to become good role models for their students, similar studies should also be replicated with pre-school teachers,

classroom teachers and science teachers, as well as pre-service teachers. Moreover, similar studies can be conducted to investigate the parent's environmental attitudes and knowledge. In addition to pencil paper test, some of the qualitative techniques should be utilized in further studies.

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APPENDICES

APPENDIX A

PERMISSION OBTAINED FROM MINISTRY OF EDUCATION

T.C.
GÜMÜŞHANE VALİLİĞİ
İl Milli Eğitim Müdürlüğü

SAYI : B.08.4.MEM.4.29.00.02./ 24 - 410 11/01/2010
KONU : Araştırma izin Onayı

KELKİT KAYMAKAMLIĞINA
(İlçe Milli Eğitim Müdürlüğü)

İlçeniz Öbektaş İlköğretim Okulu Fen ve Teknoloji Öğretmeni Ortadoğu Teknik Üniversitesi Fen ve Matematik Eğitimi Anabilim Dalı Yüksek Lisans Programı öğrencisi Arzu Onur ERYİĞİT Yüksek Lisans Tez çalışmaları kapsamında "İlköğretim Öğrencilerinin Ekolojik Dünya Görüşlerinin İncelenmesi" adlı araştırma çalışmasını ilimiz ilköğretim okullarında yapması ile ilgili olarak İl Makamından alınan 11/01/2010 tarih ve 349 sayılı olur ekte gönderilmiş olup olurun ilgiliye tebliğ edilmesi, okullarda uygulayacağı anket çalışmasını müfredat suretlerden çoğaltarak yapması ve çalışmaların tamamlanmasının ardından hazırlayacağı tez çalışmasının bir suretinin İl Milli Eğitim Müdürlüğüne gönderilmesinin sağlanmasını, ayrıca ilköğretim okullarında yapacağı konularda gerekli kolaylığın sağlanması hususunda;

Gereğini rica ederim.

Ferda YILDIRIM
Vali a.
Milli Eğitim Müdürü

EK: 1- Olur (1 adet, 1 sayfa)
2-Müfredat anketler (1 adet, 9 sayfa)

11/01/2010 Şef Z.PERKTAŞ
11/01/2010 Md.Yrd. M.OLGUN

Hükümet Konağı Kat: 2 / GÜMÜŞHANE

T.C.
GÜMÜŞHANE VALİLİĞİ
Milli Eğitim Müdürlüğü

SAYI : B.08.4.MEM.4.29.00.02.20/349
KONU : Araştırma İzni

VALİLİK MAKAMINA
GÜMÜŞHANE

İLGİ: a- Milli Eğitim Bakanlığına Bağlı Okul ve Kurumlarda Yapılacak Araştırma ve Araştırma desteğine Yönelik İzin ve Uygulama Yönergesi.
b- Orta Doğu Teknik Üniversitesi Öğrenci İşleri Dairesi Başkanlığı'nın 04/01/2010 tarih ve 48 sayılı yazıları.

Orta Doğu Teknik Üniversitesi İlköğretim Fen ve Matematik Eğitimi Anabilim Dalı Yüksek Lisans öğrencisi Arzu Onur ERYİĞİT' in İlköğretim Öğrencilerinin Ekolojik Dünya Görüşlerinin İncelenmesi" konulu yüksek lisans tez çalışmasını yapmak isteği ile ilgili belgeleri ekte sunulmuştur.

Yazıda adı geçen Arzu Onur ERYİĞİT 'in İlköğretim kurumlarınızda, yazılarında bahsi geçen çalışmalarını yapması müdürlüğümüzce uygun görülmüştür.

Makamınızca da uygun görüldüğü takdirde gereğini olurlarınıza arz ederim.

Mesut OLGUN
Milli Eğitim Müdür Yardımcısı

OLUR
1/01/2010

Ferda YILDIRIM
Vali V.
Milli Eğitim Müdürü

EK: 1- 1 Dosya ve Muhteviyatı

EĞİTİME DANIŞMA 444 0 632

Hükümet Konağı Kat: 3
GÜMÜŞHANE

Eğitim Öğretim Hizmetleri Şubesi

APPENDIX B

THE QUESTIONNAIRE USED IN THE STUDY

ÇEVREYE YÖNELİK TUTUM VE DEĞERLER ÖLÇEĞİ

Bu anketin amacı ilköğretim okulu altı, yedi ve sekizinci sınıf öğrencilerinin çevre ile ilgili tutum ve ilgilerini değerlendirmektir. Anketin tamamlanması yaklaşık 30 dakikanızı alacaktır. Bu çalışmaya katkılarınız **gönüllü** olmanıza bağlı olup, çalışmanın sonuçlandırılabilmesi açısından çok değerlidir. Bu anketten elde edilecek verilerin değerlendirilmesi aşamasında, ankette yer alan kişisel bilgiler kesinlikle **gizli** tutulacaktır.

Teşekkür ederim.

Arzu ONUR ERYİĞİT, Fen ve Teknoloji Öğretmeni

Bölüm I.

1. Sınıfınız: ❑6 ❑7 ❑8
2. Cinsiyetiniz: ❑ Kız ❑ Erkek
3. Doğum tarihiniz (yıl): _____
4. Geçen yılki Fen ve Teknoloji dersi not ortalamanız : _____
5. Size göre dünya çapındaki (küresel) çevre sorunlarından birkaçını aşağıya yazınız.
   a. _____ d. _____
   b. _____ e. _____
   c. _____
6. Size göre Türkiye'deki çevre sorunlarından birkaçını aşağıya yazınız.
   a. _____ d. _____
   b. _____ e. _____
   c. _____
7. Yerel (yöresel) çevre sorunlarından birkaçını aşağıya yazınız.
   a. _____ d. _____
   b. _____ e. _____
   c. _____
8. Çevreyi korumamız için en önemli 3 sebebinizi yazınız:
   a. _____
   b. _____
   c. _____

Bölüm II. Çevreye yönelik değer yönelimleri

9. **Yönerge:** Aşağıdaki cümlelere ne ölçüde katılıyorsunuz lütfen belirtiniz.

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
1-Aşırı nüfus artışının en kötü yanı doğal alanların yok ediliyor olmasıdır.					
2-Doğanın yararı için doğada vakit geçirmeyi severim.					
3- Yağmur ormanlarının zarar görmesinin en kötü yanı yeni ilaçların bulunmasını sınırlayacak olmasıdır.					
4- Tarım alanları yaratmak için ormanların tahrip edilmesi beni üzer.					
5- Doğayı koruma yanlısı insanların çoğu bana karamsar biraz da paranoyak gelir.					
6- Kamp yapmanın en iyi tarafı ucuz tatil imkanı sağlamasıdır.					
7- Soyu tükenmekte olan türler için özel alanlar ayrılmalıdır.					
8- Mutlu olmak için doğada zaman geçirmeye ihtiyaç duyarım.					
9- Ormansızlaşma (ormanların yok olması) konusunda beni en çok endişelendiren şey gelecek nesiller için yeterince kereste bulunmayacak olmasıdır.					
10- Mutsuz olduğum bazı zamanlarda, doğada rahatlarım.					
11- Çevresel problemler umurumda değildir.					
12- Nehirleri ve gölleri temiz tutmanın en önemli nedenlerinden biri insanlara su sporları yapacakları yerler sağlamaktır.					
13- Kirliliği azaltma, doğal kaynakları dikkatli kullanma ve vahşi hayatı koruma ile ilgili programlara karşıyım.					
14- Çevreye zarar verilmesi beni üzer.					
15- İnsanların et ihtiyaçlarının karşılandığı vahşi hayvanlar korunması gereken en önemli türlerdir.					
16- Doğa, insanların refahı ve keyfine sağladığı katkılardan dolayı önemlidir.					
17- Doğal kaynakların korunmasına gereğinden fazla önem veriliyor.					
18- Doğal kaynakları insanların yaşam kalitelerini yükseltmek için korumalıyız.					
19- Doğada zaman geçirmek stresimi büyük oranda azaltır.					
20- Doğayı korumanın en önemli nedenlerinden biri yüksek yaşam standardının devamını sağlamaktır.					
21- Doğayı korumanın en önemli nedenlerinden biri doğal yaşam alanlarının yok olmamasını sağlamaktır.					
22- Arazilerin sürekli olarak ıslah edilmesi (arazi reformu) insanlara					

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
yüksek yaşam kalitesi sunduğu sürece iyi bir fikirdir.					
23- Bazen hayvanları sanki insanmış gibi düşünürüm.					
24- Ormanların yok olması ve ozon tabakasının incelmesi gibi bazı çevre sorunları çok abartılıyor.					
25- İnsanların yaşamını devam ettirmesi için doğaya ihtiyacı yoktur.					
26- Birçok çevre sorunu yeterince zaman verilirse kendiliğinden çözülecektir.					
27- İnsanların olduğu kadar bitkilerin ve hayvanların da yaşama hakkı vardır.					
28- Eğer insan hayatını kurtarabilecekse hayvanlar bilimsel deneylerde kullanılmalıdır.					
29- İnsanların doğayı kendi menfaatleri doğrultusunda değiştirmeye hakkı vardır.					
30- Sadece ekonomik önemi olan bitki ve hayvanlar korunmalıdır.					
31- İnsanlar diğer bütün canlılardan daha önemlidir.					
32- Zehirli yılanlar ve böcekler insanlar için tehdit oluşturdukları için öldürülmelidirler.					
33- Çevresel olaylar hakkında çok fazla endişelenmem.					
34- Coğrafi bölgemizde olmasa da, hepimiz yağmur ormanlarının talep edilmesini önemsemeliyiz.					
35- Yaşadığımız yerdeki çevreyi korumak benim kişisel sorumluluğumdur.					
36- Yaşadığımız yerdeki çevreyi korumak diğer insanların sorumluluğundadır.					
37- Yaşadığımız yerdeki çevreyi korumak yetkililerin sorumluluğundadır.					
38- Çevre sorunları hakkında endişelenmeye gerek yoktur, nasıl olsa bilim ve teknoloji bu sorunları çözecektir.					

10. Yönerge: Aşağıdaki çevre problemlerin gelecek 25 yılda ülkemizde ve dünyada iyiye mi, yoksa kötüye mi gideceğini düşünüyorsunuz? **Hem Türkiye hem de Dünya için bir kutuyu işaretleyiniz.**

	TÜRKİYE' de			**DÜNYA' da**		
	Daha az olacak	Önemli bir değişme olmayacak	Daha çok olacak	Daha az olacak	Önemli bir değişme olmayacak	Daha çok olacak
Hava kirliliği.						
Ses kirliliği.						
İçme suyu kalitesinin bozulması						
Araç trafiğinin artması						
Endüstriyel kirlilik.						
Radyasyon						
Nükleer atık						
Su kıtlığı.						
Ormanların yok olması.						
Tarım alanlarının yok olması						
Çölleşme						
Enerji kıtlığı.						
Ozon tabakasının incelmesi.						
Küresel ısınma.						
Aşırı avlanma.						
Asit yağmurları						
Bitki ve hayvan nesillerinin yok olması						
İnsan nüfusunun artması						
Çöplerin yol açtığı kirlilik						
Tarımsal toprağın kalitesi						
Akarsu ve göllerin kirlenmesi						

Bölüm III. İçsel-Dışsal Kontrol Odağı Testi

Aşağıda verilen çift cümlelerin hangisinin daha doğru olduğunu düşünüyorsanız onun önüne bir çarpı (X) işareti koyunuz. Bazı çift cümlelerin her ikisi de fikrinize uygun olmayabilir. Böyle bir durumda yine bu iki cümleden düşüncenize daha yakın olanı seçiniz. Her çift cümleyi kendi başına ele alınız; ona cevap verirken diğer çift cümlelerin etkisi altında kalmayınız.

1. ( ) İnsanların yaşamındaki üzüntülü olayların çoğuna kısmen kötü talih sebep olur.
( ) İnsanların talihsizlikleri kendi yaptıkları hataların sonucudur.

2. ( ) Bu dünyada insanlar eninde sonunda hak ettikleri saygıyı görürler.
( ) Bir kimse ne kadar uğraşırsa uğraşsın, onun değeri maalesef genellikle fark edilmez.

3. ( ) Başarı sağlamak çok çalışmaya bağlıdır, şansla hemen hemen hiç ilgisi yoktur.
( ) İyi bir işi elde etmek esas olarak doğru zamanda doğru yerde olmaya bağlıdır.

4. ( ) Herhangi bir vatandaşın devlet kararlarına etkisi olabilir.
( ) Bu dünyayı başta bulunan az sayıda insan idare eder ve herhangi bir kimsenin bu konuda yapabileceği pek bir şey yoktur.

5. ( ) Planlar yaptığım zaman o planları uygulayabileceğimden hemen hemen eminimdir.
( ) Çok önceden plan yapmak her zaman akıllıca bir iş değildir, çünkü birçok şey zaten iyi veya kötü şansla oluyor.

6. ( ) Dünya meselelerinde çoğunuz anlayamadığınız ve kontrol edemediğimiz kuvvetlerin kurbanı oluyoruz.
( ) İnsanlar siyasi ve sosyal olaylara aktif olarak katılarak dünya olaylarını kontrol edebilirler.

7. ( ) İnsanların çoğu hayatlarının ne dereceye kadar tesadüfi olaylarla kontrol edildiğinin farkında değiller.
( ) Gerçekte şans diye bir şey yoktur.

8. ( ) Birisinin bizi gerçekten sevip sevmediğini bilmek zordur.
( ) Kaç tane arkadaşımız olduğu bizim ne kadar iyi bir insan olduğumuza bağlıdır.

9. ( ) Çoğu zaman başıma gelen iyi ve kötü olaylarda rolümün çok az olduğunu hissederim.
( ) Şans veya talihin hayatımda önemli bir rol oynadığına inanmak benim için imkansızdır.

Bölüm IV. Çevreye yönelik kişisel bilgiler

11. Çevre eğitimi, ilköğretim ve ortaöğretim ders programlarında yer almalıdır.
❑ Kesinlikle Katılmıyorum ❑ Katılmıyorum ❑ Kararsızım ❑ Katılıyorum ❑ Kesinlikle Katılıyorum

12. Çevre ile ilgili bilgileri nereden ediniyorsunuz?

	Kesinlikle katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Gazete ve dergilerden					
İnternet sitelerini ziyaret ederek					
Televizyon/radyo programlarını izleyerek					
Çevre ile ilgili yürütülen gönüllü çalışmalara katılarak					
Okuldan (öğretmen, dersler, ders kitapları)					
Ailemden					
Arkadaşlarımdan					

Diğer (Lütfen belirtiniz) .....

13. Aşağıdaki faaliyetleri ne kadar sıklıkla yaptığınızı işaretleyiniz.

	Hiçbir Zaman	Arasıra	Bazen	Her Zaman
Balık tutmak				
Avlanmak				
Bahçe ile uğraşmak				
Kamp Yapmak				
Ağaç dikmek				
Doğa ile ilgili kitaplar okumak				
Doğa gezileri yapmak				
Kayıkla gezmek				
Kuş gözlemciliği yapmak				
Hayvanlarla uğraşmak				

Diğer (Lütfen belirtiniz) .....

14. Çevre sorunları ile ne kadar ilgilisiniz?
❑ Çok fazla ❑ Yeteri kadar ❑ Çok az ❑ İlgili değilim

15. Aşağıdakilerden hangisi sizin görüşlerinize en yakındır?
❑ Çevre günümüzde insanların karşı karşıya olduğu en önemli 2 ya da 3 problemden biridir.
❑ Çevre önemli bir problemdir, ama daha önemli başka problemler de vardır.
❑ Çevre önemli bir problem değildir.
❑ Çevre bir problem değildir.

16. Çevre konuları ve problemleri ile ilgili, genel olarak, ne kadar bilginiz olduğunu düşünüyorsunuz?
❑ Çok ❑ Yeteri kadar ❑ Az ❑ Bilgim yok

17. Türkiye'deki çevre problemleri abartılıyor.
❑ Kesinlikle Katılmıyorum ❑ Katılmıyorum ❑ Kararsızım ❑ Katılıyorum ❑ Kesinlikle Katılıyorum

18. Aşağıda farklı geri dönüşüm malzemeleri yer almaktadır. Lütfen her malzeme için hangi sıklıkla geri dönüşüm yaptığınızı verilen seçeneklerden birini işaretleyerek belirtiniz.

	Hiç bir zaman	Nadiren	Sık Sık	Her zaman
Kağıt (Gazete, Dergi, Müsvette kağıt, Karton kutular)				
Cam (Şişe ve Kavanozlar)				
Plastik (pet şişe, plastik kaplar vs.)				
Alüminyum kutular (kola, fanta, vs.)				
Pil				

19. Okulunuzda geri dönüşüm kutusu bulunuyor mu? Cevabınız evet ise hangi malzeme ya da malzemeler için geri dönüşüm kutusu bulunduğunu lütfen boşluğa yazınız.

❑ Evet ❑Hayır ----------

20. Okulunuzda çevreyle ilgili faaliyetler yapılıyor mu? Cevabınız evet ise ne tür faaliyetler yaptığınızı lütfen boşluğa belirtiniz.

❑ Evet ❑Hayır ----------

21. Aşağıda verilen çevre problemlerini ciddi bir endişe konusu olarak görüyor musunuz? Lütfen her madde için verilen seçeneklerden birini işaretleyiniz.

	Hiç endişe duymuyorum	Çok az endişe duyuyorum	Kararsızım	Biraz endişe duyuyorum	Çok endişe duyuyorum
Hava kirliliği.					
Ses kirliliği.					
İçme suyu kalitesinin bozulması					
Araç trafiğinin artması					
Endüstriyel kirlilik					
Radyasyon					
Nükleer atık					
Su kıtlığı.					
Ormanların yok olması.					
Tarım alanlarının yok olması					
Çölleşme					
Enerji kıtlığı.					
Ozon tabakasının incelmesi					
Küresel ısınma.					
Aşırı avlanma.					
Asit yağmurları					
Bitki ve hayvan nesillerinin yok olması					
İnsan nüfusunun artması					
Çöplerin yol açtığı kirlilik					
Tarımsal toprağın kalitesi					
Akarsu ve göllerin kirlenmesi					

22. Annenizin eğitim durumu:
❑Okuryazar değil ❑İlkokul ❑Ortaokul ❑Lise ❑Üniversite

23. Babanızın eğitim durumu:
❑Okuryazar değil ❑İlkokul ❑Ortaokul ❑Lise ❑Üniversite

24. Annenizin mesleği: (emekli ise önceki işini yazınız)
❑ev hanımı ❑memur ❑işçi ❑ serbest meslek ❑Diğer (lütfen belirtiniz) .....

25. Babanızın mesleği:
❑ çiftçi ❑memur ❑işçi ❑ serbest meslek ❑çalışmıyor ❑Diğer (lütfen belirtiniz).....

26. Kardeş sayısı: (kendinizin dışında) .....

27. Evinizde kaç tane kitap bulunuyor? (Magazin dergileri, gazete ve okul kitapları dışında)
❑ Hiç yok ya da çok az (0–10) ❑ 11–25 tane ❑ 26–100 tane ❑ 101-200 tane ❑ 200'den fazla

28. Evinizde kendinize ait bir çalışma odanız var mı? ❑ Evet ❑Hayır

29. Evinizde bilgisayarınız var mı? ❑ Evet ❑Hayır

30. Ne kadar sıklıkla eve gazete alıyorsunuz? ❑ Hiçbir zaman ❑ Bazen ❑ Her zaman