PRE-SEVICE TEACHER'S PERCEPTIONS TOWARD GLOBAL VERSUS LOCAL ENVIRONMENTAL ISSUES

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ABSTRACT

PRE-SERVICE TEACHERS' PERCEPTIONS TOWARD
GLOBAL VERSUS LOCAL ENVIRONMENTAL ISSUES

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The purpose of this study is to examine Tukish pre-service teachers perceptions about global versus local environmental issues and determine gender and major effect on their perceptions of global and local environmental issues. The information will be collected from Elementary Education pre-service teachers from Middle East Technical University. Their concerns and attitudes toward 9 global and 5 local environmental issues will be measured by using a survey questionnaire. The questionnaire has been adopted from the one originally used by Duan and Fortner (2005). The local issues were selected according to report about the major environmental problems declared by the Ministry of Environment and Foresty of Turkey and the global issues were kept same as the original questionnaire. The results of the study were analysed by means of descriptive and inferential statistics. The results revealed that elementary education pre-service teachers mostly gave more importance to global environmental issues; females had higher attitudes and concerns about environmental issues than males and Early Childhood Education students have higher attitudes and concerns for environmental issues than students from departments of Elementary Science Education and Elementary Mathematics Education. In the stage of preparing environmental education courses as a must course for the faculty of education students in Turkey, the outcome of the study is expected to propose an insight for environmental education for the future teachers.

Keywords: Environmental Education, Local Issues in Environmental Education, Global Issues in Environmental Education, Environmental Attitude, Environmental Concern.

ÖZ

ÖĞRETMEN ADAYLARININ KÜRESEL VE YEREL ÇEVRE SORUNLARI İLE İLGİLİ GÖRÜŞ VE YAKLAŞIMLARI

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Yüksek Lisans, İlköğretim Fen ve Matematik Alanları Eğitimi Bölümü

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Bu çalışmanın amacı Türk öğretmen adaylarının küresel ve yerel çevresel sorunları nasıl algıladıklarını incelemek ve cinsiyetin ve okudukları anabilim dalının küresel ve yerel problemleri algılamalarındaki etkisini belirlemektir. Çalışmanın örneklemi Orta Doğu Teknik Üniversitesi İlköğretim Bölümü öğretmen adaylarından oluşmaktadır. Öğretmen adaylarının 9 küresel ve 5 yerel çevresel sorun hakkındaki endişelerini ve tutumlarını bir anket kullanarak ölçmeyi amaçlamaktadır. Çalışmada kullanılacak olan anket Duan ve Fortner (2005)' ın benzer bir çalışmada kullandıkları anketten yola çıkarak yeniden düzenlenmiştir. Yerel çevresel sorunlar, Çevre ve Orman Bakanlığının hazırladığı Türkiye'nin başlıca çevre sorunları ile ilgili rapordan yola çıkılarak belirlenmiştir. Küresel çevresel sorunlar ise orjinal anketle aynı tutulmuştur. Çalışmanın sonuçları SPSS istatistik programı kullanılarak analiz edilmiştir. Analiz sonuçları, ilköğretim öğretmen adaylarının küresel çevresel sorunları daha çok önemsediklerini; kadın öğretmen adaylarının, erkek öğretmen adaylarına göre çevresel problemlere karşı daha duyarlı ve ilgili olduklarını ve Okul Öncesi Öğretmenliği bölümünde okuyan öğretmen adaylarının, çevresel problemlere karşı, İlköğretim Fen Eğitimi ve İlköğretim Matematik Eğitimi bölümlerinde okuyan öğretmen adaylarından daha fazla ilgili olduklarını ve olumlu tutuma sahip olduklarını göstermiştir. Eğitim fakültelerinin programlarına çevre eğitimi ile ilgili derslerin, zorunlu ders olarak konulmasının hazırlıklarının sürdüğü aşamada, çalışmanın sonuçlarının öğretmen adaylarına çevre eğitimi ile ilgili bir anlayış kazandırması beklenmektedir.

Anahtar Sözcükler: Çevre Eğitimi, Çevre Eğitiminde Yerel Konular, Çevre Eğitiminde Küresel Konular, Çevresel Tutum, Çevresel İlgi

To my parents

Aynur and Ekrem ÜNAL

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EE: Environmental Education

EPQ: Environmental Perception Questionnaire

ECE: Early Childhood Education

EME: Elementary Mathematics Education

ESE: Elementary Science Education

CHAPTER 1

INTRODUCTION

The terms “environment” and “education” began to be used together in the mid-1960s. In 1960s, environmental education mostly focused on the understanding of the nature. It gave importance to learn about plants, animals, their properties and life cycles (Palmer, 1998, p.23). In 1970, The World Conservation Union defined environmental education as follows:

> Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of code of behavior about issues concerning environmental quality. (Palmer, 1998, p.7)

Palmer (1998) stated that during 1970s, the goals, approaches and objectives of environmental education has changed to emphasize importance of common understanding of environmental education around the world. In 1980s, environmental education gained importance as one of the solutions for the conservation of World’s resources. In 1990s, the idea of “sustainable development” has been stressed. In 1992, Agenda 21 (UNEP, 1992) that presents an action programme about requirements that countries should fulfill to reach sustainable development was introduced. Agenda 21 stressed the importance of global partnership for sustainable development that focus on indivisibility of environmental protection and the development process. In 2000s, environmental education has mainly focused on the education and awareness for sustainability.

Although the concept of environmental education continuously has changed during 1960s to 2000s, most of the countries are still trying to find most effective environmental education policy to apply in their schools. The recent researches which focus on determining people's perceptions toward global versus local environmental issues are the one of the ways which can be used to develop an effective environmental education programme for schools. Layrargues (2000) stated that educators can give priority to explain local problems which people faced with in their life in environmental education. By this way, people may be more willingly to take action to fulfill their responsibilities to solve these local environmental problems. He added that global problems are mostly seemed as far away from daily real life so they provide little motivation for action to solve them. Similarly, the research which was conducted by Duan & Fortner (2005) revealed that Chinese college students gave more importance to local environmental issues than global ones and according to them, local environmental issues were more real than global ones. They concerned about the environmental issues which are related with their daily life. On the other hand, they did not care about the environmental issues which are distant from their daily life. As Connell, Fien, Lee, Sykes & Yencken (1999) pointed out that people mostly think about environmental issues as "if it does not directly affect you, you do not think about it". Therefore, it may be said that focusing on local environmental issues in environmental education mostly become more meaningful to students.

Academic major and gender are also other important dimensions that affect students' and peoples' attitudes and perceptions toward environment and environmental issues. Determining gender and major effects on perception of environmental issues are necessary while organizing environmental education courses for students in different levels of education. According to related literature, students who study departments of economics, commerce, or business-related subjects were less concerned about environmental issues than students who study departments of biological or environmental sciences. (Hodgkinson & Innes, 2001; Tikka, Kuitunen, & Tynys, 2000; Sherburn & Devlin, 2004; McKnight, 1990). Among teacher education students, elementary education pre-service teachers were

found more concerned about environmental issues than secondary education mathematics and social sciences teachers (Ozden, 2008). There were also lots of studies that focus on to determine gender effect on people' environmental attitudes and perceptions. The results of these studies were not consistent. Some of them found no gender differences between females and males in terms of their environmental attitudes (Eagles & Demare, 1999); some of them found a significant differences in favor of males (Hes-Quimbita and Pavel, 1996; cited by Yılmaz et. al. ,2004); and most of them found significant gender differences in favor of females (Tıkka et. al. 2000; Blocker & Eckberg 1997, Loughland et. al. 2003, Tuncer et. al. 2005[1,2] ,Ozden, 2008).

Besides determining students' and people' perceptions and related factors that have an impact on their perceptions toward environmental issues, determining teachers' and pre-service teachers' attitudes towards the environment is the another important dimension to develop effective environmental education policy. Teachers are perceived as one of the most important factors in shaping and affecting students' interest in environmental issues (Tuncer, Sungur, Tekkaya & Ertepınar, 2007). Recent years, there are some researches that investigate Turkish pre-service teachers' environmental awareness and attitudes. Ozden (2008), for example, explained the importance of investigating student teachers' environmental awareness and attitudes as follows: "*if student teachers' have positive attitudes towards environment, their students will have positive attitudes towards environment and they will be aware of environmental problems automatically*" (p. 53). Alım (2006), on the other hand, declared that teachers in Turkey mostly do not give much importance while studying environmental topics, they mostly explain topics in traditional methods and so students only memorize topics superficially. Therefore he stressed the importance of teacher education about environmental issues to increase our students' awareness about environmental issues and develop them as environmentally responsible citizens.

The environmental education in Turkey is in its very beginning stages. There is not a well established environmental education policy for Turkey (Tuncer, Ertepınar, Tekkaya & Sungur, 2005). Yılmaz, Boone & Andersen (2004) stressed the

importance of providing regular education opportunities for teachers. They said that teachers' knowledge about new scientific concepts related with environmental issues and their knowledge about using different teaching strategies in science classrooms can be developed by providing continuing professional development programs. They added that displaying new findings about environmental issues can increase students' knowledge about those issues and also using different approaches while introducing environmental issues can provide students different perspectives about those issues and increase their environmental awareness. According to related research, the pre-service teachers seem to be aware of importance of increasing environmental awareness to solve environmental problems. But they are unsure about the solutions. (Tuncer, Sungur, Tekkaya & Ertepınar, 2007). There are some efforts to improve Turkish pre-service teachers' environmental knowledge and awareness. In this context, a must course which was named as "Environmental Sciences" is added to program of elementary science education pre-service teachers. But, there is still a need for determining content of this course accurately and effectively for successful applications.

Thus, determining people', students', teachers' or pre-service teachers' perceptions toward global and local environmental issues was important for effective EE applications, it can be also understood by examining related literature.

Under the light of the above leading points, the purpose of this study is to examine Turkish pre-service teachers' perceptions about global versus local environmental issues and determine gender and major effect on their perceptions of global and local environmental issues. In addition, there are several reasons which explain the significance of investigating Turkish pre-service teachers' perceptions about global versus local environmental issues. Firstly, the results of this study will be a beneficial source while working about establishing an effective environmental education curriculum for student teachers. Secondly, there has been very limited number of studies which focus on people' perceptions toward environmental issues in a developing country like Turkey. Lastly, this study aims to work with pre-service teachers because in the stage of preparing environmental education courses as a must course for the faculty of education students in Turkey, the outcome of the

study is expected to propose an insight for environmental education for the future teachers.

CHAPTER 2

THE MAIN AND SUB PROBLEMS

This chapter of the thesis comprised of one part as; description of the main research problem and sub-problems of the study.

2.1. The main Problem and Sub-problems

2.1.1 The main problem

The main problem of the study is set out as; "What is the perception of Turkish pre-service teachers toward global and local environmental issues?"

2.1.2. Sub-problems:

The sub-problems of the study have been set out as follows:

1. What are Turkish pre-service teachers' concerns about global and local environmental issues?
2. What are Turkish pre-service teachers' attitudes toward global and local environmental issues?
3. Is there a gender difference between pre-service teachers' concerns and attitudes about global and local environmental issues?

4. Is there a major difference between pre-service teachers' concerns and attitudes about global and local environmental issues?
5. What are the relationships between concerns and attitudes of the Turkish pre-service teachers?
6. How the results used to improve the teacher education strategy for environmental education in Turkey?

The key terms of research question can be defined as follows:

Concerns: Determining how pre-service teachers evaluate the causes, processes or consequences of each environmental issue (global and local issues) in terms of their certainty about the existence of problems, complexity, tangibility, significance and harmful effects of problems.

Attitudes: Pre-service teachers' recognition of how the environmental issues relate to humans and human values (Duan & Fortner, 2005, p.23). It includes; participants' evaluation of their own knowledge about each environmental problem, their perceptions about the importance of human activities as the causes for environmental problems, what extent they concern each environmental problem would change their life and their thoughts about how each environmental problem will be 20 years later (Duan & Fortner, 2005, p.23)

Global environmental problems: The common environmental problems that affect World adversely. The global problems are determined as follows: Climate change, freshwater pollution, water scarcity, deforestation, desertification, energy production and usage, loss of biodiversity, ozone depletion and waste disposal (Global Environmental Look 2000, United Nations Environmental Problem, 1999).

Local environmental problems: The common environmental problems that affect Turkey adversely. The local problems are determined as follows: Coastal pollution, air pollution in industrial cities, urbanization, soil erosion and loss of farmland (Ministry of Environment and Forestry, Report of Environmental Situations in Turkey/ Turkey Environmental Atlas).

CHAPTER 3

REVIEW OF LITERATURE

This chapter includes the review of relevant literature related to history of environmental education, research in environmental education, the position of environmental education in Turkey and local and global perspectives in environmental education.

3.1. History of Environmental Education

The concept of Environmental Education (EE) is not a new phenomenon or a product of our current increasing interest for the environment. In 1762, Jean-Jacques Rousseau emphasized the necessity of including environment in education in his educational philosophy novel of Emile. In 1930s, John Dewey noted the more-student centered approach that includes learning with first-hand experiences, lifelong learning, integrated and interdisciplinary efforts in education which became main dimensions of environmental education later. (McCrea, 2006).

The term Environmental Education was, firstly used in the International Union for the Conservation of Nature (IUCN) Conference in Paris in 1948. IUCN was the major international union of governmental and non-governmental organizations that have a relation to conservation of environment (Palmer, 1998). In 1968, United Nations Educational Scientific and Cultural Organization (UNESCO) organized a Biosphere Conference in Paris. In this Conference, issues of improving materials for the teaching environment in all levels of education, developing global awareness on environmental problems, inducing technical training and constructing national

coordinating committees around the World were stressed. This Conference was perceived as the first evidence of World awareness on EE (Palmer, 1998).

In 1970, IUCN organized a meeting that was the one of the main milestone in history to make definition of EE. In this meeting EE is defined as follows:

Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of code of behavior about issues concerning environmental quality (IUCN, 1970/ cited by Palmer, p. 7).

During 1970s, international organizations continue to support development of EE. In 1972; The United Nations Conference on the Human Environment in Stockholm, Sweeden was organized. This Conference pointed out the growing global concern for the environment in 1970s (Palmer, 1998). In 1975, UNESCO and United Nations Environment Programme (UNEP) founded the International Environmental Education Programme (IEEP). IEEP organized a workshop in which main goals, objectives, audiences and guiding principles of EE was determined and named as "Belgrade Charter-A Global Framework for Environmental Education". The main goals of the EE that was introduced in Belgrade Charter can be summarized as follows: helping individuals and social groups get total awareness and understanding of the total environment; helping them gain concern, skills and sense of responsibility to protect environment and to produce solutions for environmental problems; helping them to realize environment in terms of ecological, political, economic, social, esthetic and educational dimensions. (UNESCO/UNEP, 1975). In 1977, UNESCO and UNEP organized the first Inter-governmental Conference on EE, in Tbilisi. Tbilisi Conference emphasized the wider use of EE in formal and non-formal education (Palmer, 1998). The three goals of the EE that was written final report of Tbilisi Conference were the nearly same as the main goals of the Belgrade Charter (UNESCO, 1977).

In 1987, UN The World Commission on Environment and Development published report of Our Common Future in which the idea of sustainable development was displayed and environmental protection and economic growth were viewed as interdependent concepts. This report initiated organizations of conferences UN Earth Summits in 1992 and 2002.

UN Conference on Environment and Development-"The Earth Summit" was organized in 1992 in Rio de Janerio. Agenda 21 and Rio Declaration on Environment and Development were the resulting documents of The Earth Summit 1992. 36th chapter of Agenda 21 stressed the issues of "reorienting education towards sustainable development; increasing public awareness and promoting training." (Agenda 21, 1992).

In 2002, UN Commission on Sustainable Development organized the World Summit on Sustainable Development meeting in Johannesburg. The main objectives of the meeting were explained as reviewing outcomes of the Agenda 21 and make necessary alterations for better implementation of sustainable development action plans (World Summit, 2002). After the World Summit 2002, UN Decade of Education for Sustainable Development-DESD (2005-2014) was adopted. The aim of the Decade was promoting education according to need of sustainability and giving more importance to international cooperation to enhance new policies, programmes and practices for the education for sustainable development (DESD, 2005).

3.2. Research in Environmental Education

As Environmental Education become an important area to be improved, there are lots of researches are conducted to focus on different dimensions of EE. Many of the studies focus on to determine students' understanding of environment; many others try to clarify students' and teachers' attitudes and awareness about environmental issues; others examine the teaching and learning methods for effective EE applications.

One of the main issues for EE researchers is to determine how students define the term environment. It is important to determine students' understanding of environment, because if educators know what their students understand from environment, they can have an idea about how to develop beneficial and effective environmental education strategies (Loughland, Reid, Petocz, 2002). One of the examples of such studies is Shepardson (2005). He conducted a research to get ideas of students about the meaning of environment. Eighty one students from different grade levels were participated in study. Firstly, students were asked to draw a picture of environment and then explain their drawings. Secondly, a series of seven photos were shown students and asked them to explain whether the photograph describe an environment. The results of the study showed that students mostly look environment from ecological perspectives and define it as area where animals live or area that supports animal life. Students mostly view environment as a natural landscape, they did not consider human made environments as environment and also they did not consider human as a part of the environment.

Another study was conducted by Loughland, Reid & Petocz in 2002. They asked 2249 primary and secondary school students what they understand from the term "environment". As a result of the study they determined 6 distinct categories for students' understanding of environment. Loughland et. al. said that the first three categories which were the environment is a place; place that includes living organisms; place that includes living organisms and people were reflecting environment as an "object". The last three categories which were the environment does something for people; people are part of the environment and are responsible for it; people and environment are in mutually sustaining relationship were reflecting mutual care and "relation" between environment and people. In 2003, Loughland, Reid, Walker and Petocz conducted another research and investigated the factors that affect students' perception of environment-as an "object" or as a "relation". Totally 1734 primary and secondary school students participated in the study. Results showed that majority of the students (88 %) view "environment as an object" and minority of them (12 %) view "environment as a relation". Primary school students show "relation" conception five or six times more than secondary

school students. The researchers of the study explained this situation as in primary schools; teaching about environment is more integrated across into different disciplines but in secondary school teaching environmental sciences is a different subject area which focuses on examination of local ecosystem. By means of gender difference, girls had one and a half time more relation conception of environment than boys. Another result of the study was that there is not a correlation between having better knowledge about environmental issues and development of a "relation" conception of environment. Loughland, Reid, Walker and Petocz (2003) said that environmental knowledge was gained without developing a "relation" concept of environment so current environmental education requires reorientation.

Having an idea about environmental attitudes of people provides important clues for development of effective EE strategies, many of the researches were conducted studies to determine people's environmental attitudes. A person who has positive environmental attitudes, mostly have a tendency to participate in several environmental activities (Tıkka, Kuitunen, Tynys, 2000). It is cited by Ballantyne and Packer (2002) that the study which was conducted by Ballantyne, Fien & Packer (2001) showed that one of the most effective ways of taking students' interests on environmental issues is to provide opportunities in which they can get first-hand experiences in real environmental settings. They added that especially, if students are provided to observe the evidences of environmental problems and effects of these problems on people, animals, plants and wildlife etc., the environmental messages that are given in schools become more meaningful for them.

In his study Bowker (2007) examined the 9-11 years of children' perceptions and learning about tropical forests from their drawings. Thirty children were randomly chosen from 3 different schools which located different social areas. The children participated in the study visit to Humid Tropics Biome which contains the tropical forest. Immediately before students come to the Humid Tropics Biome, their teachers wanted them to draw a picture of rainforest to show their knowledge about rainforests. Before visiting the rainforest, children firstly attended a workshop about rainforest features-shape, texture, function of plants and then they visit the

rainforest. After their visit and workshop, immediately, the children were given their first drawing back and provided opportunity to review it and then complete with a new drawing about rainforests. Besides these, interviews were conducted to ask children describe their first and second drawings to gain deep understanding of their perceptions of rainforests. Analysis of the children's first and second drawings showed that second drawings include the more species of trees and plants, the greater accuracy of the plants and more accurate rainforest features. The interview results also revealed that children mostly remember the names and properties of the plants that they draw correctly. As Loughland, Reid, Walker & Petocz (2003) indicated, other sources for learning about environment should be focused and environmental education should be taken out of the formal school system and be located in the community in young people live. Moreover, Wilhelm & Schneider (2005) conducted a research to examine urban youth's perception of nature and their suggestions for effective environmental education. The youths of the study stressed that they are more interested in programs that let them to be active in their learning.

Littledyke (2004) determined children's views on science and environmental issues. According to research results, students mostly did not view science as an important issue in society and also as a factor in environmental issues. Students mostly looked at science as an approach to learning. For environmental issues, younger students mostly saw environment as a living place for animals. Older children mostly think about environment in terms of transport and pollution.

In 2006, Petegem and Blieck conducted a research to determine young people's environmental worldviews by using the Manoli, Janson & Dunlop (2005)'s revised "New Ecological Paradigm" (NEP) scale for children. NEP scale is a widely used to measure people's shifting worldviews from a human dominant view to an ecological one, with humans as a part of nature. 524 children in Zimbabwe who are between 13-15 years old and 613 children in Belgium who are 13 years old participated in the study. Responses to NEP scale showed clear differences in the perception of the human-nature interrelationship between Belgian and Zimbabwean students. Belgian students had more environmentally protective attitudes. Both of

the Belgian and Zimbabwean students were aware of humankinds' negative impact on nature. However, Zimbabwean students also stress human dominance over nature and believe that people can use nature to supply their needs. Belgian children do not share this human dominance view on nature. Petegem and Blieck (2006) said that in industrialized societies people mostly reject the progress and growth that result in environmental degradation. However, in less-industrialized societies, the distinction between human dominant view and ecology dominant view may not be as exact as industrialized ones; people of less-industrialized societies may have holistic view of human environment relationship. As research results showed that Zimbabwean students are also concerned with the adverse human influence on ecological systems and at the same time their responses showed they believe in limited human usage of nature. Authors of the research explain this result with Zimbabwean students' nature-extractive tradition. The result of this study showed the effect of cultural differences in children's worldviews. Sustainability emphasizes the importance of satisfying balance between environmental protection and using nature for human needs. Researchers stressed the necessity of continuous educational support for young people to make them find different ways for supporting sustainability and understand main reasons of environmental problems and find solutions for the conservation of remaining environment.

Vaske and Kobrin (2001) realized a study to determine the effects of attachment to a local natural resource on environmentally responsible behavior in a person's daily life. They worked with young people whose ages between 14-17 years old. According to results of their study, they claimed that if people develop emotional connection to their local natural resources, they feel themselves more responsible toward their environment and so behave more responsibly in their daily activities (p. 21). Cullinford (1996) said that young people' view of environment change according to their personal experiences related with environmental issues. He gave the example of that if young people experience pollution in their environment, they will think of environment in terms of pollution (cited by Loughland et. al., 2002, p. 188).

Researchers also focus on determining people's feelings towards environmental problems and their views about the future trend of environmental problems. It can be inferred from such studies as an overall view that majority of the young people are pessimistic about global environmental futures (Hıcks and Bord, 2001). As a result of their study, for example Connell et. al. (1999) stated that young people expressed the feelings of sadness, pessimism and frustration about environmental problems. Duan and Fortner (2005) also showed that Chinese college students have also a pessimistic attitude about the environmental changes of future. It was suggested by Duan and Fortner (2005) that teachers should not only explain the negative changes in environment but also explain that these environmental problems can be overcome if individuals take necessary steps. And they should help their students to understand how people can prevent or manage the problems with certain ways.

3.3. Environmental Education in Turkey

As a developing country, environmental education in Turkey is in its very beginning stages. There is not a well established environmental education policy for Turkey (Tuncer, Ertepınar, Tekkaya & Sungur, 2005). Recent years, there have been several research conducted to determine criteria for developing effective environmental education policy for Turkey. Some of the researches focused on to determine environmental views and attitudes of the Turkish students and pre-service teachers; others were conducted to explore views of sustainable development of people; some of them investigated the Turkish people' concern about environment.

Yılmaz, Boone & Anderson (2004), for example, designed a study that aims to determine Turkish students' views about environmental issues that they study in their science curriculum from grades 4 to 8. Researchers of the study also aim to determine effects of gender, grade level, previous science achievement, socio-economic status (SES) and school location on students' views of environment. An Attitude toward Environmental Issue Scale (ATEIS) that includes 51 items was used

to investigate students' views about 30 environmental issues which are stressed in current Turkish science curriculum. According to results of the study, Turkish students give more importance to economic growth and industrialization than environmental protection. Researchers of the study suggested that if inquiry teaching method is used more effectively and efficiently in science classes, students can understand these concepts more clearly and think about environmental and economic issues in more detail. Recycling and population growth were the other issues that were seen as important environmental problems by middle/ secondary school students. The middle/secondary school students agreed on importance of environmental education, prevention of habitat destruction, soil erosion, pollution, population growth and energy conservation. The current research also investigated the relation between science achievement and environmental attitudes. It was seen that students who have a higher science achievement view environmental issues more positively. It was stressed by the researchers that if students knew more things about scientific concepts, their environmental concern and attitudes also increased. In grade level, 4^{th}, 7^{th} and 8^{th} graders' environmental attitudes better than 5^{th} and 6^{th} graders. The researchers could not find any gender differences between environmental attitudes of elementary school students but they did between middle school students. Female students' environmental concern was higher than males in middle school. For SES and school location, it was found that in elementary school, students with higher SES who study in urban areas have more positive environmental attitudes. However, in middle school, there was not any significant difference between students' environmental attitudes according to their SES and school location. In Turkey, students mostly take their courses related with environmental issues in middle school so developing their knowledge and experiences on environmental issues may create no difference according to their SES and school location among middle school students. As a result, Yılmaz, Boone, Anderson (2004) stressed the importance of collaboration among different stakeholders to develop more effective science education and environmental education in Turkey. They suggested that providing students textbooks with high quality, technology classes, effective hands-on activities and outdoor experiences will improve science and environmental education in Turkey. In addition, they

asserted that, providing teachers in service training programs will increase their professional development and provide them to follow new scientific and environmental developments.

Berberoğlu and Tosunoğlu (1995) were also designed a research to determine Turkish university students' attitudes toward environment and they found that population growth, nuclear energy, energy conservation and environmental problems were chosen as important environmental issues by students. Whereas, the authors found that, economical growth, technological development, relationship between human and nature and recycling were not seen as important environmental problems. Berberoğlu and Tosunoğlu (1995) explained this results the content of, Turkish school curriculum that it does not cover these issues and with the negative efforts of mass media to increase students' awareness about these issues.

In 2005, Tuncer, Ertepınar, Tekkaya & Sungur conducted a research that was aimed to investigate effect of school type and gender on students' environmental attitudes. One thousand four hundred ninety seven private and public school students who study in 6^{th}, 7^{th}, 8^{th} and 10^{th} grades participated in the study. As a result of the study, researchers found that students who study in private schools have more positive attitudes toward environmental issues. The reason was explained by the different financial, physical and functional conditions in public and private. The result also related with the educational level of parents. Researchers also found a gender effect on the students' environmental attitudes in favor of girls. Girls had more positive environmental attitudes; they were more aware of environmental problems, individual responsibility and national environmental problems and they had more positive attitudes toward the solutions of the problems. Although private school students have better attitudes toward the environment, the authors showed that most of the participants have positive attitudes toward environment. One of the important finding related to the study was that, although young people believe in the significance of environmental conservation they were not able to integrate environmental conservation and economical development. The researchers also claimed that students were undecided to choose between environmental protection and economical growth or profits and disadvantages of technology. In addition,

Tuncer et. al (2005) stated that students were unable to comprehend the relationships between lifestyles and concern with environment. According to authors, the students accepted the importance of individual responsibility and need for changing our life styles to protect environment but they did not know what it means and what they are going to do. Thus the authors stated that environmental education contents should be designed in the way that includes both natural environment and cultural, technical, constructed and social environments.

In 2005, Tuncer, Sungur, Tekkaya & Ertepınar designed another research to determine attitude of the young towards sustainable development. Total number of 1497 6^{th}, 7^{th}, 8^{th} and 10^{th} graders studying in different public and private schools in Ankara participated the study. Young people' attitudes toward sustainable development were determined by using A 45 item questionnaire. According to results of the study, it was concluded that young people do not see environmental pollution as a temporary problem and they bother about the environmental problems and nature. Besides, young people was to be able to make a correlation between growths and industrialization; instead of expecting environmental solution only from science and technology and the government, they stressed the importance of taking individual responsibility to protect the environment. Researchers of the study said that young people have a positive attitude toward the general environmental problems and sustainability; that societies with developed industry provide better life conditions but it is not worth to discard environment for the sake of industrialization and they were found to be pessimistic about the future trends of environmental problems. As a result it was concluded that, "in spite of their positive attitudes, the young people are not equipped to make a relation between the environmental issues and life styles. This single finding could have an important implication that education in its traditional forms, is not sufficient to meet the immense challenge posed by phenomenon of unsustainable living. As far as contents are concerned, EE should go beyond nature and environmental protection but should cover both the natural environment and the cultural, technical and social aspects" (p. 192).

In 2006, Alp, Ertepınar, Tekkaya & Yılmaz conducted a research to determine 6th, 8th and 10th grade students' environmental knowledge and attitudes in Turkey and, to investigate the effect of the grade level and gender on student's environmental knowledge and attitudes and also to investigate the relation between environmental knowledge, affects, behavioral intentions, demographic variables and environmentally responsible behavior. Data were obtained from 1977 students who study 22 different schools in urban areas. The statistical results of the study showed that all students' environmental knowledge on basic environmental issues were low for both elementary and high school level. The reason of this situation was explained as inadequacy of emphasizing environmental issues in formal science curriculum of Turkey. On the other hand, all students had positive attitudes toward the environment. But present study also showed that positive attitudes toward environment decreased by grade level. Researchers related this result with the way environmental issues are presented. Researchers of the study did not find any gender difference on students' knowledge about environmental issues. But they found a gender difference on students' environmental attitudes that is girls had more positive behavioral intentions, environmentally responsible behaviors and affects. As a result, Alp, Ertepınar & Tekkaya (2006) stressed the importance of activity based science classrooms for developing our students who take active role on protecting environment and solving environmental problems (p.221).

Besides determining students' understanding of environment, determining teachers' understanding of it also very important issue. Because teachers are accepted as the key factors for EE (Loughland et. al., 2002).

Alım (2006) stated that, governments have begun to put lots of money for the projects that aim to protect environment and provide people to live in healthy environments. But he also emphasized that these projects can be successful if, people is educated to protect environment and feel responsible to solve environmental problems. Thus, as the author states, nations should develop effective and productive environmental education policies. Alım (2006) investigated Turkish primary school curriculum from grade 1 to 8 in all lessons and he found that there were enough subjects related with environmental issues in

Turkish primary school curriculum. But, as he stated, teachers mostly do not give much importance while studying these topics, they mostly explain topics in traditional methods and so students only memorize topics superficially. Therefore he stressed the importance of teacher education about environmental issues to increase our students' awareness about environmental issues and develop them as environmentally responsible citizens.

In 2007, Tuncer, Sungur, Tekkaya & Ertepınar conducted a study to determine level of environmental attitudes and awareness of pre-service teachers and elementary school students. One thousand two hundred thirty five elementary school students and 334 elementary education pre-service teachers of Middle East Technical University participated in the study. The results of the study indicated that pre-service teachers had better awareness about environmental problems and they were more optimistic about the solutions for problems. They noted that finding solutions for environmental problems is related to increasing environmental awareness. Researchers of the study evaluated this result as future teachers were conscious about their key role in influencing students' environmental interest. On the other hand, results denoted that students' perception toward environmental issues was also high. However, they were not in the state of putting into practice some solutions and individual responsibilities into their daily life. Pre-service teachers and students accepted seriousness of environmental pollution as a problem and they thought that it will not decrease in the future. Both pre-service teachers and students realized significance of individual responsibilities to find solutions but both of them unclear about the kind of solutions should be applied. The researchers of the study stated that lack of environmental knowledge might be one of the major reasons of such an attitude. They said that "designing an interdisciplinary course which emphasizes the relationship between education, development and environment in a holistic way and challenges students to promote environmental care within their future lives is a need for improving environmental education in elementary school teacher training" (p.196).

Moreover, Özden (2008) conducted a study to determine environmental attitudes and awareness of student teachers in University of Adıyaman in Turkey. He

investigated effect of gender, academic major, grade level and socio economic status on pre-service teachers' attitudes and awareness of environmental issues. Totally 830 participants from different majors, classes and socio economic status participated in the study. The results of the study marked that female pre-service teachers had more positive attitude toward environmental issues than males. Pre-service teachers who have lower than three brothers and sisters had more positive attitude toward environment than other who have three or more than three brothers and sisters. Participants who come from families with high economic income had more positive environmental attitudes than others who come from families with average and low economic income. By means of grade level, fourth year students had more positive attitudes toward environment than other classes. The researcher of the study explained reason of this situation as pre-service teachers mostly attend the environmental courses in their last year. Elementary education pre-service teachers had more positive attitudes than secondary education mathematics or social science pre-service teachers. Residence and geographical region also have an impact on pre-service teachers' environmental attitudes. Pre-service teachers who live in big cities had more positive attitudes than others who live in villages or small cities. Pre service teachers who live in Marmara Region had more positive attitude toward environment and who live in Southeastern Region had least environmental attitudes. These results showed that students' who faced with environmental problems directly in their daily life-in big cities or Marmara Region- that is the more industrialized region in Turkey- had more positive attitudes toward environment.

Furman (1998) design a research to determine environmental concern of citizens of İstanbul. Survey was applied 430 residents of İstanbul. As state by the author showed that Turkish people rated their own level of environmental concern much lower than people who live in other developing countries; older people who participated in the study were more environmentally concerned and people who have better environmental knowledge, mostly looked environment and environmental problems from broader geographical range rather than local one.

Likewise, Furman and Erdur (1999) designed a study to understand the relationship between perceived characteristics of an environmentalist and good citizen. One hundred twenty-two third class students from 21 faculties of Boğaziçi University participated in the study. The characteristics of the environmentalist were defined as having knowledge about world affairs and environmental issues; showing individually pro-environmental behavior; behaving for the environmental benefit of the local community-recycling, saving water and so on-; supporting environmental organizations and participating in their activities and opposing nuclear power. The results of the study pointed out respondents agreed on to be a good citizen, one should possess all properties of environmentalist. 52 percent of the participants supported the idea of individuals and citizen groups could have a great effect in solving environmental problems. Researchers of the study explained the result of the study as follows: "results of our study indicated public concern with lack of governmental effort in environmental protection, rather than implying a tendency for relegating individuals' responsibility to the government" (p. 187).

3.4. Local and Global Perspectives in Environmental Education

Students' experiences with environment have a great impact to form their environmental attitudes and behaviors. In 1992, Agenda 21 stressed the importance of countries and regions' determination of their priorities according to their specific and local needs. The big international conferences about EE also highlighted to significance of cooperation with non-formal local organizations for effective EE applications.

Roch, Wilkening & Hart (2007) summarized the recommendations from Belgrade (UNESCO-UNEP, 1975), Tbilisi (UNESCO-1975), Moscow (UNESCO-UNEP, 1988), Rio de Jenerio (UN, 1992) and Athens (UNESCO-UNEP & MIO-ECSDE, 1995) conferences to stress those international organizations also targeting national civil organizations for building on EE applications. Recommendations for EE targeting local organizations can be ranged as incorporating EE activities in existing

programme; designing programmes to lead public take action about environmental issues; supporting interchange of information and networking for EE; providing training for EE specialists, civil organizations and media practitioners; undertaking research to enable EE at the non-formal level; improving and delivering training for non-formal EE; producing instructional materials for non-formal EE; supporting participation of the public and entire community in environmental campaign and EE programs and lastly identifying priority questions in EE.

The importance of placing local environmental issues in to general EE policies was stressed by Rene Dubos-advisor to the United Nations Conference on the Human Environment in 1972- by saying "think globally and act locally". Rene Dubos phrase explains the main focus of many international conferences about EE. One of the guiding principles of Belgrade Charter emphasized that EE should examine major environmental issues from a world point of view but it should also regard to regional differences. In Belgrade Charter and World Summit 2002, one of the main principles of EE was explained as promoting necessity of local and national cooperation in the solution of environmental problems. Parallel to these, current research showed that people's perceptions of environmental issues were differentiating even between different regions of same country (Özden, 2008). Therefore, educators and researchers should more focus on local environmental issues for effective EE implications.

However, there are very limited number of research has been conducted to explore the effect of using local environmental issues in EE.

Fisman (2005), for example, investigated the influences of an urban environmental education programme on students' awareness of their local environment. She worked with 3rd and 5th grade students in two public schools in New Haven. By considering her findings, Fisman suggested that consciously encouraging students to apply their environmental knowledge to their home environment may be an influential strategy to develop local environmental awareness.

Some of the countries began to give importance to focus on local-problem solving approach in environmental education. Brazil is one of those countries. Layrargues

(2000) said that Brazil's environmental education policy based on the resolution of real environmental problems. Educators can show real-life examples to students if they focus on the local situations related with environment. By this way, students become more desirable to take action to solve local problems in which they faced with in their daily life.

Connell, Fıen, Lee, Sykes and Yencken (1999) investigated environmental attitudes of young people in two Australian cities, Melbourne and Brisbane. The results of the study parallel to results of the related studies in literature. For instance, the young people in both cities mostly concerned about local environmental problems which are local pollution and urban development.

Duan and Fortner (2005) examined the Chinese college students' perceptions of local and global environmental problems in terms of their concerns (certainty, tangibility, complexity, significance, danger) and attitudes (personal knowledge, responsibility of human, influence on personal life and predicted future trends) (p.23). The results of the study showed that Chinese college students perceive local environmental issues more important and real than global ones. They were more concerned about the issues that are directly has an influence on their daily life and least concerned about the issues which are far away from their life. According to students, the most important issues are the ones that they can be directly sensed. In addition, by considering students' responses, it can be said that students are most knowledgeable about local environmental issues than global ones.

One can infer from related literature that, EE efforts to focus on local environmental issues to increase people's environmental awareness and help them acquire basic understanding of environmental problems more clearly. Related literature also showed that people mostly concern about the environmental issues that affect their daily lives. In addition, it was stressed that if people are directly influenced from negative impacts of environmental problems, they usually more willingly participate in environmental activities. Thus the content of the current study aims to determine Turkish pre-service teachers' perceptions about global and local

environmental problems to serve development of effective teacher education strategy for environmental education in Turkey.

3.5. Effect of Gender on the Perception of Local and Global Environmental Issues

There were lots of studies that focus on to determine effect of gender on perception of environment and environmental issues. The results of these studies were not consistent. Some of them found no gender differences between females and males in terms of their environmental attitudes (Eagles & Demare, 1999); some of them found a significant differences in favor of males (Hes-Quimbita and Pavel, 1996; cited by Yılmaz et. al. (2004)); and most of them found significant gender differences in favor of females (Tıkka et. al. 2000; Blocker & Eckberg 1997, Loughland et. al. 2003, Tuncer et. al. 2005[1,2] ,Ozden, 2008).

Tıkka, Kuıtunen & Tynys (2000) conducted a study to determine effect of gender on students' attitudes, activity levels and knowledge. The participants of the study came from different educational backgrounds. The results of their study revealed that female students had more positive attitudes toward nature and environment than males. They emphasized that female participants on their study showed more responsible behaviors toward environment in their daily actions. Females' positive attitude was related with their care of offspring. Researchers said that females more concerned about environment because clean and safe environment is a pre-condition for welfare and survival.

Blocker & Eckberg (1997) also conducted a research to find effect of gender on environmental concern and action. The results of their study parallel with Tikka et. al (2000). Females were more concerned about health and safety issues and more concerned about effects of pollution. But unlikely to Tıkka et. al (2000)'s view, they found that having children and child rearing did not have a significant impact on the environmental attitudes of females. It was also founded that females' greater

concern not translated into the action because they lack the knowledge or social status to become involved in environmental action.

In 1997, Bord and O'Connor also explored the reasons of gender differences in environmental concern. They asserted that the main reason of gender differences in environmental surveys is differences perceived vulnerability to risks from the environment rather than differences in ecological sensibilities. They stated that if surveys focus on to link risks to health and personal well-being with environmental issues, females' level of concern tend to be higher than males. They also found that when health-risk perceptions enter equations accounting for environmental concerns, gender effects disappear.

In 1998, Worsley & Skrzypiec conducted a research to explore environmental attitudes of senior secondary school students in South Australia. Totally 958 students participated in their study. The results of the study showed that females were mostly more concerned about environmental issues. But there were not a significant difference between females' and males' environmental optimism and environmental protection scores. Both males and females were mostly pessimistic about future of environment and they were mostly supported priority of environment over other issues such as economic growth but there were no statistically significant sex differences.

Eagles & Demare (1999) designed a study with 72 6^{th} grade students to explore factors that influencing children's ecologistic and moralistic attitudes toward environment. They also focused on the gender effect on students' attitudes. Results of the study showed that ecologistic and moralistic attitudes toward environment related with conversations about environment at home, watching nature films and reading about environment. By means of gender, they found no gender differences in ecologistic attitudes of students but for moralistic attitudes, girls showed higher scores than boys.

Loughland, Reid, Walker & Petocz (2003) also stated the effects of gender differences on students' conceptions of environment. They found that girls more had "relation" conception towards environment than males.

In Turkey, there are also some studies which examine the gender effect on students' and pre-service teachers' attitudes toward environmental issues. In 2004, Yılmaz, Boone & Andersen conducted a research to determine elementary and middle school Turkish students' views toward environmental issues and also they searched how their views differ by gender. They found that there were no significant gender differences in elementary school students but significant gender differences between middle school students. Female students in middle schools showed more environmental concern than male students.

Tuncer, Ertepınar, Tekkaya & Sungur (2005) explored effect of gender and school type on elementary and high school students' environmental attitudes. The results of the study showed that females were more aware of environmental problems, individual responsibility and national environmental problems and also they had more positive attitudes toward solving the problems.

In 2005, Tuncer, Sungur, Tekkaya & Ertepınar designed another study which aimed to determine young attitude on sustainable development. They found gender differences on the young attitude on sustainability. As mostly supported related literature girls were much aware of the relation between sustainability and its effects on their lives. Girls who participated in the study from ten different schools of different regions of Ankara were more aware of general concepts of environment, environmental degradation-sustainable use of natural resources-economical and industrial aspects of the environment. Researches of the study relate this result with more socialization of girls to relational view of life than boys. They also stated that "girls are more socialized to be more caring than boys and consequently display more care about environment" (p.192).

In 2006, Alp, Ertepınar, Tekkaya & Yılmaz investigated effect of gender on students' environmental knowledge and attitudes. They found no statistically significant gender difference on students' environmental knowledge but they found significant difference for students' behavioral intentions and environmentally responsible behaviors in favor of girls. Researchers noted that girls' more

environmentally sensitive attitudes may be explained with their experiences of more depressive moods than boys.

In 2008, Ozden investigated environmental awareness and attitudes of student teachers who study University of Adıyaman. He found that female pre-service teachers had higher awareness and individual responsibility toward environmental problems. In addition they had more positive attitudes towards solutions of environmental problems.

In the light of the results of the related literature, it can be said that gender is one of the main factors that had an influence on the people's attitudes, views and perceptions about environmental issues. Therefore, in this study, effects of gender on elementary education pre-service teachers' perceptions about global and local environmental issues were examined.

3.6. Effect of Major on the Perception of Local and Global Environmental Issues

Academic majors is one of the important factors that affecting environmental attitudes. Most of the studies reported that students majoring in economics, commerce, or business-related subjects were less concerned about environmental issues than students majoring biological or environmental sciences.(Hodgkinson & Innes, 2001; Tikka, Kuitunen, & Tynys, 2000; Sherburn & Devlin, 2004; McKnight, 1990 ,cited by Sherburn & Devlin, 2004)

McKnight (1990) conducted a study to determine effect of major on students' views about environment and technology. Two-hundred college students who study departments of environmental studies, business and engineering participated in his study. Results indicated that students from department of environmental studies had more pro-environmental and anti-technology views, on the other hand, engineering students had most pro-technology views and business students had more anti-environmental and anti- technology views. McKnight suggested that

communications about environmental and social impact of technology should be more stressed in all educational levels to promote more positive environmental perspective and action. In contrast to McKnight's study, the results of the study by Shetzer, Stackman & Moore (1991) revealed that business students had a strong pro-environment feelings and views. (cited by Sherburn and Devlin, 2004).

In 2000, Tıkka, Kuıtunen, Tynys searched the effects of educational background on students' attitudes, activity levels and knowledge about the environment. Results showed that, students who had educational background related with environment- for instance biology education- were more knowledgeable about environmental issues. These students had more positive attitudes toward environment and more participated in the environmental activities. But students who came from educational background related with economy or technology- for instance engineering or commercial training- had less knowledge about environment, less positive attitude toward environment and less participation on environmental activities. Researchers said that as experts of future who will plan the new technology and make decisions on investments, these negative attitudes of engineers and economists can be perceived as alarm bells.

Sherburn and Devlin (2004) investigated the relationships between academic major and environmental concern. Seventy undergraduates who study different departments-environmental sciences, economics, psychology, sociology, art history, film studies, biomedical ethics, chemistry, zoology- of a small liberal arts school participated in study. The majors were grouped under three headings which were environmental studies, economics and other majors. Participants were wanted to fill three different questionnaires which were Environment Concern Scale (EC), New Ecological Paradigm scale (NEP) and Environmental Preference Questionnaire (EPQ). The results of the study showed that students who studied department of environmental studies scored significantly more positively on all three measures. This finding showed that environmental studies students had greater concern for environment than students who study business-related majors. The results of the Sherburn and Devlin (2004)'s study also indicated that besides economics majors, psychology, psychology-related or sociology majors also had lower level of

environmental concern as well as economics majors students. In addition, results also showed that students from department of environmental studies gave more importance to natural properties of the campus than economics major students and other majors' students.

In 2001, Hodgkınson and Innes examined the differences in environmental attitudes and ecological beliefs among first year university students from different disciplines. Three hundred ninety-one students from an Australian university participated in the study. The results of the study showed that environmental and ecological beliefs varied according to majors that students studied. Students from departments of biology and environmental studies had higher attitudes and more positive beliefs toward environment than students from other disciplines. This result was parallel to related literature. Unlikely from Sherburn and Devlin (2004), Hodgkınson and Innes (2001) found that sociology students had higher attitudes and positive beliefs toward environment as well as biology and environmental sciences students. Parallel to findings of Sherburn and Devlin (2004) and McKnight (1990)'s studies, students from departments of commerce and computer studies had lowest attitudes toward environment and had least pro-environmental views. Students from department of law also showed lowest attitudes toward environment as well as students of commerce and computer studies departments.

In 2008, Ozden found that elementary education pre-service teachers had more positive attitudes toward environmental issues than mathematics and social studies pre-service teachers. He stated that because of elementary education pre-service teachers had more lessons about environmental issues and environment, their awareness and attitudes showed higher scores than mathematics and social sciences teachers.

CHAPTER 4

METHOD

This chapter of the thesis is comprised of three parts as; research design, sample, and instrumentation.

4.1. Research Design

The current study has a cross-sectional survey design. The information was collected from the pre-service teachers who study in departments of Elementary Science Education (ESE), Elementary Mathematics Education (EME), and Early Childhood Education (ECE) in Middle East Technical University.

The main target of the design was to determine pre-service teachers' perceptions toward global and local environmental issues. To reach this target, following steps were applied:

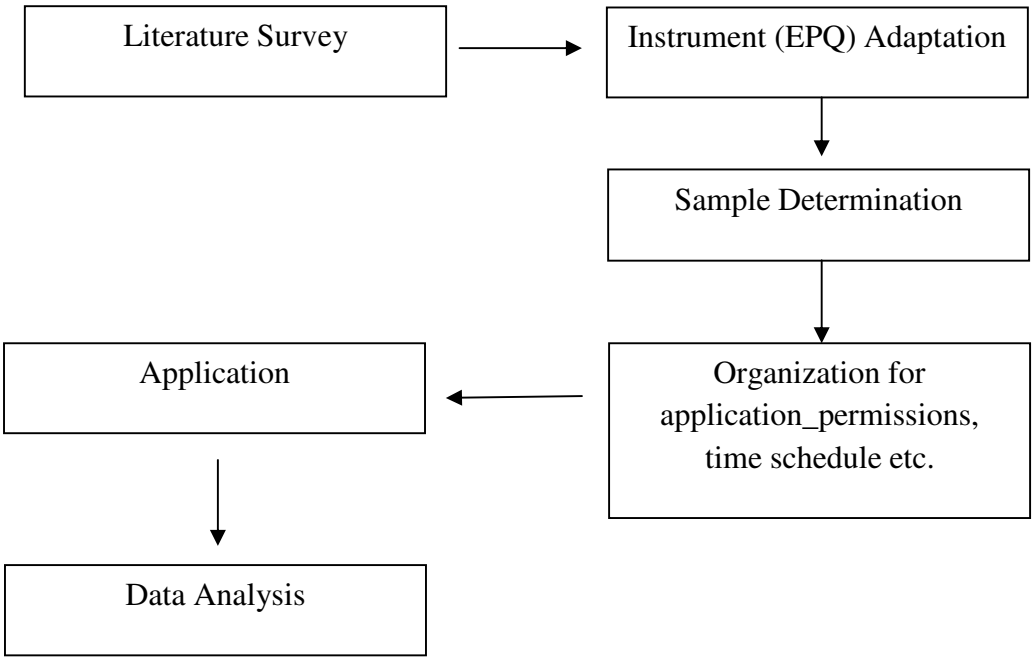


Figure 4.1 Steps of Study

Moreover, correlational research design was used to examine whether there is a relationship between concerns and attitudes of the pre-service teachers toward global and local environmental issues.

4.2. Sample

The target population of this study is all Faculty of Elementary Education students – pre-service teachers- in Turkey and accessible population is all elementary education pre-service teachers (213 female and 55 male) in the Middle East Technical University. Participants of the study were Elementary Science Education students from classes 1- to- 4; Elementary Mathematics Education students from classes 1-to-4 and Early Childhood Education students from classes 1-to-4.

Number of the students for each group has been presented in the Table 4.1:

Table 4.1 Number of Students for Each Group

Department	Class	Number of students					
		Female		Male		Total	
		No	**%**	**No**	**%**	**No**	**%**
ESE	**1**	21	78	6	22	27	100
	2	14	87.5	2	12.5	16	100
	3	19	86	3	14	22	100
	4	19	66.5	10	34.5	29	100
	Total	**73**	**78**	**21**	**22**	**94**	**100**
EME	**1**	5	42	7	58	12	100
	2	16	76	5	24	21	100
	3	20	61	13	39	33	100
	4	22	73	8	27	30	100
	Total	**63**	**66**	**33**	**34**	**96**	**100**
ECE	**1**	18	100	-	0	18	100
	2	20	100	-	0	20	100
	3	17	94	1	6	18	100
	4	22	100	-	0	22	100
	Total	77	99	1	1	78	100
	TOTAL	**213**	**79.5**	**55**	**20.5**	**268**	**100**

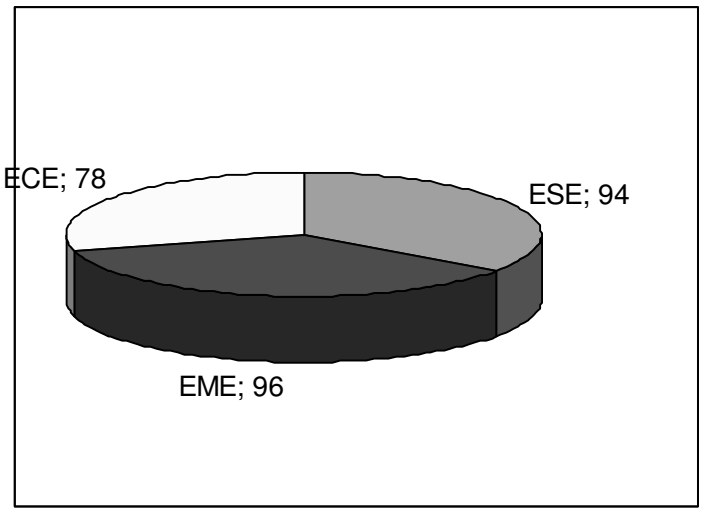


Figure 4.2 Characteristics of the participants- Number of students

As was shown Table 4.1- ,among 268 elementary education pre-service teachers participated in the study- 79.5 % of them are female (213) and 20.5 % of them are male (55). The number of 4th class students was 81 (30 %_ of all); 36 percent of them from the department of elementary science education, 37 % from the department of elementary mathematics education and 27 % from the department of early childhood education. Totally, seventy-three 3rd class students participated in study, they were 27 % of all sample. 30 % of the 3rd class students study department of elementary science education, 45 % of them study department of elementary mathematics education and 25 % of them study department of early childhood education. The number of the 1st and 2nd class pre-service teachers who participated in the study was same, it was 57 for both (21.5 %_ of all sample). 28 percent of 2nd class pre-service teachers from the department of elementary science education, 37 % from the department of elementary mathematics education and 35 % from the department of early childhood education; this ratio for 1st class students were 47 %, 21 % and 32 % respectively.

As far as the gender is considered, on the other hand, percentage of the male pre-service teachers participated the study is lower than those for the females for ESE, EME and ECE (Figure 4.2). The difference is clearly evident especially for the pre-service teachers for Early Childhood Education; the percent of females in this department is 99.

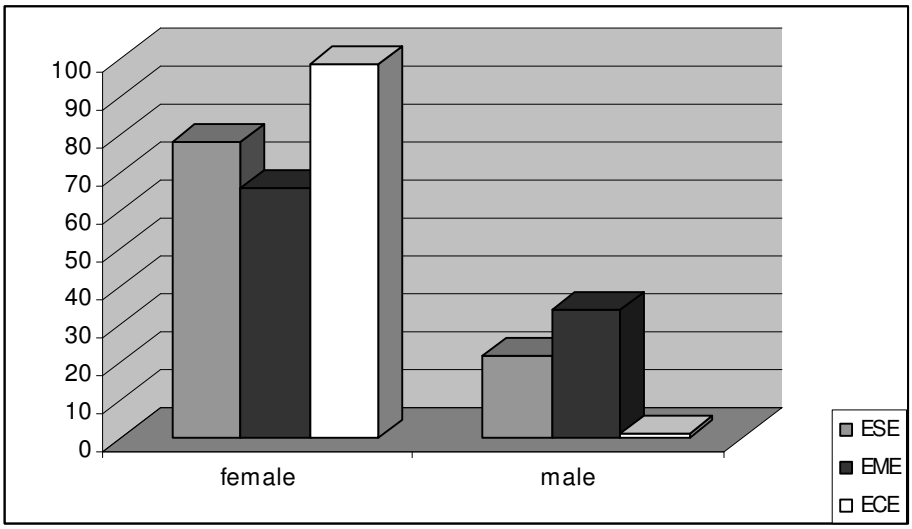


Figure 4.3 Characteristics of the participants- Gender

4.3. Instrumentation

Environmental Perception Questionnaire (EPQ) (Appendix 1) used in this study is designed to examine pre-service teachers' perceptions about global and local environmental issues. The questionnaire design was realized based on the one which was used by Duan and Fortner (2005). There are nine items in the questionnaire and each item seeks answers for 9 global and 5 local environmental issues. Nine- items, on the other hand, separated into two dimensions as Dimension 1; concerns (5 items) and Dimension 2; attitudes (4 items). The concerns dimension is designed to test participants' concern on the certainty, tangibility, complexity, significance and danger related to environmental issues. Attitudes, on the other hand, includes participants' evaluation of their own knowledge about each environmental issue, their perceptions about the importance of human activities as the causes for environmental problems, their concern about the effect of change of environmental problems on their life styles and their perceptions about the state of

the environmental problems in 20 years. The global issues tested under both dimensions are the same as original questionnaire and are; (1) climate change, (2) water pollution, (3) water scarcity, (4) deforestation, (5) desertification, (6) loss of biodiversity, (7) ozone depletion, (8) waste disposal and (9) energy production and usage. The local issues, on the other hand,-are adapted according to the local conditions in Turkey. The issues kept same as in the original questionnaire are; coastal pollution, air pollution in industrial cities, soil erosion and loss of farmland. The additions, on the other hand, were based on the major issues in Turkey declared by the Ministry of Environment and Forestry of Turkey (MoEF,2004) and the issue added is urbanization. The items excluded from the original questionnaire were sandstorms and white pollution. Thus, the local issues of the questionnaire are, (1) coastal pollution, (2) air pollution in industrial cities, (3) soil erosion, (4) loss of farmland, (5) urbanization. The dimensions for concerns and attitudes of environmental issues, on the other hand, were kept same as the original questionnaire.

The questionnaire consists of three parts. First part is designed to get demographic information about the participants (environmental views, gender, age, class, department, voluntary activities related with environmental topics). Second part is designed to determine participants' perception- about the causes, processes or consequences of each environmental issue in terms of their certainty about the presence of problems to natural environment and human beings; complexity of the issues -what extent participants consider the issues to involve various interacting factors in processes and consequences; tangibility of the issues- what extent participants see, touch, smell or feel in any other way the causes, processes or consequences of the issues; and harmful effects of problems - how serious participants consider the causes, processes and consequences of the problem. Third part is designed to examine participants' self evaluation of their knowledge about the environmental issues, their views about importance of human activities to cause environmental problems and impacts of these problems on their life. Dimensions of the questionnaire (Appendix A) and related targets are presented below:

The 6-point scale was used to get responses for each issue (ex: 1=very uncertain, 2=uncertain, 3= undecided, 4= certain, 5= very certain, 6= I don't know

Table 4.2 The questionnaire

Dimension1: Concern

Target: To determine how participants evaluate the causes, processes or consequences of each environmental issue in terms of their certainty about the existence of problems, complexity, tangibility, significance and harmful effects of problems.

Concern about;

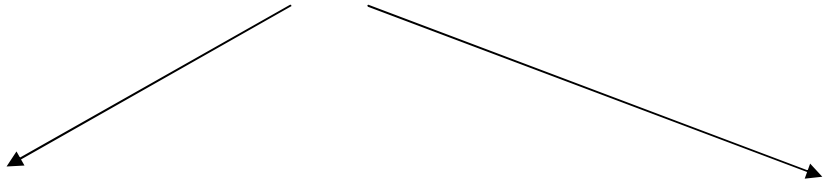
Certainty

Tangibility

Complexity

Significance

Danger



Related to local environmental issues:

Local Issues

(1) Coastal pollution

(2) Air pollution in industrial cities

(3) Soil erosion

(4) Loss of farmland

Related to global environmental issues:

Global Issues

(1) Climate change

(2) Water Pollution

(3) Water scarcity

(4) Deforestation

(5) Desertification

(6) Loss of Biodiversity

(7) Ozone Depletion

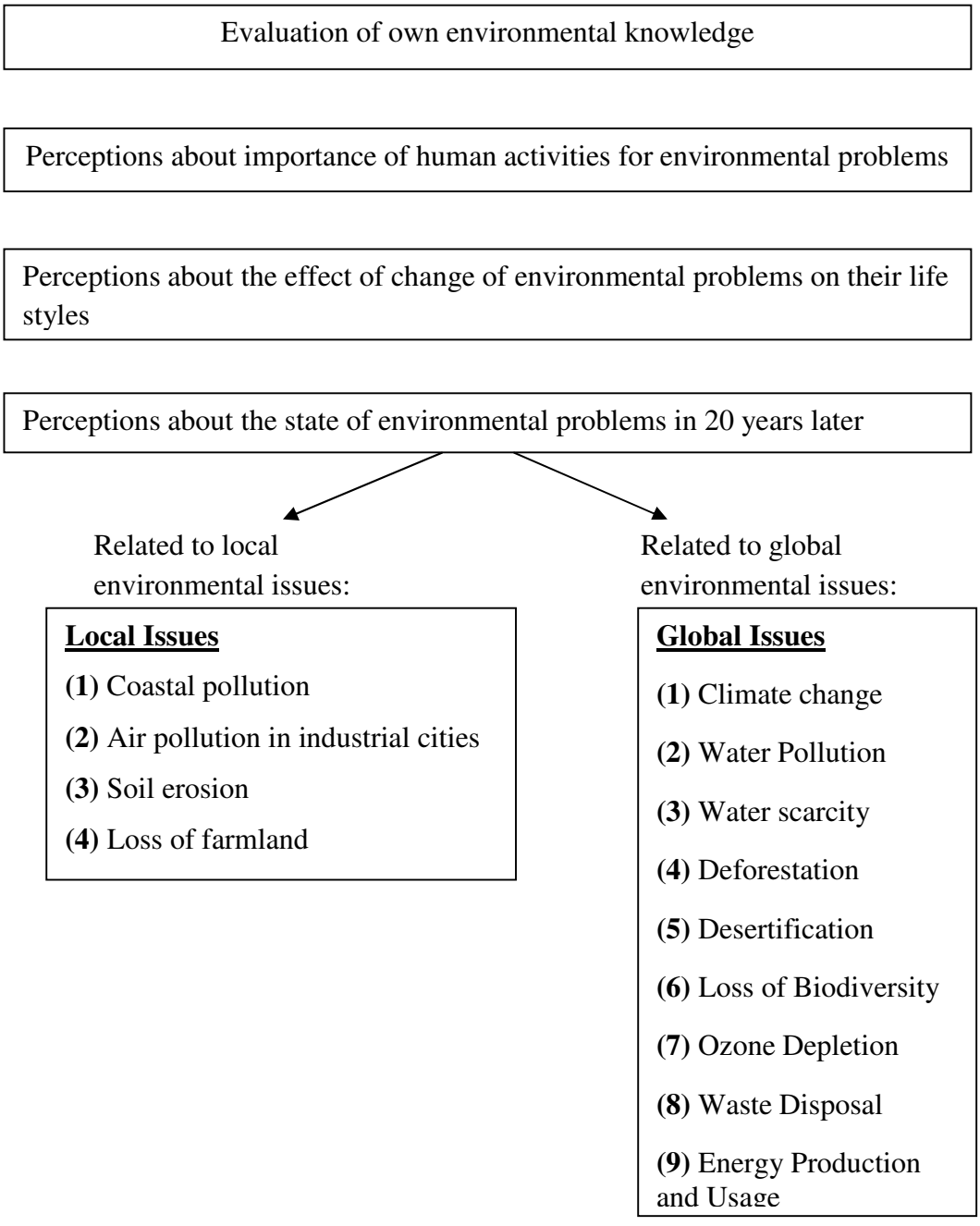
(8) Waste Disposal

(9) Energy Production and Usage

(Table 4.2 Continued)

Dimension 2: Attitudes

Target: To examine participants' self evaluation of their knowledge about each environmental issue, their views about importance of human activities to cause these environmental problems, influences of these problems on their life and predicted trend about each problem.



The validity of the translated and adapted version of the questionnaire was assured by reviews of experts in science education. Three different experts' opinion was taken to determine whether the items in each dimension are relevant to the goals of the questionnaire. Then revisions were made based on their comments and opinions.

The internal consistency of the scale was assessed via a pilot study. Cronbach alpha internal consistency for each dimension of the scale were found as follows: for issue certainty r= .911; for issue complexity r= .964; for issue tangibility r= .903; for issue danger r= .921 and for issue significance r= .979; for evaluation of own knowledge r= .939; for perception of human impact r= .916; for perception of life change r= .927 and for predicted trend in 20 years r=. 936. Cronbach alpha internal consistency for the overall test was found to be r= .959.

4.4. Procedural Details

Firstly, departmental schedules of each class was taken and obligatory courses for each department which students have to take in that semester was determined to reach 1st year, 2nd year, 3rd year and 4th year students together for each department. After getting permission from the instructors of each class in the departments of science education, mathematics education and early childhood education, classes were visited to apply EPQ. In each class, the purpose of the questionnaire and the procedure to complete it was explained before distributing the EPQ. After this short explanation, students were asked to complete the questionnaire on their own. The participation of the study was based on the willingness of students. It took about 15-20 minutes for students to complete the EPQ.

CHAPTER 5

RESULTS

In this chapter, results of the study are presented in two sections comprising of; results of descriptive statistics, and results of inferential statistics. In the first part, each dimension of the EPQ were evaluated by means of frequency distributions and in the second part effect of gender and major on pre-service teachers' perceptions toward local and global environmental issues and relationship between perceptions of pre-service teachers' local and global environmental issues were examined.

5.1. Pre-service Teachers' Self Assessment about Their Concern and Knowledge

In the beginning of the survey, students were asked three questions to determine their general view of environment and environmental problems. Related results and frequency distributions are presented below:

Responses related with the pre-service teachers' concern about environmental problems revealed that 58.6 % of participants are not concerned about environmental problems at all, 23.5 % of them are not very much concerned about environmental problems and only 17.2 % of participants concerned about environmental problems in a great deal. The pre-service teachers' responses are presented Figure 5.1 below.

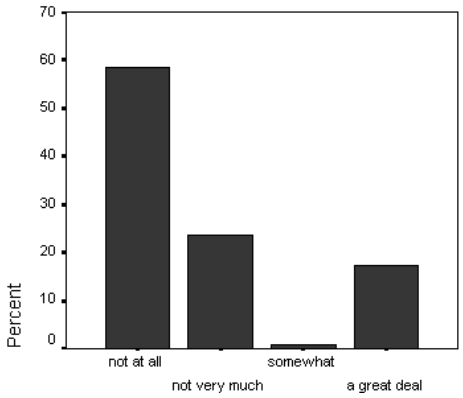


Figure 5.1 Pre-service teachers' self evaluation about their environmental concern

Majority of the pre-service teachers (86.9 %) of this study viewed environmental problems as one of the 2 or 3 most important problems that people currently face and 13.1 % of them viewed environment as an important problem but they thought that there are other more important problems (Figure 5.2).

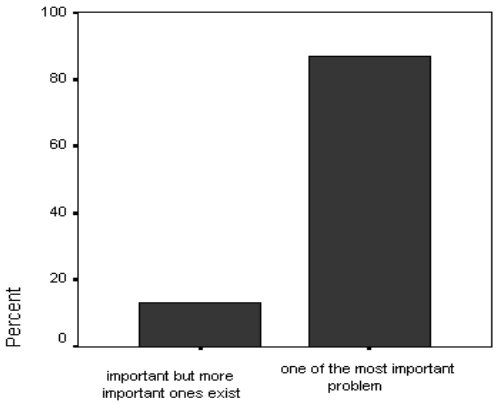


Figure 5.2 Pre-service teachers' views about environment as a problem

Moreover, related to participants' self assessment about their level of knowledge on environmental issues, more than half of the participants (64.6 %) thought that they had a fair amount of knowledge on environmental issues and problems. 29.1 % of them evaluated their level of environmental knowledge as only a little amount. The Figure 5.3 showed how pre-service teachers evaluate their own knowledge on environmental issues and problems.

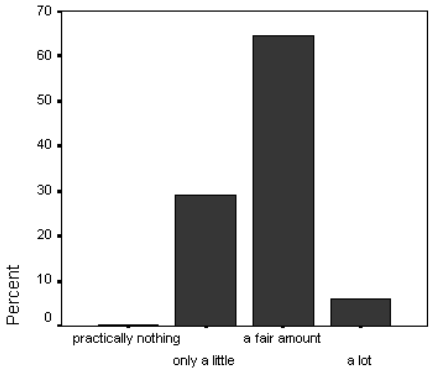


Figure 5.3 Pre-service teachers' self evaluation of their environmental knowledge

5.2. Descriptive Statistics

Pre-service elementary education teachers' concerns and attitudes were analyzed by means of descriptive statistics.

5.2.1. Pre-Service Teacher's Concerns about Global versus Local Environmental Issues

This part of the EPQ comprised of 5 items to determine how participants evaluate the causes, processes or consequences of each environmental issue in terms of their certainty about the existence of problems, complexity, tangibility, significance and harmful effects of problems. Each item includes 14 different environmental problems which are climate change, water pollution, water scarcity, deforestation, desertification, loss of biodiversity, ozone depletion, waste disposal, energy production and usage, coastal pollution, air pollution in industrial cities, soil erosion, loss of farmland, and urbanization. The items and participants responses of environmental concern dimension are shown below.

Item 1: What do you think about the certainty of the issues below really does present a problem to the natural environment or to human beings?

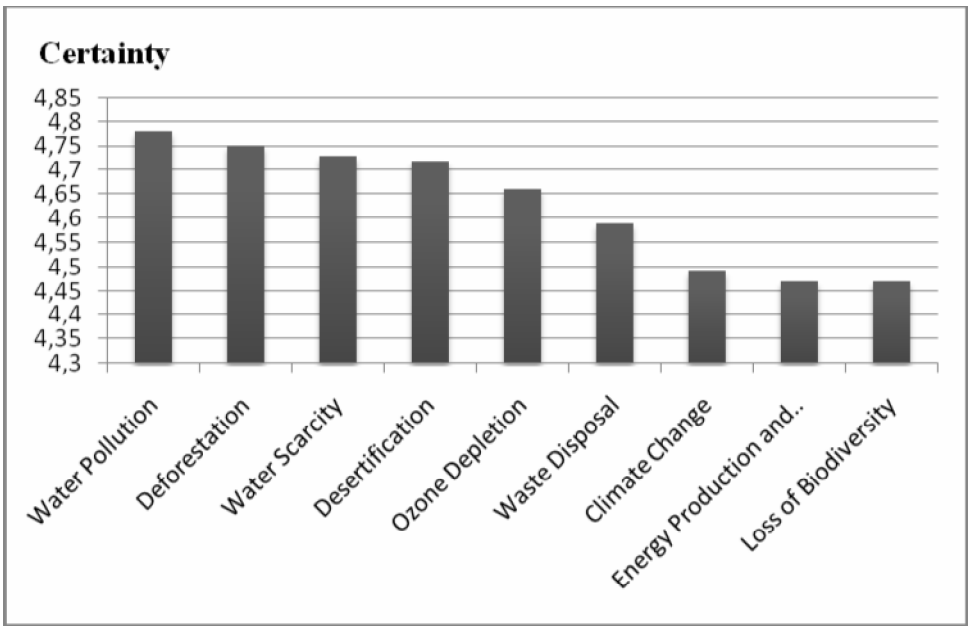


Figure 5.4 Issue vs. mean for certainty level of global issues

As it was shown in Figure 5.4, pre-service teachers were mostly very certain about that water pollution (*M*=4.78), deforestation (*M*=4.75) and water scarcity (*M*=4.73) presented problem to the natural environment or to human beings.

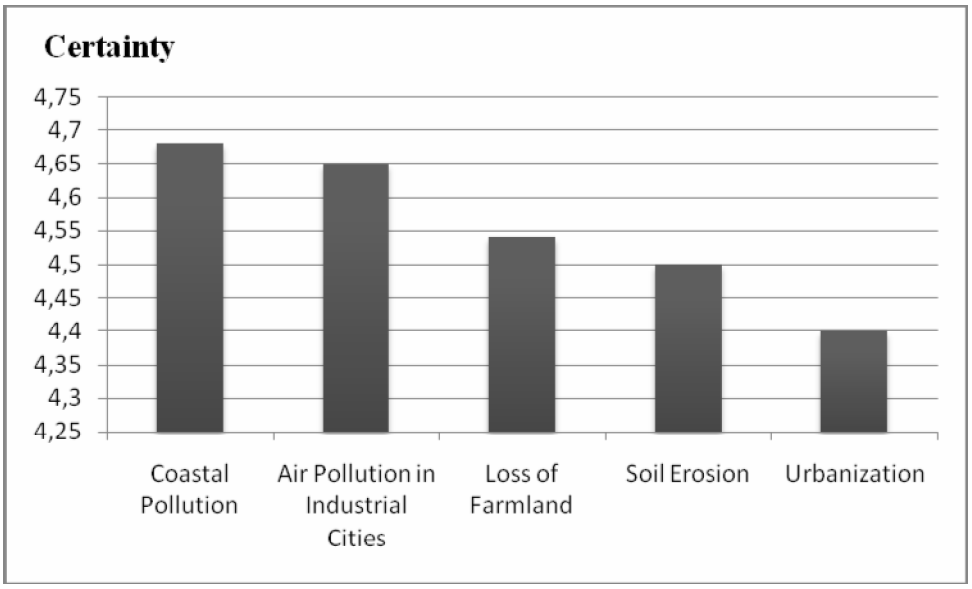


Figure 5.5 Issue vs. mean for certainty level of local issues

Pre-service teachers were mostly very certain about the presence local environmental issues that presented a problem for natural environment or human beings were coastal pollution (*M*=4.68), air pollution in industrial cities (*M*=4.65) and loss of farmland (*M*=4.54) (Figure 5.5).

Item 2:

How complicated is the each issue below, that is, to what extend do you consider the problem to involve various interacting factors in processes or consequences?

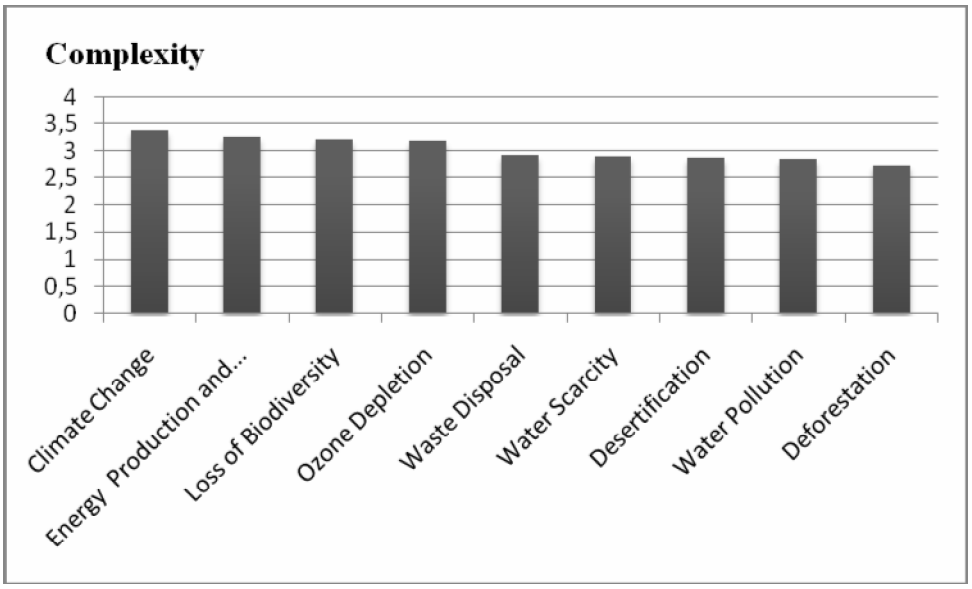


Figure 5.6 Issue vs. mean for complexity level of global issues

Climate change (*M*=3.37) was chosen as the most complex global environmental issue for the participants of the study. Pre-service teachers denoted their views as "undecided" for other global environmental issues (Figure 5.6).

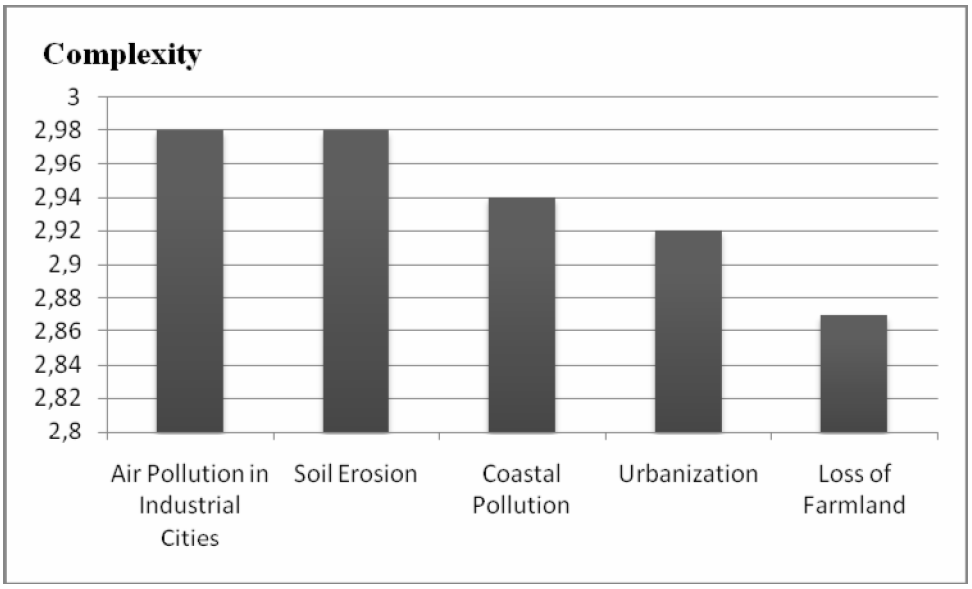


Figure 5.7 Issue vs. mean for complexity level of local issues

Pre-service teachers emphasized their views about complexity of the local environmental issues as "undecided". Issues of air pollution in industrial cities and soil erosion gained highest mean score (*M*=2.98) (Figure 5.7).

Item 3:

To what extend can you see, touch, smell or feel in any other way the causes, processes or consequences of the problem?

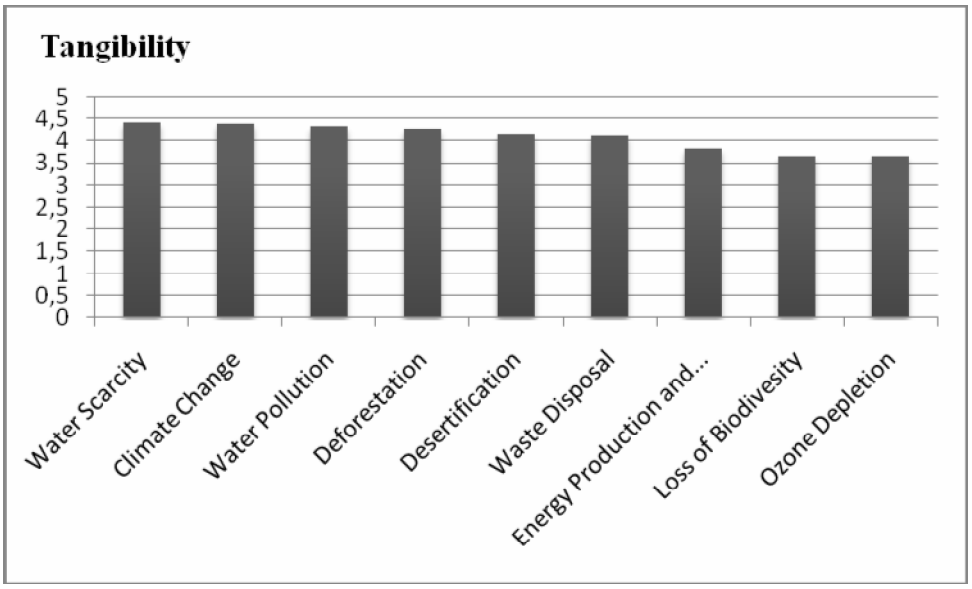


Figure 5.8 Issue vs. mean for tangibility level of global issues

The global issues that were found very tangible by pre-service teachers were water scarcity (*M*=4.40), climate change (*M*=4.38), water pollution (*M*=4.31) and deforestation (*M*=4.26) (Figure 5.8).

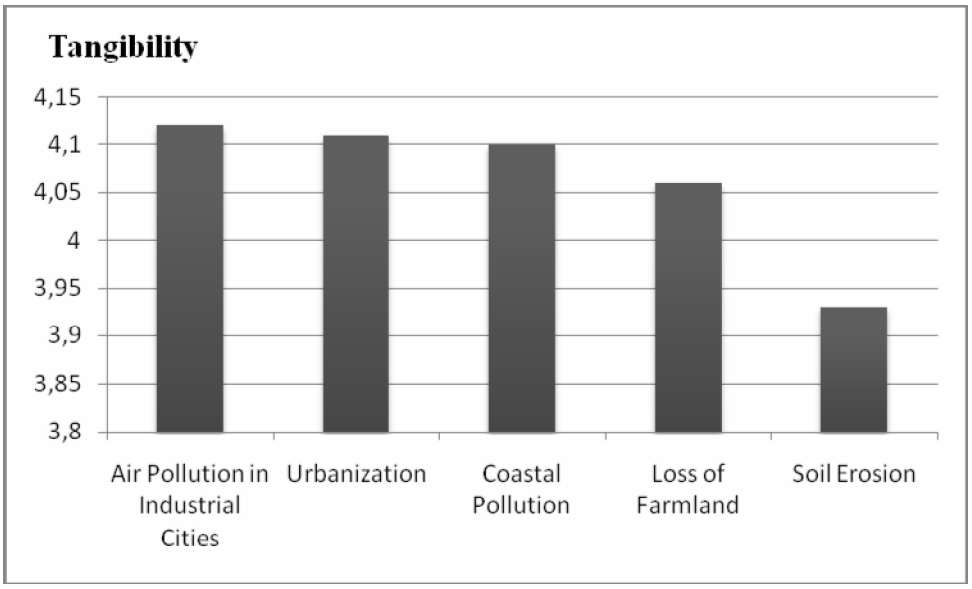


Figure 5.9 Issue vs. mean for tangibility level of local issues

All of the local environmental issues were found tangible by pre-service teachers. The most tangible ones were air pollution in industrial cities (*M*=4.12), urbanization (*M*=4.11) and coastal pollution (*M*=4.10) (Figure 5.9).

Item 4:

How serious do you consider the causes, processes, or consequences of the problem to be?

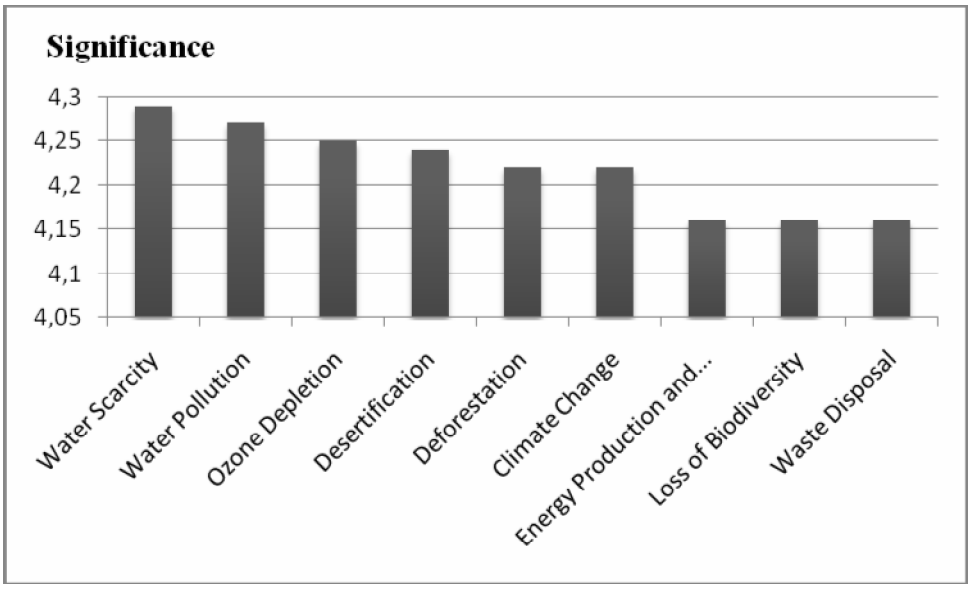


Figure 5.10 Issue vs. mean for significance level of global issues

The most significant global environmental problem for the pre-service teachers were water scarcity (*M*=4.29), water pollution (*M*=4.27) and ozone depletion (*M*=4.25) (Figure 5.10).

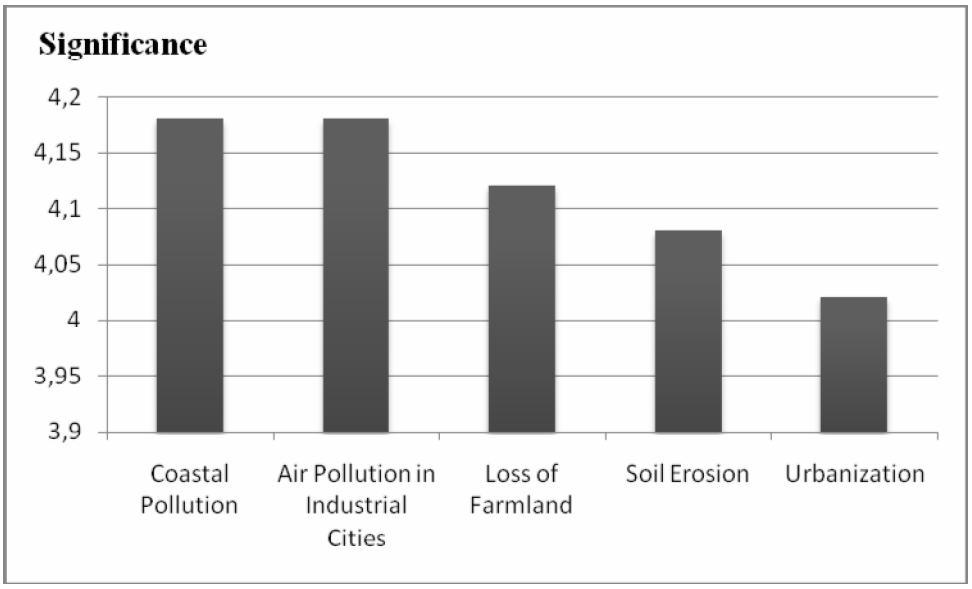


Figure 5.11 Issue vs. mean for significance level of local issues

Coastal pollution (*M*=4.18) and air pollution in industrial cities (*M*=4.18) were perceived as most significant local environmental issues by pre-service elementary education teachers. Urbanization (*M*=4.02) was least significant local environmental issue for the participants of the study (Figure 5.11).

Item 5:

To what extend do you think the problem is harmful to the human and the natural environment?

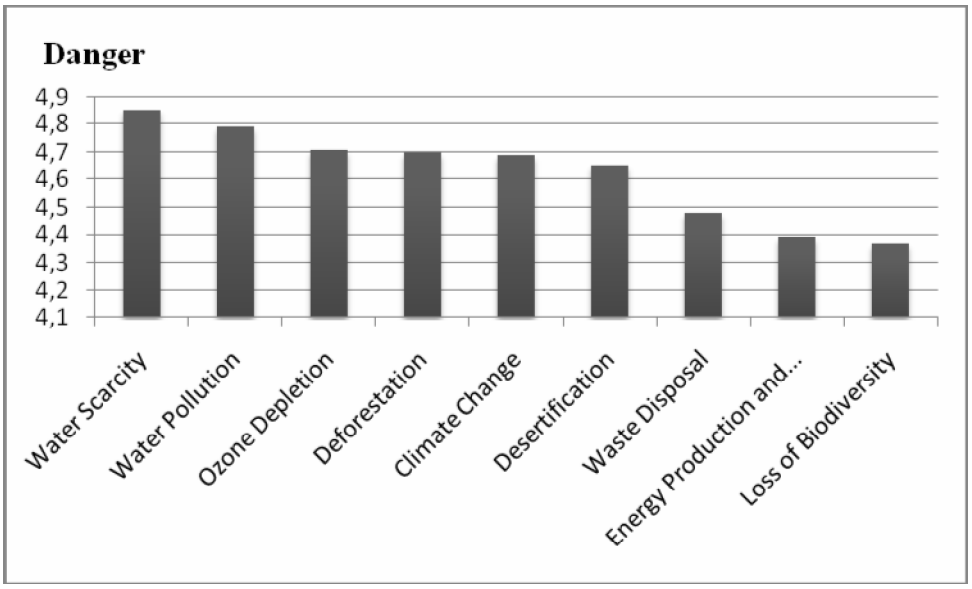


Figure 5.12 Issue vs. mean for danger level of global issues

The most dangerous first three global environmental problems for the elementary education pre-service teachers were water scarcity (*M*=4.85), water pollution (*M*=4.79) and deforestation (*M*=4.70) (Figure 5.12).

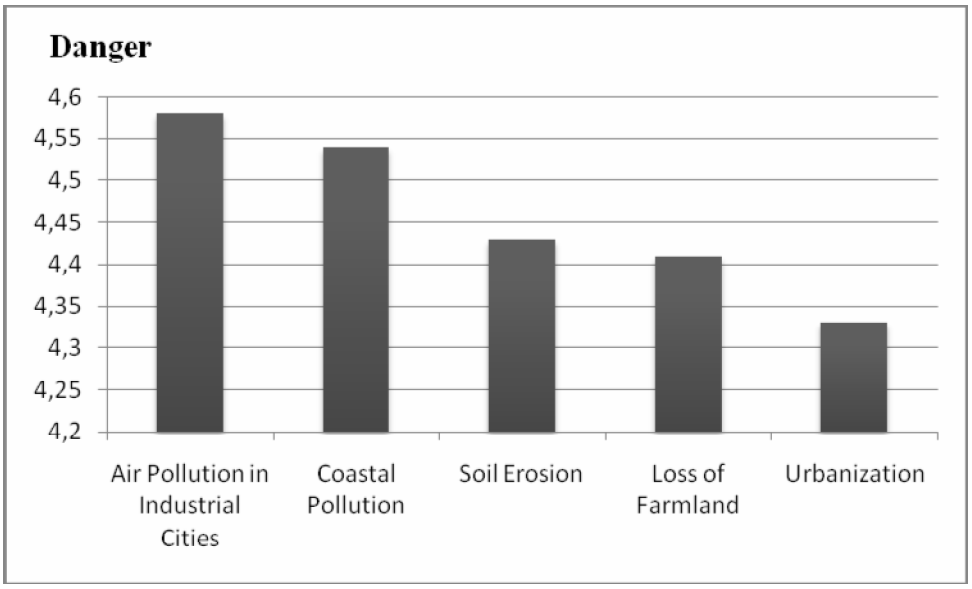


Figure 5.13 Issue vs. mean for danger level of local issues

The most dangerous first three local environmental problems for the elementary education pre-service teachers were air pollution in industrial cities (*M*=4.58), coastal pollution (*M*=4.54) and soil erosion (*M*=4.43). Urbanization was perceived as least dangerous environmental problem between other local environmental issues (Figure 5.13).

Table 5.1 Summary of the pre-service teachers' concerns about global and local environmental issues

Concerns	Certainty		Complexity		Tangibility		Significance		Danger	
	Most Certain	**Least Certain**	**Most Complex**	**Least Complex**	**Most Tangible**	**Least Tangible**	**Most Significant**	**Least Significant**	**Most Dangerous**	**Least Dangerous**
For global issues	Water pollution	Energy production & usage Loss of biodiversity	Climate Change	Deforestation	Water Scarcity	Loss of biodiversity Ozone Depletion	Water Scarcity	Energy production & usage Loss of biodiversity Waste Disposal	Water Scarcity	Energy production & usage
For local issues	Coastal pollution	Urbanization	Air Pollution in Industrial Cities Soil Erosion	Loss of Farmland	Air Pollution in Industrial Cities	Soil Erosion	Coastal Pollution Air Pollution in Industrial Cities	Urbanization	Air Pollution in Industrial Cities	Urbanization

As it was shown in Table 5.1, water scarcity was chosen as most tangible (*M*=4.40), significant (*M*=4.29) and dangerous (*M*=4.85) environmental issue by elementary education pre-service teachers. On the other hand, loss of biodiversity was determined as least certain (*M*=4.47), tangible (*M*=3.65), significant (*M*=4.16) and dangerous (*M*=4.37) global environmental problem. By means of local environmental problems; air pollution in industrial cities was marked as most complex (*M*=2.98), tangible (*M*=4.12), significant (*M*=4.18) and dangerous (*M*=4.58) environmental issue for Turkey. For local environmental issues of Turkey, urbanization was seen as least certain (*M*=4.40), significant (*M*=4.02) and dangerous (*M*=4.33) environmental issue.

5.2.2. Pre-Service Teacher's Attitudes toward Global versus Local Environmental Issues

Attitudes part of the EPQ comprised of 4 items including participants' evaluation of their own knowledge about each environmental issue, their perceptions about the importance of human activities as the causes for environmental problems, their concern about the effect of change of environmental problems on their life styles and their perceptions about the state of the environmental problems in 20 years. Each item includes 14 different environmental problems which are same as the concern part of the EPQ.

Item 1:

How do you evaluate your knowledge about the environmental issue?

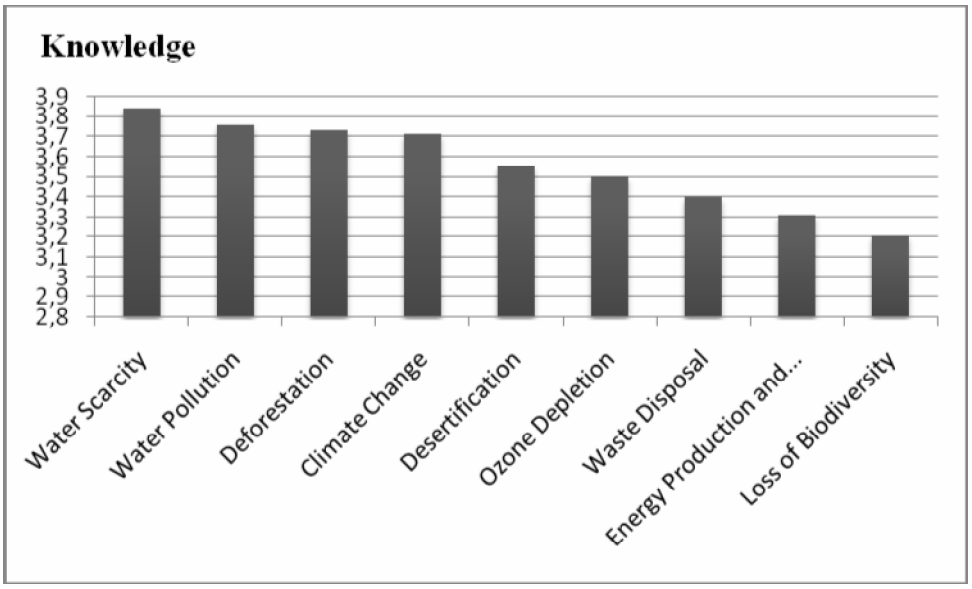


Figure 5.14 Issue vs. mean for reported knowledge of global issues

Pre-service teachers claimed that they mostly knowledgeable about the global environmental issue of water scarcity (*M*=3.84), secondly about the water pollution (*M*=3.76) and thirdly about deforestation (*M*=3.73). Participants of the study noted that they were least knowledgeable about the issues of loss of biodiversity (*M*=3.21) (Figure 5.14).

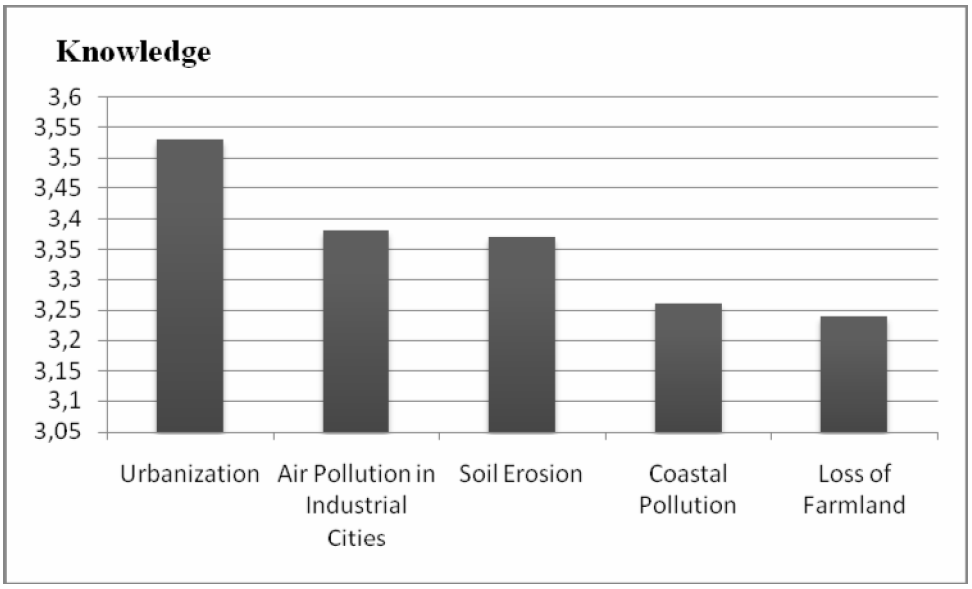


Figure 5.15 Issue vs. mean for reported knowledge of local issues

By means of local environmental issues of Turkey, elementary education pre-service teachers evaluated their knowledge as most knowledgeable about the issue of urbanization (*M*=3.53), secondly about the issue of air pollution in industrial cities (*M*=3.38) and thirdly about the issue of soil erosion (*M*=3.37). They found themselves least knowledgeable about the issue of loss of farmland (*M*=3.24) (Figure 5.15).

Item 2:

How important are human activities in causing the environmental problems?

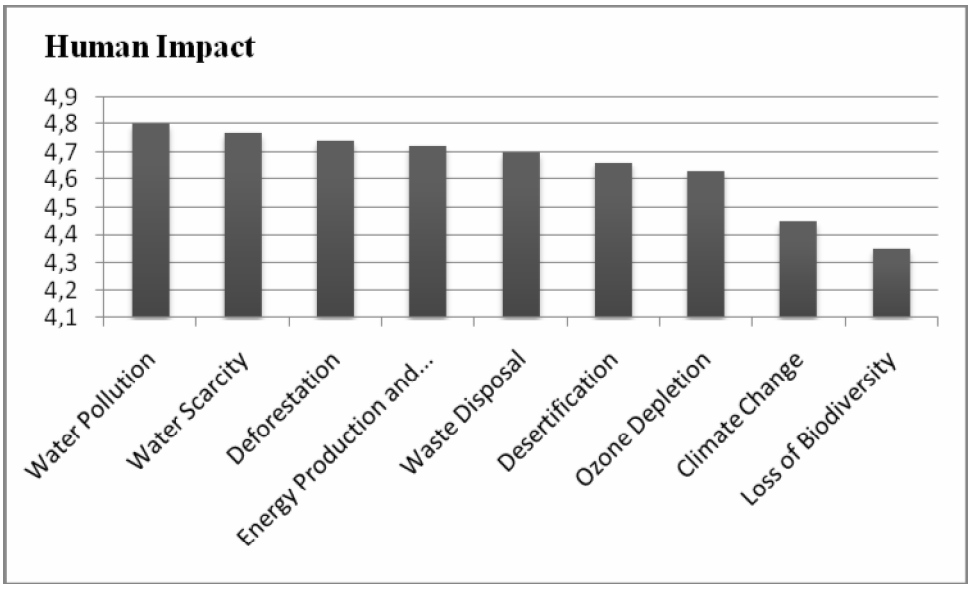


Figure 5.16 Issue vs. mean for perception of human impact for global issues

Elementary education pre-service teachers thought that human's destructive activities toward environment mostly caused the environmental problem of water pollution (*M*=4.80), then water scarcity (*M*=4.77) and thirdly deforestation (*M*=4.74). Loss of biodiversity (*M*=4.35) was perceived as an environmental problem in which human has least effect (Figure 5.16).

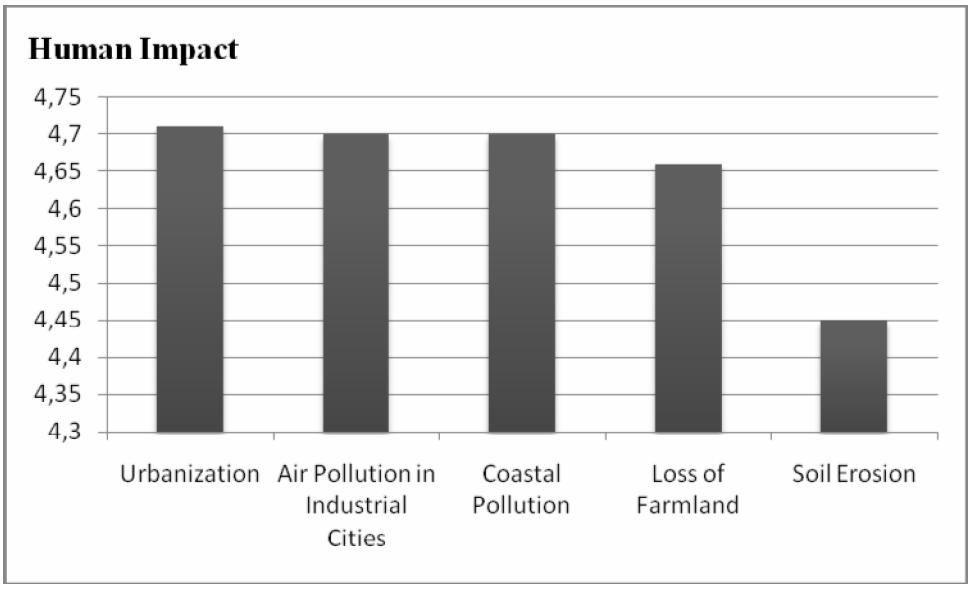


Figure 5.17 Issue vs. mean for perception of human impact for local issues

As it was shown in Figure 5.17, pre-service teachers perceived human as a main cause of local environmental problem of urbanization (*M*=4.71). The human effect as a cause for coastal pollution and air pollution in industrial cities were perceived in same level which was (*M*=4.70). Soil erosion in Turkey (*M*=4.45) was perceived as a local environmental problem in which human has least effect.

Item 3:

To what extent are you concerned that the environmental problem would change your life?

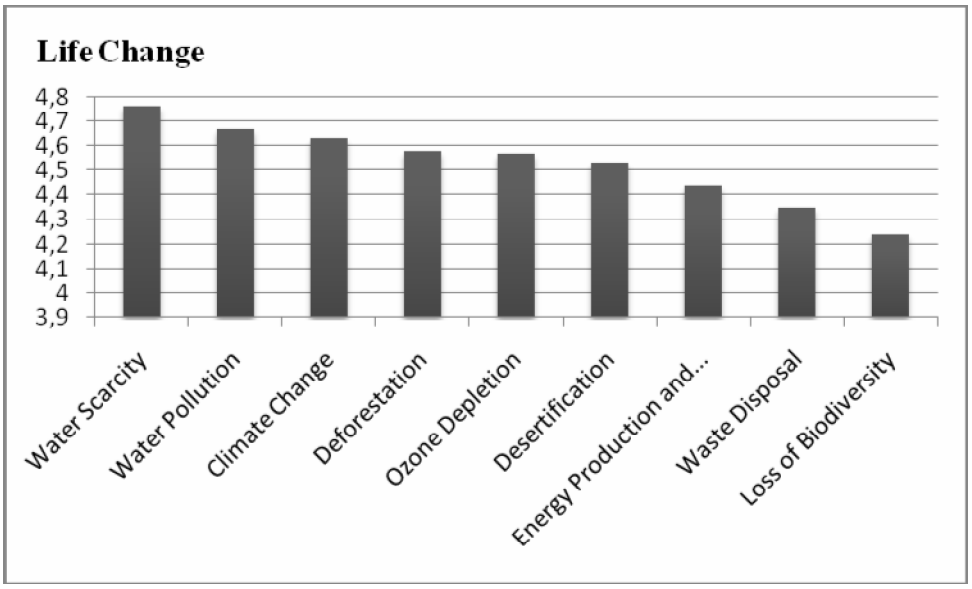


Figure 5.18 Issue vs. mean for concern about life change for global issues

Elementary education pre-service teachers mostly concerned about the effect of water scarcity (*M*=4.76), water pollution (*M*=4.67) and climate change (*M*=4.63) changed their life-styles. They least concerned about the effect of loss of biodiversity (*M*=4.24) changed their life-styles (Figure 5.18).

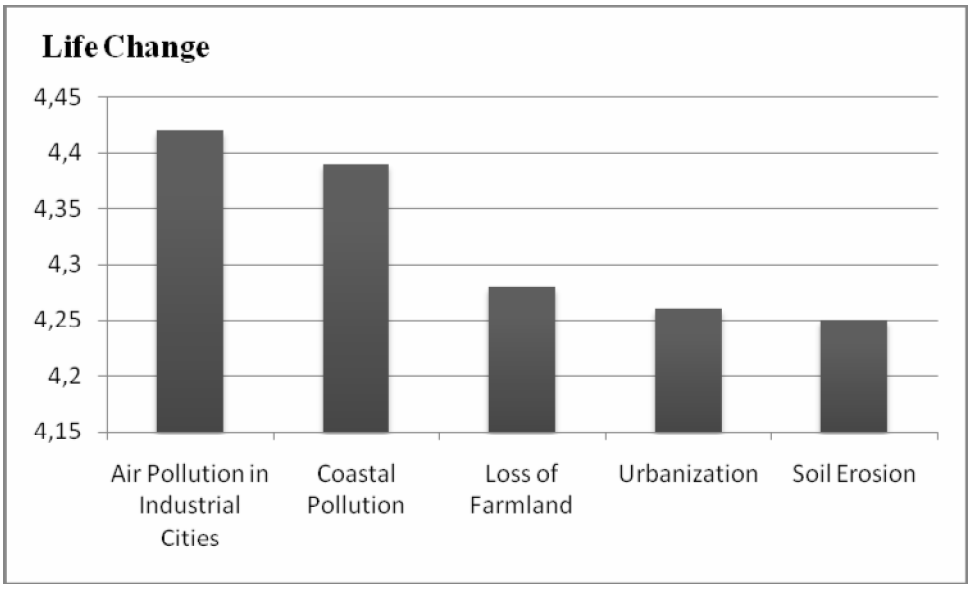


Figure 5.19 Issue vs. mean for concern about life change for local issues

In terms of local environmental issues of Turkey, elementary education pre-service teachers mostly concerned about the effect of air pollution in industrial cities (*M*=4.42), coastal pollution (*M*=4.39) and loss of farmland (*M*=4.28) changed their life-styles. They least concerned about the effect of soil erosion (*M*=4.25) changed their life-styles (Figure 5.19).

Item 4:

How will the environmental problem be 20 years from now?

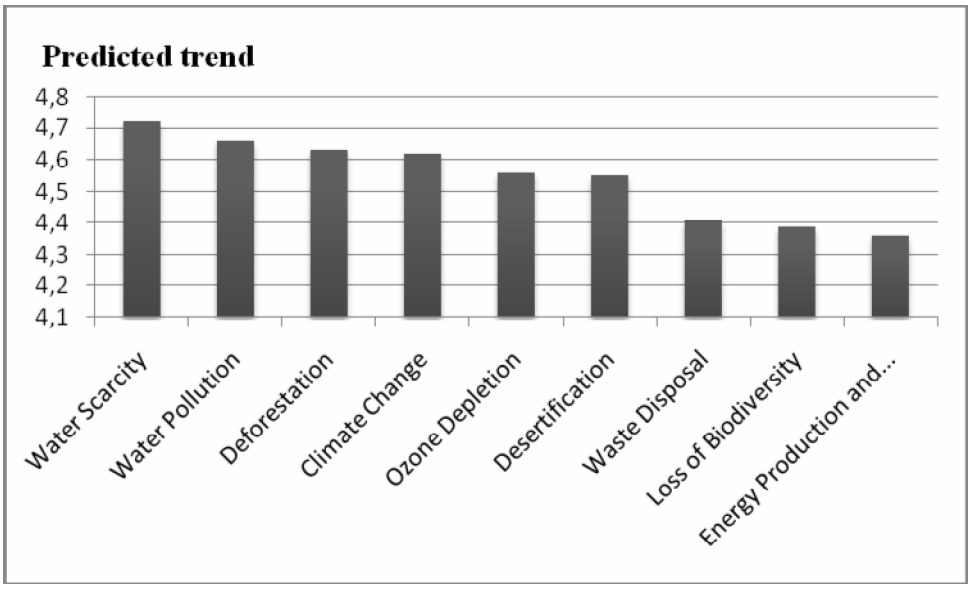


Figure 5.20 Issue vs. mean for predicted trend for global issues

As was shown Figure 5.20, elementary education pre-service teachers thought that all of the global environmental problems become worse in 20 years but the first three of the problems that become worse in 20 years were chosen as; water scarcity (*M*=4.72), water pollution (*M*=4.66) and deforestation (*M*=4.63).

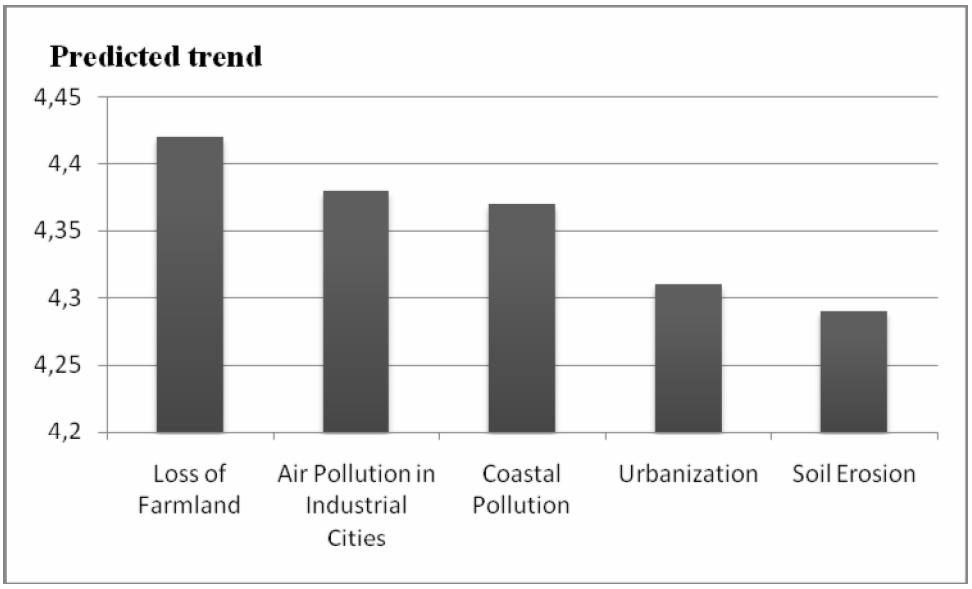


Figure 5.21 Issue vs. mean for predicted trend for local issues

As was shown Figure 5.21, elementary education pre-service teachers thought in a similar way that all of the local environmental problems become worse in 20 years. First three of the problems that become worse in 20 years were chosen as; loss of farmland (*M*=4.42), air pollution in industrial cities (*M*=4.38) and coastal pollution (*M*=4.37).

Table 5.2 Summary of the pre-service teachers' attitudes toward global and local environmental issues

Attitudes	Evaluation of own environmental knowledge		Perceptions about importance of human activities for environmental problems		Perceptions about the effect of change of environmental problems on their life styles		Perceptions about the state of environmental problems in 20 years later	
	Very knowledgeable	**Least knowledgeable**	**Very important**	**Least important**	**Very concerned**	**Least Concerned**	**Worse**	**Not worse**
For global issues	Water Scarcity	Loss of Biodiversity	Water Pollution	Loss of Biodiversity	Water Scarcity	Loss of Biodiversity	Water Scarcity	Energy Production and Usage
For local issues	Urbanization	Loss of Farmland	Urbanization	Soil Erosion	Air Pollution in Industrial Cities	Soil Erosion	Air Pollution in Industrial Cities	Soil Erosion

As it was shown in Table 5.2, by means of global issues, elementary education pre-service teachers found themselves most knowledgeable about the issue of water scarcity (*M*=3.84) and least knowledgeable about the issue of loss of biodiversity (*M*=3.21). They were very concerned about the changing effect of water scarcity (*M*=4.76) to their life styles and least concerned about the effect of loss of biodiversity (*M*=4.24). They marked that state of water scarcity as a global environmental problem will become worse (*M*=4.72) in next 20 years. In addition, pre-service teachers stated that human activities least important cause for the problem of loss of biodiversity (*M*=4.35).

For local environmental issues of Turkey, per-service teachers thought that human activities mostly caused the problem of urbanization (*M*=4.71). According to results of their evaluation of own knowledge, they found themselves most knowledgeable about the local environmental issue of urbanization (*M*=3.53). Air pollution was the another local environmental problem which pre-service teachers mostly concerned about the changing effect of it (*M*=4.42) to their life-styles. They were also stressed that air pollution will become worse (*M*=4.38) situation in next 20 years. Elementary education pre-service teachers least concerned about the changing effect of soil erosion (*M*=4.29) on their life styles and they thought that human activies are not very important cause of soil erosion (*M*=4.45).

5.3. Correlation Analysis

The Pearson correlations were calculated to determine relationship between five dimensions of concerns and four dimensions of attitudes for global environmental issues and Turkey's local ones.

5.3.1. Correlation Analysis For the Concerns of Global and Local Environmental Issues

Table 5.3 Correlation analysis for the concerns of global and local environmental issues

	Concerns				
Concerns	**Certainty**	**Complexity**	**Tangibility**	**Significance**	**Danger**
Global					
Certainty	1	-.077	.439**	.207**	.664**
Complexity	-.077	1	-.055	.048	-.105**
Tangibility	.439**	-.055	1	.185**	.445**
Significance	.207**	.048	.185**	1	.202**
Danger	.664**	-.105**	.445**	.202**	1
Local					
Certainty	1	-.012	.453**	.281**	.560**
Complexity	-.012	1	-.004	.084	-.086
Tangibility	.453**	-.004	1	.284**	.492**
Significance	.281**	.084	.284**	1	.293**
Danger	.560**	-.086	.492**	.293**	1

*Significant at the .05 level (two-tailed). **Significant at the .01 level (two-tailed)

The Pearson correlations were calculated to determine relationship between five dimensions of concerns for global environmental issues and Turkey's local ones. The results showed that there was moderate positive correlation between certainty and tangibility of global issues [(r = .439) ,n=268 , p<.01] with high levels of certainty associated with high levels of tangibility. There was also moderate positive correlation between tangibility and danger of global issues [(r = .445), n=268, p<.01]. The environmental issues perceived as tangible were those considered dangerous. There was large positive correlation between certainty and danger of global issues [(r = .664), n=268, p<.01]. The participants of the study certain about those global environmental issues which perceived as dangerous were present a problem human or environment. For local issues, it was found that there was moderate positive correlation between certainty and tangibility of local issues [(r = .453), n=268, p<.01] with high levels of certainty associated with high levels

of tangibility. Same as the global environmental issues, there was large positive correlation between certainty and danger of local issues [(r = .560), n=268, p<.01].

Elementary education pre-service teachers certain about those Turkey's environmental issues which perceived as dangerous were present a problem human or environment. There was moderate positive correlation between tangibility and danger of local issues [(r = .492), n=268, p<.01]. The local environmental issues perceived as tangible were those considered dangerous in a similar way with global ones.

Pearson correlation showed that complexity of the problem was not related to certainty about the presence of it, tangibility and significance of it for both global and local issues. Significant correlations were observed for other paired characteristics for both global and Turkey's issues, but correlations were small (Table 5.3).

5.3.2. Correlation Analysis for the Attitudes of Global and Local Environmental Issues

Table 5.4 Correlation analysis for the attitudes of global and local environmental issues

	Attitudes			
Attitudes	**Knowledge**	**Human Impacts**	**Life Change**	**Predicted Trend**
Global				
Knowledge	1	.157**	.262**	.144
Human Impacts	.157**	1	.637**	.505**
Life Change	.262**	.637**	1	.600**
Predicted Trends for next 20 years	.144*	.505**	.600**	1
Local				
Knowledge	1	.168**	.342**	.219**
Human Impacts	.168**	1	.476**	.446**
Life Change	.342**	.476**	1	.544**
Predicted Trends for next 20 years	.219**	.446**	.544**	1

*Significant at the .05 level (two-tailed). **Significant at the .01 level (two-tailed)

Pearson correlation analysis showed that there was large positive correlation between perception of human effect and concern for changing life in terms of global issues [(r = .637) ,n=268 , p<.01] and for local issues, there was moderate positive correlation for same variables [(r = .476) ,n=268 , p<.01]. A large positive correlation was observed between perception of human effect and predicted trend for next 20 years for global environmental issues [(r = .505), n=268, p<.01], but this relationship was moderate [(r = .446), n=268, p<.01] for Turkey's issues at the same confidence level. Lastly, it was found that there was strong relationship exist between concern for changing life and predicted trend for next 20 years for both

global and local environmental issues, [(r = .600) ,n=268 , p<.01] and [(r = .544) ,n=268 , p<.01], respectively.

There was also small correlations were observed for other paired characteristics for both global and Turkey's issues (Table 5.4).

5.3.3. Correlation Analysis for Attitudes and Concerns of Environmental Issues

Table 5.5 Pearson correlations for concerns and attitudes for global and local environmental issues

	Concerns				
Attitudes	**Certainty**	**Complexity**	**Tangibility**	**Significance**	**Danger**
Global					
Knowledge	.164**	-.137*	.431**	.008	.229**
Human Impacts	.619**	-.090	.338**	.213**	.706**
Life Change	.624**	-.018	.391**	.186**	.687**
Predicted Trends for next 20 years	.486**	-.022	.374**	.080	.570**
Local					
Knowledge	.139*	-.111	.417**	.038	.283**
Human Impacts	.451**	-.132*	.376**	.286**	.555**
Life Change	.440**	-.107	.384**	.255**	.623**
Predicted Trends for next 20 years	.431**	-.054	.398**	.165**	.499**

*Significant at the .05 level (two-tailed). **Significant at the .01 level (two-tailed)

The relationships between concerns and attitudes for global and local environmental issues were shown in Table 5.5. There was moderate positive correlation between respondents' knowledge and tangibility of both global and local environmental issues [(r = .431), n=268, p<.01] and [(r = .417), n=268, p<.01] respectively. Significance was not related to pre-service teachers' knowledge both global issues

and local issues. Complexity also was not related to pre-service teachers' knowledge of global issues and had small relationship with their knowledge of local issues [(r = -.137), n=268, p<.05]. There was small positive correlations existed between participants' environmental knowledge and certainty and danger of the both global and Turkey's environmental issues.

Perceptions of human effect on global issues were positively correlated with issue certainty [(r = .619), n=268, p<.01], tangibility [(r = .338), n=268, p<.01], danger [(r = .706), n=268, p<.01] and significance [(r = .213), n=268, p<.01] but not related with the issue complexity. For local issues, there was large positive correlation between perceptions of human effect and danger [(r = .555), n=268, p<.01] and moderate correlations with issue certainty and tangibility, [(r = .451), n=268, p<.01] and [(r = .376), n=268, p<.01], respectively. There was small correlation between perceptions of human effect and issue complexity and significance [(r = -.132), n=268, p<.05] and [(r = .286), n=268, p<.01], respectively.

Perceptions of how the issues change life-style had large positive correlation with issue danger for both global environmental issues [(r = .687), n=268, p<.01] and Turkey's issues [(r = .623), n=268, p<.01], respectively. There was large correlation between perceptions of how the issues change life-style and issue certainty for global environmental issues [(r = .624), n=268, p<.01] and moderate correlation for local environmental issues [(r = .440), n=268, p<.01]. Perceptions of how the issues change life-style were positively correlated with issue tangibility for global environmental issues [(r = .391), n=268, p<.01] and local environmental issues [(r = .384), n=268, p<.01]. Significant correlations were observed for perceptions of how the issues change life-style and issue significance for both global and Turkey's issues, and perceptions of how the issues change life-style and issue complexity for local environmental issues, but correlations were small. Pearson correlation showed that complexity of the problem was not related to perceptions of how the issues change life-style for global environmental.

People's predictions about the situations of issues in 20 years and issue certainty moderately correlated for both global environmental issues [(r = .486), n=268,

$p<.01$] and local ones [($r = .431$), $n=268$, $p<.01$]. There was moderate correlation between people's predictions about the situations of issues in 20 years and issue tangibility both for global and local environmental issues, [($r = .374$), $n=268$, $p<.01$] and [($r = .398$), $n=268$, $p<.01$], respectively. Pearson correlation analysis showed that there was large positive correlation between issue danger and people's predictions about the situations of issues in 20 years for global environmental issues [($r = .570$), $n=268$, $p<.01$] and for local environmental issues [($r = .499$), $n=268$, $p<.01$]. Complexity of the problem was not related to predictions about the situations of issues in 20 years both for global and local environmental issues (Table 5.5).

5.4. T-Test Analysis

Paired sample t-tests were conducted to determine pre-service elementary education teachers' concerns and attitudes toward global versus local environmental issues. In addition, independent t-tests were also conducted to compare the concerns and attitudes for global and local environmental issues for males and females.

5.4.1. Paired-Sample T-Test Analysis

5.4.1.1. Comparison of Perceived Characteristics of Concerns for Global and Local Environmental Issues

Table 5.6 Comparison of perceived characteristics of concerns for global and local environmental issues

		M	*SD*	*t*	*df*	*p*
Pair 1	Issue certainty for global issues	92.54	9.60	3.029	267	0.003*
	Issue certainty for local issues	91.04	10.76			
Pair 2	Issue complexity for global issues	60.73	21.42	2.715	267	0.007*
	Issue complexity for local issues	58.78	23.26			
Pair 3	Issue tangibility for global issues	92.42	8.83	7.786	267	0.000*
	Issue tangibility for local issues	89.12	10.84			
Pair 4	Issue significance for global issues	92.54	9.60	3.029	267	0.003*
	Issue significance for local issues	91.04	10.76			
Pair 5	Issue danger for global issues	71.04	14.34	5.813	267	0.000*
	Issue danger for local issues	66.94	17.16			

$p<.05$

Paired-sample t-test was conducted to determine differences of pre-service teachers' concerns on global versus local environmental issues. As it was shown Table 5.6, in all five dimensions of the concern part of the EPQ-certainty, complexity, tangibility, significance, danger- there was a significant differences between perceptions of global versus local environmental issues. This statistical difference was in favor of global environmental issues in all dimensions of the scales. In other words,

elementary education pre-service teachers, more certain about global environmental problems (*M*=92.54, *SD*= 9.6) present a problem for nature or human being than local ones (*M*=91.04, *SD*= 10.76), *t*(267)=3.029, *p*<05; they found global environmental issues (*M*=60.73, *SD*= 21.42) more complex than local ones (*M*=58.78, *SD*= 23.26), *t*(267)=2.715, *p*<05; they viewed global environmental issues more tangible (*M*=92.42, *SD*= 8.83) than Turkey's environmental issues (*M*=89.12, *SD*= 10.84), *t*(267)=7.786, *p*<05; they considered causes, processes or consequences of global issues more significant (*M*=92.54, *SD*= 9.6) than local ones (*M*=91.04, *SD*= 10.76), *t*(267)=3.029, *p*<05and lastly they thought that global environmental issues were more harmful to the nature and human beings (*M*=71.04, *SD*= 14.34) than local environmental issues of Turkey (*M*=66.94, *SD*= 17.16), *t*(267)=5.813, *p*<05.

5.4.1.2. Comparison of Perceived Characteristics of Attitudes for Global and Local Environmental Issues

Table 5.7 Comparison of perceived characteristics of attitudes for global and local environmental issues

		M	***SD***	***t***	***Df***	***p***
Pair 1	Knowledge on global issues	92.81	9.13	0.420	267	0.675
	Knowledge on local issues	92.64	10.30			
Pair 2	Human impacts on global issues	90.53	10.26	7.209	267	0.000*
	Human impacts on local issues	86.36	14.13			
Pair 3	Concern about life change about global issues	90.82	11.10	6.227	267	0.000*
	Concern about life change about local issues	87.00	15.13			
Pair 4	Predicted trend for next 20 years for global issues	84.30	19.97	4.062	267	0.000*
	Predicted trend for next 20 years for local issues	82.18	19.40			

p<.05

Paired-sample t-test was conducted to determine differences of pre-service teachers' attitudes on global versus local environmental issues. There was not a significant differences between global and Turkey's environmental issues in terms of participants' evaluation of their own knowledge. However, global and local environmental issues perceived significantly differently on how the issues affect pre-service teachers' lives, impacts of human activities in causing environmental problems and situations of the issues for next 20 years. Participants of the study thought that their lives were changed more by global issues (M=90.82, SD= 11.10) than Turkey's local ones (M=87, SD= 15.13), $t(267)=6.227$, $p<05$; they considered that global environmental issues would get worse (M=84.30, SD= 19.97) compared with Turkey's local issues in 20 years (M=82.18, SD= 19.40), $t(267)=4.062$, $p<05$ and also they perceived human activities as a more important cause for global environmental problems (M=90.53, SD= 10.26), than local ones (M=86.36, SD= 14.13), $t(267)=7.209$, $p<05$ (Table 5.7).

5.4.2. Independent Sample T-Test Analysis

5.4.2.1. Evaluation of Gender Differences between Pre-Service Teachers' Concerns for Global Environmental Issues

Table 5.8 Gender differences between pre-service teachers' concern for global environmental issues

Concerns for Global Issues	Gender	*N*	*M*	*SD*	*t*	*Df*	*p.*
Certainty	female	213	42.26	3.80	4.781	266	0.000*
	male	55	39.25	5.33			
Complexity	female	213	27.43	9.99	0.330	266	0.742
	male	55	26.95	8.20			
Tangibility	female	213	37.28	5.75	3.078	266	0.002*
	male	55	34.58	5.93			
Danger	female	213	42.18	3.35	5.024	266	0.000*
	male	55	39.29	5.21			
Significance	female	213	39.07	8.69	4.203	266	0.000*
	male	55	33.53	8.85			

Independent samples t-tests were conducted to compare the concerns for global issues for males and females. There was no significant difference in issue complexity for males (*M*=26.95, *SD*= 8.20), and females [*M*=27.43, *SD*= 9.99 *t* (266) =0.33, *p*=.742]. But there were significant differences in perception of issue certainty, tangibility, danger and significance for males and females. Female pre-service teachers more certain (*M*=42.26, *SD*= 3.80) about those global environmental issues present a problem for nature or environment than males [*M*=39.25, *SD*= 5.33 *t* (266)=4.78, *p*=.000]. The magnitude of the differences in means was moderate (eta squared=.07). Female pre-service teachers' perception for issue tangibility (*M*=37.28, *SD*= 5.75) was higher than males [*M*=34.58, *SD*= 5.93 *t* (266) =3.078, *p*=.002] but the difference between means was small (eta squared=. 03). There was moderate significant difference in the means in terms of issue danger between females (*M*=42.18, *SD*= 3.35) and males [*M*=39.29, *SD*= 5.21 *t* (266) =5.024, *p*=.000] (eta squared=.08) in favor of females. In other words, females perceived global environmental issues more harmful to humans and nature than males. Lastly, females (*M*=39.07, *SD*= 8.69) considered the causes, processes and consequences of the global environmental issues more significant than males [*M*=33.53, *SD*= 8.85 t (266) =4.203, *p*=.000]. The magnitude of the differences in the means was moderate (eta squared= .06).

5.4.2.2 Evaluation of Gender Differences between Pre-Service Teachers' Concerns for Local Environmental Issues

Table 5.9 Gender differences between pre-service teachers' concern for local environmental issues

Concerns for Local Issues	Gender	*N*	*M*	*SD*	*t*	*Df*	*p*
Certainty	female	213	23.32	2.15	7.383	266	0.000*
	male	55	20.58	3.39			
Complexity	female	213	14.91	5.91	1.176	266	0.241
	male	55	13.87	5.41			
Tangibility	female	213	20.58	3.49	2.787	266	0.006*
	male	55	19.07	3.87			
Danger	female	213	22.68	2.39	4.908	266	0.000*
	male	55	20.75	3.31			
Significance	female	213	21.14	4.73	4.039	266	0.000*
	male	55	18.25	4.68			

*$p<0.05$

Independent samples t-tests were conducted to compare the concerns for local environmental issues for males and females. Similarly with the comparison results of issue complexity for global issues, for local environmental issues, there was no significant difference in issue complexity between males (*M*=13.87, *SD*= 5.41), and females [*M*=14.91, *SD*= 5.91 *t* (266) =1.176, *p*=.241]. But there were significant differences in perception of issue certainty, tangibility, danger and significance for males and females. Female pre-service teachers more certain (*M*=23.32, *SD*= 2.15) about presence of local environmental issues as problem for nature or environment than males [*M*=20.58, *SD*= 3.39 *t* (266) =7.383, *p*=.000]. The magnitude of the differences in means was large (eta squared=.17). Female pre-service teachers perceived local environmental issues more tangible (*M*=20.58, *SD*= 3.49) than males [*M*=19.07, *SD*= 3.87 *t* (266) =2.787, *p*=.006] but the difference between means was small (eta squared=. 02). There was moderate significant difference in the means for issue danger between females (*M*=22.68, *SD*= 2.39) and males

[*M*=20.75, *SD*= 3.31 *t* (266) =4.908, *p*=.000] (eta squared=.08) in favor of females. In other words, females perceived local environmental issues more dangerous to humans and nature than males. Lastly, females (*M*=21.14, *SD*= 4.73) considered the causes, processes and consequences of the local environmental issues more significant than males [*M*=18.25, *SD*= 4.68 *t* (266) =4.039, *p*=.000]. The magnitude of the differences in the means was small (eta squared= .05).

5.4.2.3. Evaluation of Gender Differences between Pre-Service Teachers' Attitudes for Global Environmental Issues

Table 5.10 Gender differences between pre-service teachers' attitudes for global environmental issues

Attitudes for Global Issues	Gender	*N*	*M*	*SD*	*t*	*Df*	*p*
Knowledge	female	213	31.99	6.44	0.102	266	0.919
	male	55	31.89	6.56			
Human Impact	female	213	42.18	3.39	3.343	266	0.001*
	male	55	40.15	5.91			
Concern for Life Change	female	213	41.36	4.01	4.499	266	0.000*
	male	55	38.33	5.91			
Predicted Trends for Next 20 Years	female	213	41.44	4.39	3.745	266	0.000*
	male	55	38.67	6.44			

*$p<0.05$

Independent samples t-tests were conducted to compare the attitudes- in terms of environmental knowledge, human impact in causing global environmental problems, concern about changing effect of global environmental problems and predicted trends for next 20 years for global environmental issues-between males and females. There was no significant difference between females (*M*=31.99, *SD*= 6.44) and males [*M*=31.89, *SD*= 6.56 *t* (266) =0.102, *p*=.919] for evaluation of their

own environmental knowledge. However there were significant mean differences for other three dimensions of the scale between females and males. Females (*M*=42.18, *SD*= 3.39) viewed human activities as more important cause for presence of global environmental issues than males [*M*=40.15, *SD*= 5.91 *t* (266) =3.343, *p*=.001]. The magnitude of the differences in the mean was small (eta squared=.04). Females (*M*=41.36, *SD*= 4.01) were moderately more concerned about that global environmental problems would change their life than males [*M*=38.33, *SD*= 5.91 *t* (266) =4.499, *p*=.000] (eta squared=.07). Last, females' views about situation of global environmental issues in 20 years were more pessimistic (*M*=41.44, *SD*= 4.39) than views of males [*M*=38.67, *SD*= 6.44 *t* (266) =3.745, *p*=.000]. The magnitude of the differences in the means was small (eta squared= .05).

5.4.2.4. Evaluation of Gender Differences between Pre-Service Teachers' Attitudes for Local Environmental Issues

Table 5.11 Gender differences between pre-service teachers' attitudes for local environmental issues

Attitudes for Local Issues	Gender	*N*	*M*	*SD*	*t*	*Df*	*p*
Knowledge	female	213	16.72	4.30	-0.126	266	0.900
	male	55	16.80	4.28			
Human Impact	female	213	23.42	2.24	3.341	266	0.001*
	male	55	22.15	3.43			
Concern for Life Change	female	213	21.95	3.28	3.380	266	0.001*
	male	55	20.18	4.11			
Predicted Trends for Next 20 Years	female	213	22.22	3.45	4.085	266	0.000*
	male	55	19.95	4.45			

*$p<.05$

Independent samples t-tests were conducted to compare the attitudes for local environmental issues between males and females. There was no significant difference between females (*M*=16.72, *SD*= 4.30) and males [*M*=16.80, *SD*= 4.28 *t* (266) =-0.126, *p*=.900] for evaluation of their own environmental knowledge. However, same as the attitudes for global issues, there were also significant mean differences for other three dimensions of the attitude scale between females and males for local environmental issues. But the magnitudes of the differences in the means were small for all those dimensions. Females (*M*=23.42, *SD*= 2.24) thought that human activities were more important cause for presence of local environmental issues than males [*M*=22.15, *SD*= 3.43 *t* (266) =3.341, *p*=.001] (eta squared=.04). Females (M=21.95, SD= 3.28) were more concerned about changing effect of local environmental problems on their life than males [*M*=20.18, *SD*= 4.11 *t* (266) =3.380, *p*=.001] (eta squared=.04). Last, females' views about situation of local environmental issues in 20 years were more pessimistic (*M*=22.22, *SD*= 3.45) than views of males [*M*=19.95, *SD*= 4.45 *t* (266) =4.085, *p*=.000] (eta square= .05).

5.5. One Way Analysis of Variance (ANOVA)

One way between groups analysis of variances were conducted to explore the impacts of major on concerns and attitudes of global and local environmental issues pre-service elementary education teachers.

5.5.1 Assumptions for ANOVA

5.5.1.1 Level of Measurement

The dependent variables (pre-service elementary education teachers' level of concerns and attitudes) are measured the ratio level.

5.5.1.2 Random Sampling

This assumption is violated because the scores were obtained by using convenience sampling method.

5.5.1.3 Independence of Observation

It is assumed that each measurement of data were independent of one another.

5.5.1.4 Normal Distribution

Since the sample size was larger than 30 (N=268), this assumption is satisfied.

5.5.1.5 Homogeneity of Variances

Homogeneity of variance assumption was assessed by using Levene's test. Results showed that there was a violation of homogeneity of variance assumption for the dimensions of issue certainty, significance, danger, human impact on global and local environmental issues and predicted trend in 20 years for global issues. For these dimensions, appropriate post-hoc comparison tests were used.

5.5.2 Impact of Major Differences on Perception of Concerns for Global and Local Environmental Issues

Table 5.12 ANOVA results for pre-service teachers' perception of concerns of global and local environmental issues

	ANOVA					
	GLOBAL ISSUES			LOCAL ISSUES		
CONCERNS	***F***	***p***	**Departments with significant differences**	***F***	***p***	**Departments with significant differences**
Certainty	9.011	0.000	*ECE-EME *ECE-ESE	9.959	0.000	*ECE-EME *ECE-ESE
Complexity	1.592	0.205	-	1.110	0.331	*ECE-EME *ECE-ESE
Tangibility	9.702	0.000	*ECE-EME *ECE-ESE	8.804	0.000	*ECE-EME *ECE-ESE
Significance	31.104	0.000	*ECE-EME *ECE-ESE	27.855	0.000	*ECE-EME *ECE-ESE
Danger	7.112	0.001	*ECE-EME *ECE-ESE	6.044	0.003	*ECE-EME *ECE-ESE

*$p<0.05$

A one way between groups analysis of variance was conducted to explore the impact of major on concerns for global and local environmental issues of pre-service teachers. For global environmental issues, there was a statistically significant difference at the $p<.05$ level in issue certainty according to pre-service teachers' majors [F (2,265) =9, p=.00]. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (M= 43.33, SD= 2.58) was significantly different from pre-service teachers from department of ESE (M= 41.06, SD= 3.85). Mean scores for pre-service teachers from department of ECE (M= 43.33, SD= 2.58) was also significantly different from pre-service teachers from department of EME (M= 40.83, SD= 5.40). There was not a significant difference between pre-service teachers' those studied departments of ESE and EME in their perception of certainty of global issues. For

local environmental issues, there was also a statistically significant difference at the $p<.05$ level in issue certainty according to pre-service teachers' majors [F (2,265) =9.95, p=.00]. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (M= 23.85, SD= 1.79) was significantly different from pre-service teachers from department of ESE (M= 22.49,_SD= 2.39). Mean scores for pre-service teachers from department of ECE (M= 23.85, SD= 1.79) was also significantly different from pre-service teachers from department of EME (M= 22.15, SD= 3.28). There was not a significant difference between pre-service teachers' those studied departments of ESE and EME in their perception of certainty of local issues.

There was not a statistically significant difference at the $p<.05$ level in issue complexity according to pre-service teachers' majors for global and local environmental issues, [F (2,265) =1.5, p=.205], [F (2,265) =1.1, p=.331] respectively.

There was a statistically significant difference at the $p<.05$ level in issue tangibility according to pre-service teachers' majors [F (2,265) =9.7, p=.00] for global issues. Post-hoc comparisons using the LSD test indicated that the mean score for pre-service teachers from department of ECE (M= 39.03, SD= 5.21) was significantly different from pre-service teachers from department of ESE (M= 35.28, SD= 6.05). Mean scores for pre-service teachers from department of ECE (M= 39.03, SD= 5.21) was also significantly different from pre-service teachers from department of EME (M= 36.27, SD= 5.72). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their perception of tangibility of global issues. There was also a statistically significant difference at the p<.05 level in issue tangibility according to pre-service teachers' majors [F (2,265) =8.8, p=.00] for local environmental issues. Post-hoc comparisons using the LSD test indicated that the mean score for pre-service teachers from department of ECE (M= 21.63, SD= 3.15) was significantly different from pre-service teachers from department of ESE (M= 19.44, SD= 3.37). Mean scores for pre-service teachers from department of ECE (M= 21.63, SD= 3.15) was also significantly different from pre-service teachers from department of EME (M= 19.98, SD= 3.91).

There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their perception of tangibility of local issues.

There was a statistically significant difference at the $p<.05$ level in issue significance according to pre-service teachers' majors [F (2,265) =31.1, p=.00] for global environmental issues. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (M= 43.28, *SD*= 2.6) was significantly different from pre-service teachers from department of ESE (*M*= 38, *SD*= 8.56). Mean scores for pre-service teachers from department of ECE (*M*= 43.28, *SD*= 2.6) was also significantly different from pre-service teachers from department of EME (*M*=33.52, *SD*= 10.33). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their perception of significance of global issues. There was also a statistically significant difference at the $p<.05$ level in issue significance according to pre-service teachers' majors [F (2,265) =27.85, p=.000] for local environmental issues. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (*M*= 23.55, *SD*= 2.21) was significantly different from pre-service teachers from department of ESE (*M*= 20.03, *SD*= 4.65). Mean scores for pre-service teachers from department of ECE (*M*= 23.55, *SD*= 2.21) was also significantly different from pre-service teachers from department of EME (*M*= 18.60, *SD*= 5.44). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their perception of significance of local issues.

There was a statistically significant difference at the $p<.05$ level in issue danger according to pre-service teachers' majors [F (2,265) =7.11, p=.001] for global environmental issues. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (*M*= 42.99, *SD*= 2.97) was significantly different from pre-service teachers from department of ESE (*M*= 41.02, *SD*= 3.96). Mean scores for pre-service teachers from department of ECE (*M*= 42.99, *SD*= 2.97) was also significantly different from pre-service teachers from department of EME (*M*= 41.01, *SD*= 4.44). There was not a significant difference between pre-service teachers' who studied departments of

ESE and EME in their perception of harmful effects of global environmental issues. There was also a statistically significant difference at the $p<.05$ level in issue danger according to pre-service teachers' majors [F (2,265) =6.04, p=.003] for local environmental issues. Post-hoc comparisons using the LSD test indicated that the mean score for pre-service teachers from department of ECE (M= 23.15, SD= 2.42) was significantly different from pre-service teachers from department of ESE (M= 21.83, SD= 2.66). Mean scores for pre-service teachers from department of ECE (M=23.15, SD= 2.42) was also significantly different from pre-service teachers from department of EME (M= 22.01, SD= 2.84). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their perception of danger of local issues.

5.5.3 Impact of Major Differences on Perception of Attitudes for Global and Local Environmental Issues

Table 5.13 ANOVA results for pre-service teachers' perception of attitudes of global and local environmental issues

	ANOVA					
	GLOBAL ISSUES			**LOCAL ISSUES**		
ATTITUDES	***F***	***p***	**Departments with significant differences**	***F***	***p***	**Departments with significant differences**
Knowledge	1.328	0.267	-	0.452	0.637	-
Human Impact	6.424	0.002	*ECE-EME *ECE-ESE	9.225	0.000	*ECE-EME *ECE-ESE
Concern for Life Change	4.203	0.016	*ECE-EME *ECE-ESE	3.864	0.022	*ECE-EME *ECE-ESE
Predicted Trend	5.225	0.006	*ECE-EME *ECE-ESE	5.016	0.007	*ECE-EME *ECE-ESE

*$p<0.05$

Pre-service teachers who study department of ESE (*M*= 32.67, *SD*= 6.13) showed highest mean scores for reported own environmental knowledge than other departments those were EME (*M*= 32.02, *SD*= 6.51) and ECE (*M*= 31.06, *SD*= 6.74). But this difference was not statistically significant [*F* (2,265) =1.32, *p*=.267] for global environmental issues. For local environmental issues, pre-service teachers who study department of EME (*M*= 17.05, *SD*= 4.20) showed highest mean scores for reported own environmental knowledge than other departments those were ESE (*M*= 16.47, *SD*= 4.41) and ECE (*M*= 16.67, *SD*= 4.28). But this difference was not statistically significant [*F* (2,265) =0.45, *p*=.637].

There was a statistically significant difference at the *p*<.05 level in perception of human influence in causing global environmental problems according to pre-service teachers' majors [*F* (2,265) =6.42, *p*=.002] for global environmental issues. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (*M*= 43.09, *SD*= 2.90) was significantly different from pre-service teachers from department of ESE (*M*= 40.94, *SD*= 4.01). Mean scores for pre-service teachers from department of ECE (*M*=43.09, *SD*= 2.90) was also significantly different from pre-service teachers from department of EME (*M*= 41.50, *SD*= 4.76). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their perception about human impact on global environmental problems. For local environmental issues, there was a statistically significant difference at the *p*<.05 level in perception of human influence in causing local environmental problems according to pre-service teachers' majors [*F* (2,265) =9.22, *p*=.000]. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (*M*= 24.18, *SD*= 1.66) was significantly different from pre-service teachers from department of ESE (*M*= 22.67, *SD*= 2.43). Mean scores for pre-service teachers from department of ECE (*M*=24.18, *SD*= 1.66) was also significantly different from pre-service teachers from department of EME (*M*= 22.81, *SD*= 3.07). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their perception about human impact on local environmental problems.

There was a statistically significant difference at the $p<.05$ level in pre-service teachers' concern about global environmental problems lead them to change their life style according to their majors [F (2,265) =4.2, p=.016]. Post-hoc comparisons using the LSD test indicated that the mean score for pre-service teachers from department of ECE (M= 42.00, SD= 3.90) was significantly different from pre-service teachers from department of ESE (M= 40.22, SD= 4.72). Mean scores for pre-service teachers from department of ECE (M=42.00, SD= 3.90) was also significantly different from pre-service teachers from department of EME (M= 40.22, SD= 4.89). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their concern level related with changing effect of global issues to their lives. There was also a statistically significant difference at the p<.05 level in pre-service teachers' concern about local environmental problems lead them to change their life style according to their majors [F (2,265) =3.86, p=.022]. Post-hoc comparisons using the LSD test indicated that the mean score for pre-service teachers from department of ECE (M= 22.50, SD= 3.22) was significantly different from pre-service teachers from department of ESE (M= 21.09, SD= 3.51). Mean scores for pre-service teachers from department of ECE (M=22.50, SD= 3.22) was also significantly different from pre-service teachers from department of EME (M= 21.34, SD= 3.69). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their concern level related with changing effect of local issues to their lives.

There was a statistically significant difference at the $p<.05$ level in pre-service teachers' conceptions about state of global environmental problems in 20 years according to their majors [F (2,265) =5.22, p=.006]. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (M= 42.37, SD= 3.98) was significantly different from pre-service teachers from department of ESE (M= 40.10, SD= 5.20). Mean scores for pre-service teachers from department of ECE (M=42.37, SD= 3.98) was also significantly different from pre-service teachers from department of EME (M= 40.41, SD= 5.32). There was not a significant difference between pre-service

teachers' who studied departments of ESE and EME in their thinking about state of global environmental problems next 20 years. There was also a statistically significant difference at the $p<.05$ level in pre-service teachers' ideas about state of local environmental problems in 20 years according to their majors [F (2,265) =5.22, p=.006]. Post-hoc comparisons using the Tamhane test indicated that the mean score for pre-service teachers from department of ECE (M= 22.87, SD= 2.83) was significantly different from pre-service teachers from department of ESE (M= 21.22, SD= 3.99). Mean scores for pre-service teachers from department of ECE (M=22.87, SD= 2.83) was also significantly different from pre-service teachers from department of EME (M= 21.35, SD= 4.08). There was not a significant difference between pre-service teachers' who studied departments of ESE and EME in their conceptions about state of local environmental problems next 20 years.

5.4. How Do Results Used to Improve the Teacher Education Strategy for Environmental Education in Turkey?

This study provided insights on what elementary education pre-service teachers know and feel about environmental issues that are very valuable for effective curriculum development. It was seen that Turkish pre-service teachers gave more importance to global environmental issues rather than local ones. However, in Turkey, there are lots of local environmental problems. Therefore, there is a need to develop EE programs and contents that overcome the deficits about emphasizing local environmental issues and increase pre-service elementary education teachers' awareness about local environmental problems.

5.5. Summary of Results

The aim of this study was to determine pre-service elementary education teachers' perceptions toward global and local environmental problems. Firstly, their concerns-issue certainity, complexity, tangibility, significance and danger- were

determined both for global and local environmental problems. It was found that among the nine global environmental issues, water scarcity was considered as most tangible, significant and dangerous environmental issue. On the other hand, loss of biodiversity was determined as least certain, tangible, significant and dangerous global environmental problem.

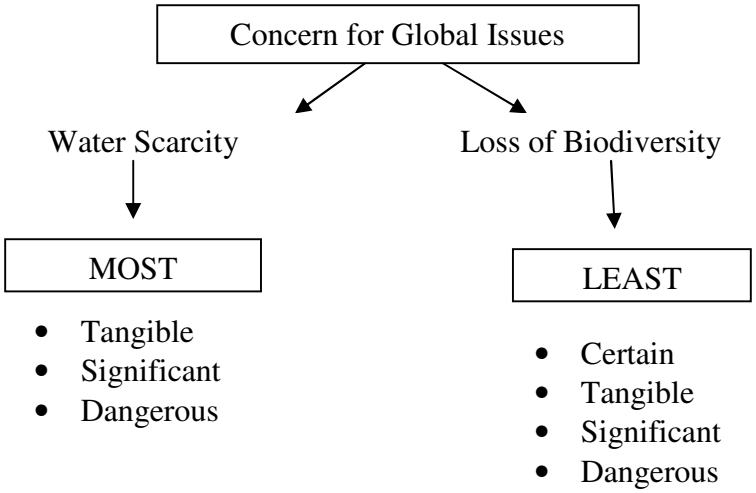


Figure 5.22 Concerns for Global Issues

Among Turkey's environmental problems; air pollution in industrial cities was marked as most complex, tangible, significant and dangerous environmental issue for Turkey. Urbanization was seen as least certain, significant and dangerous environmental issue for Turkey.

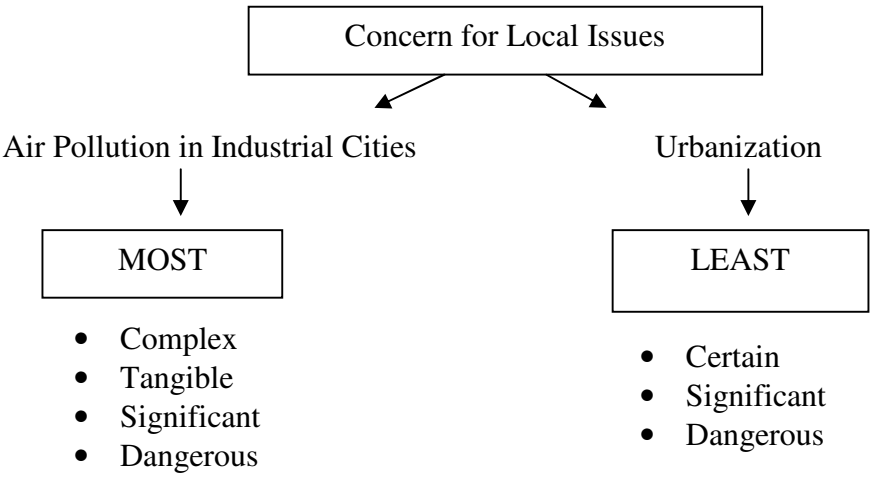


Figure 5.23 Concerns for Local Issues

Secondly, pre-service teachers' attitudes toward global and local environmental issues were determined. Participants' self-reported environmental knowledge was highest for water scarcity and lowest for loss of bio diversity in term of global environmental problems. They were very concerned about the changing effect of water scarcity to their life styles and also noted that state of water scarcity as a global environmental problem will become worse in next 20 years. For local environmental issues, Turkish pre-service teachers reported most knowledge for the issue of urbanization. They also thought that human activities mostly caused the problem of urbanization. Air pollution was the local environmental problem which pre-service teachers mostly concerned about the changing effect of it to their life-styles. They were also stressed that air pollution will become worse situation in next 20 years.

Pearson correlations were calculated for five characteristics of concerns for global and local environmental issues. The results showed that there was medium positive correlation between certainty and tangibility of global issues and also medium

positive correlation between tangibility and danger of global issues. In addition there was large positive correlation between certainty and danger of global issues was found. For local issues, it was found that there was medium positive correlation between certainty and tangibility of local issues and also medium positive correlation between tangibility and danger of local issues. Same as the global environmental issues, there was large positive correlation between certainty and danger of local issues.

Pearson correlations for four dimensions of attitudes showed that there was large positive correlation between perception of human effect and concern for changing life in terms of global issues and there was medium positive correlation for same variables for local issues. A large positive correlation was observed between perception of human effect and predicted trend for next 20 years for global environmental issues, but this relationship was medium for Turkey's issues. Lastly, it was found that there was strong relationship exist between concern for changing life style and predicted trend for next 20 years for both global and local environmental issues.

The relationships between concerns and attitudes for global and local environmental issues were showed that there was medium positive correlation between respondents' knowledge and tangibility of both global and local environmental issues. Significance of the issue was not related to pre-service teachers' knowledge for both global issues and local issues. Complexity also was not related to pre-service teachers' knowledge of global issues and had small relationship with their knowledge of local issues. Perceptions of human effect on global issues were positively correlated with issue certainty, tangibility, danger and significance but not related with the issue complexity. For local issues, there was large positive correlation between perceptions of human effect and danger and medium correlations with issue certainty and tangibility. Perceptions of how the issues change life-style had large positive correlation with issue danger for both global environmental issues and Turkey's issues. There was large correlation between perceptions of how the issues change life-style and issue certainty for global environmental issues and medium correlation for local environmental issues.

Perceptions of how the issues change life-style were positively correlated with issue tangibility for global environmental issues and local environmental issues. People's predictions about the situations of issues in 20 years and issue certainty moderately correlated for both global environmental issues and local ones. There was medium correlation between people's predictions about the situations of issues in 20 years and issue tangibility both for global and local environmental issues. Pearson correlation analysis showed that there was large positive correlation between issue danger and people's predictions about the situations of issues in 20 years for global environmental issues. Complexity of the problem was not related to predictions about the situations of issues in 20 years both for global and local environmental issues.

Paired-sample t-test was conducted to determine differences of pre-service teachers' concerns on global versus local environmental issues. All five dimensions of the concern part of the EPQ-certainty, complexity, tangibility, significance, danger-there was a significant differences between perceptions of global versus local environmental issues. This statistical difference was in favor of global environmental issues in all dimensions of the scales. Paired-sample t-test was also conducted to determine differences of pre-service teachers' attitudes on global versus local environmental issues. There was not a significant differences between global and Turkey's environmental issues in terms of participants' evaluation of their own knowledge. However, global environmental issues perceived significantly differently on how the issues affect pre-service teachers' lives, impacts of human activities in causing environmental problems and situations of the issues for next 20 years than local environmental issues. This difference was in favor of global environmental issues.

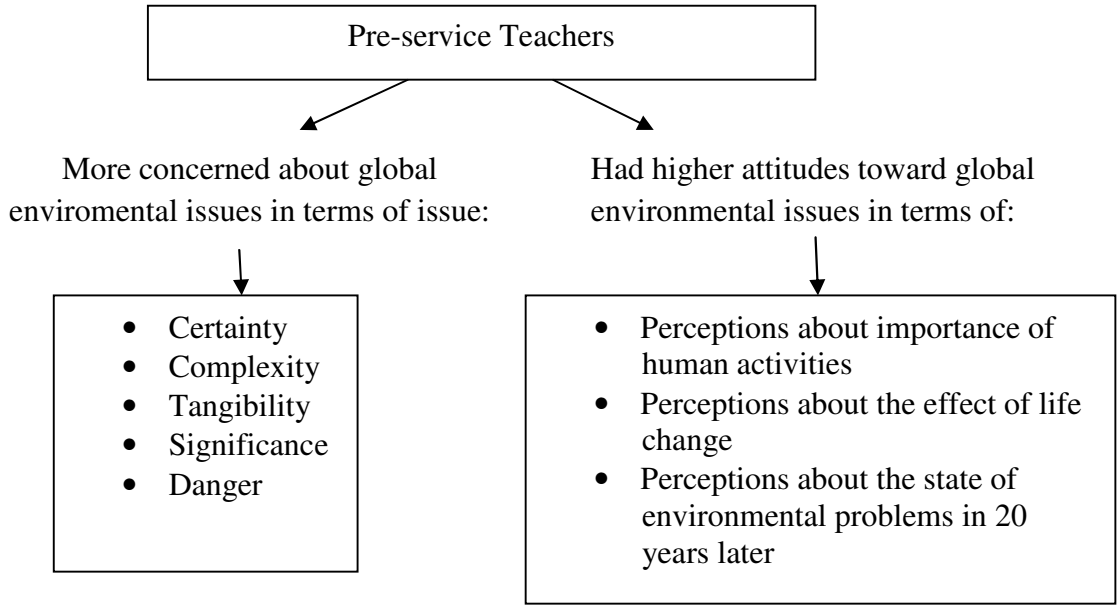


Figure 5.24 Relations between Concerns Attitudes of Local and Global Issues

Independent samples t-tests were conducted to compare the concerns and attitudes for global and local issues for males and females. There was no significant difference in issue complexity for males, and females for both global and local environmental issues. But there were significant differences in perception of issue certainty, tangibility, danger and significance for males and females for global and local environmental issues, the differences were in favor of girls. There was no significant difference between females and males for evaluation of their own environmental knowledge both for global and local environmental issues. However there were significant mean differences for other three dimensions of the scales between females and males which were in favor of female pre-service teachers.

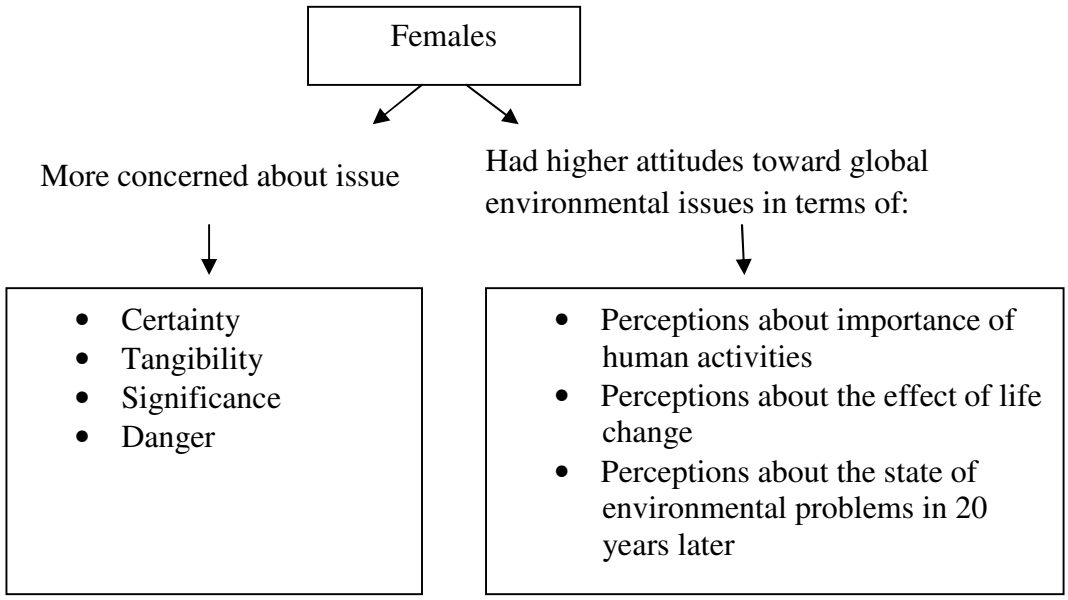


Figure 5.25 Gender Effect on Concerns and Attitudes of Environmental Issues

A one way between groups analysis of variance was conducted to explore the impact of major on concerns and attitudes for global and local environmental issues of pre-service teachers. Significance differences were found except the issue complexity and respondent's own knowledge about both both global and local issues. The other differences were in favor of department of ECE pre-service teachers. In other word, pre-service teachers those study department of ECE had highest scores on the concerns and attitudes dimensions of EPQ for both global and local environmental issues than pre-service teachers those study departments of ESE and EME.

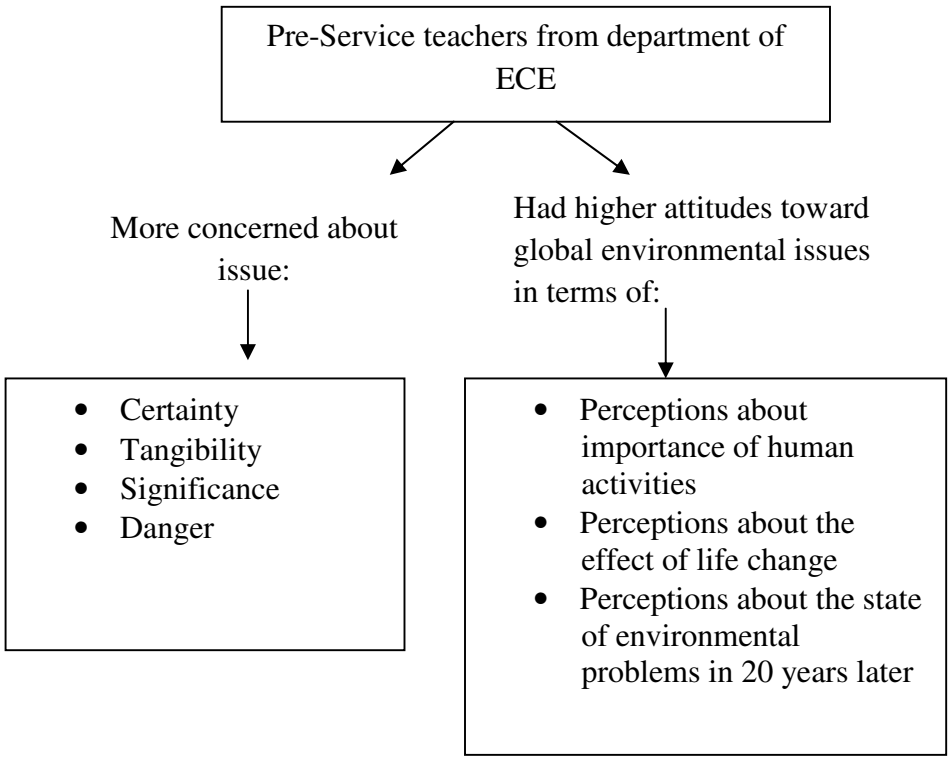


Figure 5.26 Major Effect on Concerns and Attitudes of Environmental Issues

CHAPTER 6

DISCUSSION

This part of the thesis comprised of five parts which are discussion, conclusion, implications of the study, limitations and recommendation for further researches.

6.1 Discussion

In this study, Turkish pre-service teachers perceived the selected global and local environmental issues differently with respect to certainty, complexity, tangibility, significance and danger. Turkish pre-service teachers viewed global environmental problems as more complex, tangible, significant and dangerous. They were also more certain about presence of global environmental issues as a problem to human and/or nature. These findings may arouse from insufficient environmental education applications in education faculties of Turkey. Güngör & Çakır (2006) investigated pre-service science teachers' views about environment and environmental problems. They found that pre-service teachers mostly gained their environmental knowledge from social relations rather than environmental courses of their curriculum. Maskan, Efe, Gönen & Baran (2006) also conducted a similar research with pre-service teachers. The results of their study showed that 55 % of the pre-service teachers that participated in their study stated that they gained their environmental knowledge from visual and printed media. Pre-service teachers also emphasized their views about EE as universities in Turkey do not give much importance to EE, and they stated that they did not have effective and adequate environmental education courses in their curriculums. Tuncer & Erdoğan (2006) stated that content of the environmental education courses that are supported by real

life environmental issues contributed to pre-service teachers' environmental awareness and responsibility about environmental problems and sustainability.

The finding is supported by the results of the similar research realized by Geok, Ivy, Kim, Lee & Chuan (1998). Students who live in Singapore also had more positive attitudes toward problems that are more general in nature but have less effect on their daily lives. This similar result was interpreted by the researchers by means of the "learned responses". According to the authors, the reason for students in Singapore to have positive attitudes toward general environmental issues was explained also by the effect of media. In addition, the result of the study that was conducted by Geok et. al (1998) revealed that students mostly (53.7 %) gathered their environmental information from media. In general, global environmental issues are more expressed by both visual and printed media. Therefore, the media effect may be stated as another effective factor that influenced pre-service teachers' perception toward global and local environmental issues. Moreover, in contradiction with the results of the current study, the results of the study that was conducted by Duan and Fortner (2005) revealed that Chinese people viewed local environmental issues as more significant and tangible than global environmental issues. Researchers stated that Chinese people were more concerned about the environmental issues that had direct impact on their lives unlike to Singapore or Turkish people.

Turkish pre-service teachers' attitudes toward global and local environmental issues were also different as far as their opinion on the assessment of their own knowledge has been considered. There was not a significant difference between pre-service teachers' reported environmental knowledge about global issues and local issues. This result was opposite of the one found for the Chinese people. According to the study realized by Duan & Fortner (2005), Chinese students were more knowledgeable on local environmental issues than global environmental issues. Turkish pre-service teachers think that global environmental problems would change their lives more than local environmental problems. This view is parallel to their concerns. They thought that global issues were more tangible, significant, dangerous and complex. There was a positive correlation between pre-service

teachers' concern about life-change and issue certainty, danger and tangibility. This result was supported by Duan and Fortner (2005)'s study with Chinese people. They stated that Chinese students perceive the issues as more significant and dangerous; they were more concerned about the causes and effects of those issues.

The results of the current study also showed that human responsibility for the presence of global and local environmental problems was related with concerns of the environmental issues. Pre-service teachers thought that human had more responsibility toward the presence of global environmental problems those they viewed as more tangible, harmful, significant and certain than local ones. Inadequacy of emphasizing local environmental issues in formal science curriculum of Turkey might be underlying reason of this result. Besides, as supported by the related literature,-Turkish pre-service teachers were pessimistic about the future trend of environmental issues. This result is similar with the results of several other studies, such as-(Duan & Fortner (2005); Hıcks and Bord,(2001); Connell et. al. (1999) and Tuncer, Sungur, Tekkaya & Ertepınar (2005)). Although they thought that global environmental problems will become worse than local ones; general view was related to worse situation of both local and global problems in the future. The major reason for the pre-service teachers' pessimistic views for the future of the environmental problems may be due to the general comments in the media about disappearance of the natural resources. Especially the frequently pronounced water scarcity problems may affect their views on this issue. Although the target of EE as described in the Thessaloniki Decleration (1997) is to not to give students a fear of future, this pessimistic point of view may make them either to decide to conserve the resources or simply just to ignore them since there is nothing to do by their sides. Therefore, it is a very dangerous situation for the pre-service teachers to be pessimistic about the future of environmental problems. In addition, Turkish pre-service teachers are pessimistic about the future environmental problems and they did not have an idea about the solutions of those problems. They are not equipped to make a relation between the environmental issues and life styles (Tuncer, Sungur, Tekkaya & Ertepınar, 2005; Tuncer, Sungur, Tekkaya & Ertepınar 2007). Thus, designing environmental education courses that stressed the relation between

human, environment, technology and development accurately and emphasized the human power and abilities to find solutions about environmental problems is a need for Turkish education system. It should also be stressed that optimism about future of environmental problems is possible because many people are working to find solutions for those problems and they can join them to find effective solutions (Connell, Fien, Lee, Sykes & Yencken, 1999).

The effect of gender on pre-service teachers' concerns and attitudes about global and local environmental issues was also examined in this study. There was no significant difference between females and males for evaluation of their own environmental knowledge. Unlikely to this result, Tıkka et.al.(2000) stated that males had more environmental knowledge as a result of their study. However, similar to previous research results (Tıkka, Kuıtunen, Tynys 2000; Tuncer, Ertepınar, Tekkaya & Sungur, 2005), there were significant mean differences for other three dimensions of the attitude scale between females and males for local and global environmental issues in favor of females. Females thought that human activities were more important cause for presence of local and global environmental issues than males; they were more concerned about changing effect of local and global environmental problems on their life and females' views about situation of local and global environmental issues in 20 years were more pessimistic than views of males. The differences between concerns for local and global environmental issues were also examined for males and females. There was no significant difference in issue complexity between males and females both for global and local environmental issues. But there were significant differences in perception of issue certainty, tangibility, danger and significance for males and females. Female were more certain about presence of local and global environmental issues as problem for nature or environment than males; they perceived local and global environmental issues more tangible, dangerous, significant than males. Those more sensitive and favorable attitudes of females may be as a result of their general traditional characteristics such as caring children, looking after home as a mother or wife.

The effect of major on pre-service teachers' attitudes and concerns toward environment was also investigated; the results were different from the study which

was conducted by Tıkka et.al. Tıkka et. al. (2000) found that students who came from educational background related with biology had higher attitudes toward environment and environmental problems. According to the results of the current study, Early Childhood Education (ECE) students were in the fourth sequence among twelve different majors. Pre-service teachers from ECE had highest scores on the concerns and attitudes dimensions of EPQ for both global and local environmental issues than pre-service teachers those study departments of Elementary Science Education (ESE) and Elementary Mathematics Education (EME) except for the issue complexity and respondents' own reported knowledge about global and local environmental issues. These results showed that although environmental issues are associated with science topics closely, science education teachers' environmental knowledge was not different from early childhood education teachers or mathematics teachers, parallel to this they perceived issues in the similar complexity level.

In sum, this study provided insights on what elementary education pre-service teachers know and feel about environmental issues that are very valuable for effective curriculum development. It was seen that Turkish pre-service teachers gave more importance to global environmental issues rather than local ones. In Turkey, formal education curriculum did not explain the local environmental issues. Although the researches showed that students' and pre-service teachers' attitudes differentiated according to their living area-urban or rural-(Tıkka et.al, 2000, Özden, 2008), there is not a curriculum that is planned to teach environmental issues in terms of local priorities. Turkish media also did not try to develop environmental awareness for local environmental problems. Focusing on local environmental issues was an important dimension for effective EE applications as Rene Dubos said "think globally-act locally" is one of the most efficient and influential way of coping with environmental problems.

Although, the pre-service teachers who participated in the study are seem to more close to global environmental problems, EE trends emphasized the importance of focusing on local environmental issues to implement EE targets. For instance, in Belgrade Charter, it was emphasized that EE should examine major environmental

issues from a world point of view but it should also regard to regional differences. In addition, Belgrade Charter and World Summit 2002 stated that promoting necessity of local and national cooperation in the solution of environmental problems is one of the main principles of EE. Agenda 21 also highlighted the importance of countries and regions' determination of their priorities according to their specific and local needs. Therefore, In Turkey, there is a need to develop EE programs and contents that overcome the deficits about emphasizing local environmental issues.

6.2 Conclusion

People have been interested in environmental problems for centuries and the need for finding solutions to those problems become urgent day by day. Education is seen as most effective way to cope with environmental problems because there is a need to find sustainable solutions not instantaneous ones. Agenda 21, therefore, emphasized the issues of "reorienting education towards sustainable development; increasing public awareness and promoting training."

The importance of placing local environmental issues in to general EE policies was stressed by Rene Dubos by saying "think globally and act locally". Parallel to this, Agenda 21 stressed the importance of countries and regions' determination of their priorities according to their specific and local needs.

In the light of these ideas, in this study, pre-service teachers' perceptions toward global and local environmental issues were determined. Additional analysis was carried out to find how their perceptions differ by gender and academic major. Results of the study revealed some important issues related to EE in Turkey.

In the present study, the indications of results can be summarized as follow: Turkish pre-service teachers perceived global environmental issues more complex, tangible, significant and dangerous. They were also more certain about presence of global environmental issues as a problem to human or nature. The schools which are one of the main sources environmental information for Turkish people do not focus on

local environmental issues; they mostly focus on passing knowledge about general issues. Media also do not focus on facilitating the transmission of environmental information and promoting public awareness about local environmental problems. Therefore, in Turkey, there is an urgent need for developing effective environmental courses which aim to develop students' environmental knowledge that is related with daily life rather than memorization of concepts and generalizations.

Turkish pre-service teachers' attitudes toward global and local environmental issues were also different except their reported own knowledge. Turkish people perceived that global environmental problems would change their lives more than local environmental problems. They thought that human had more responsibility in causing global environmental problems those they viewed as more tangible, harmful, significant and certain than local ones. Inadequacy of emphasizing local environmental issues in formal science curriculum of Turkey might be underlying reason of this result. Besides these, as related literature supported, Turkish pre-service teachers were pessimistic about the future trend of environmental issues. Although they thought that global environmental problems will become worse than local ones; general view was situations of both problems will be worse than today. This pessimistic view of people's should be changed to motivate them take action to find solutions about environmental problems. For that reason, schools and media should encourage people to think about if everyone takes his responsibility toward environmental problems; these problems can be solved or prevented and as a result situation of environmental problems may become better than today.

Gender had an effect on pre-service teachers' concerns and attitudes about global and local environmental issues except evaluation of their own environmental knowledge and perception of issue complexity. Female pre-service teachers had higher scores for both concerns and attitudes parts of the EPQ. In other words, females have higher sensitiveness toward environment and environmental issues. These more sensitive and favorable attitudes of females may be as a result of their general traditional characteristics such as caring children, looking after home as a mother or wife.

Academic major also had an effect on pre-service teachers' concerns and attitudes about global and local environmental issues except evaluation of their own environmental knowledge and perception of issue complexity. Pre-service teachers who study department of ECE had highest scores on the concerns and attitudes dimensions of EPQ for both global and local environmental issues than pre-service teachers those study departments of ESE and EME. ECE departments composed of mostly female students. This might be a reason of their most favorable attitudes toward environmental issues. Teachers have very important effect on shaping students' environmental attitudes. Therefore, there is a need for developing environmental education courses in Education Faculties of Universities which focus on human, environment, technology and development relation accurately and emphasize concrete reality about local environmental issues.

6.3. Implications of the Study

The results of this study have some implications in developing effective EE policy for Turkey:

- Effective environmental courses should be developed for each level of education-from primary to higher education- which aims to develop students' environmental knowledge related with daily life rather than memorization of concepts and generalizations.

- Media also should focus on facilitating the transmission of environmental information and promoting public awareness about local environmental problems.

- Schools and media should encourage people to think about if everyone takes his responsibility toward environmental problems; these problems can be solved or prevented.

- Males should be more encouraged to develop projects related with local environmental problems in EE courses.

- Environmental education courses in Education Faculties of Universities should be organized which focus on human, environment, technology and development relation accurately and emphasize concrete reality about local environmental issues.

6.4. Limitations of the Study

- Participants of the study were selected only from Middle East Technical University Elementary Education students. This limited the generalization of the study.

6.5. Recommendations for Further Research

- The same study can be repeated with a larger sample from elementary education departments of different universities, in different regions of Turkey for the sake of generalizing results.
- The same study can be repeated with primary and secondary school students to compare differences between students and pre-service teachers.
- The influence of local and global issues on EE can be studied by conducting experimental research. This can be achieved by applying pre and post tests in the courses that include local and global issues in order to measure the concerns and attitudes of the participants.
- The same study can be broadening into the direction that whether local and global issues have impact upon the behavior of the participants.

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APPENDICES

A. Environmental Perception Questionnaire (EPQ)

Öğretmen Adaylarının Yerel ve Küresel Çevre Sorunları ile ilgili Görüşleri

(Pre-service Teachers' Perceptions About Global Versus Local Environmental Issues)

Bu anketin amacı öğretmen adayları olan sizlerin yerel ve küresel çevre sorunları ile ilgili görüş, bilgi ve tutumlarınızın birbirinden ne kadar farklı olduğunu belirlemektir. Anketin tamamlanması yaklaşık 15-20 dakikanızı alacaktır. Bu çalışmaya katkılarınız **gönüllü** olmanıza bağlı olup, çalışmanın sonuçlandırılabilmesi açısından çok değerlidir.

Bu anketten elde edilecek verilerin değerlendirilmesi aşamasında, anketin ilk bölümünde yer alan kişisel bilgiler kesinlikle gizli tutulacaktır. İsim ve diğer özel bilgiler anketin kapsamında yanıt verilen sorularla kesinlikle bağlantılandırılmayacaktır. Özel bilgilerinizin gizli tutulması konusunda gereken titizliğin gösterileceği kesinlikle garanti edilmektedir.

Eğer bu çalışmaya gönüllü olarak katkıda bulunmayı kabul ediyorsanız lütfen sonraki bölümlerde yer alan soruları yanıtlamaya geçiniz ve lütfen her soru için bir seçenek işaretleyiniz.

Yardımlarınız ve katkılarınız için teşekkür ederim.

Nilüfer Ünal

ODTÜ Eğitim Fakültesi

İlköğretim Fen ve Matematik Eğitimi

Yüksek Lisans öğrencisi

BÖLÜM 1

1. Çevre sorunları ile ne kadar ilgilisiniz?

   1 çok fazla

   2 yeteri kadar

   3 biraz

   4 pek az

   5 hiç

2. Aşağıdakilerden hangisi sizing görüşünüze en yakındır?

   1 Çevre günümüzde insanların karşı karşıya olduğu 2 ya da 3 en önemli problemlerden biridir.

   2 Çevre önemli bir problemdir, ama daha önemli başka problemler vardır.

   3 Çevre önemli bir problem değildir.

   4 Çevre bir problem değildir.

3. Çevre konuları ve problemleri ile ilgili, genel olarak, ne kadar bilginiz olduğunu düşünüyorsunuz?

   1 çok

   2 yeteri kadar

   3 sadece biraz

   4 hiçbirşey

   5 bilmiyorum

4. Çevreyle ilgili katıldığınız gönüllü aktiviteler var mı? Varsa hangi aktivitelere katıldınız?

5.. Cinsiyetiniz belirtiniz? Kadın ( ) Erkek ( )

6. Lütfen doğum tarihinizi yazınız. _____

7. Kaçıncı sınıftasınız? 1 ( ) 2 ( ) 3 ( ) 4 ( )

8. Bölümünüz nedir?

_____

BÖLÜM 2

1. Aşağıdaki sorunların insanlar ya da çevre için problem oluşturduğuna katılıyor musunuz?

	Kesinlikle Eminim	**Eminim**	**Kararsızım**	**Emin değilim**	**Kesinlikle emin değilim**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						

2. Nedenlerini ve sonuçlarını göz önünde bulundurduğunuzda, aşağıdaki çevre sorunları sizin için ne kadar karmaşıktır?

	Çok karmaşık	**Karmaşık**	**Karasızım**	**Basit**	**Çok Basit**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						

3. Aşağıdaki çevre sorunlarının nedenlerini ve/veya sonuçlarını ne kadar hissedebiliyor, görebiliyor yada herhangi bir şekilde algılayabiliyorsunuz?

	Çok somut	**Somut**	**Karasızım**	**Soyut**	**Çok soyut**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						

4. Aşağıdaki çevre sorunlarının nedenleri ve sonuçları sizce ne kadar ciddidir?

	Çok ciddi	**Ciddi**	**Karasızım**	**Ciddi değil**	**Hiç ciddi değil**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						

5. Aşağıdaki problemlerin çevre ve insanlar için ne kadar tehlikeli olduğunu düşünüyorsunuz?

	Çok tehlikeli	**Tehlikeli**	**Kararsızım**	**Az Tehlikei**	**Tehlikesiz**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						

BÖLÜM 3

6. Aşağıdaki çevre sorunları ile ilgili bilginizi nasıl değerlendirirsiniz?

	Çok bilgili	**Bilgili**	**Kararsızım**	**Az bilgili**	**Bilgisiz**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						

7. Aşağıdaki çevre sorunlarının oluşumunda insanların etkisi ne kadar önemlidir?

	Çok önemli	**Önemli**	**Karasızım**	**Az önemli**	**Önemsiz**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						

8. Aşağıdaki çevre sorunlarının hayatınızı değiştireceğinden ne derece endişelisiniz?

	Çok endişeli	**Endişeli**	**Karasızım**	**Az endişeli**	**Endişesiz**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						

9. Aşağıdaki çevresel sorunların 20 yıl sonra ne durumda olacağını düşünüyorsunuz?

	Çok daha kötü	**Daha Kötü**	**Karasızım**	**Daha İyi**	**Çok daha iyi**	**Bilmiyorum**
İklim değişikliği						
Su kirliliği						
Su kıtlığı						
Ormansızlaşma						
Çölleşme						
Enerji üretimi ve kullanımı						
Biyolojik Çeşitlilik Kaybı						
Ozon tabakasının incelmesi						
Katı atıklar						
Kıyı şeridinde (İzmir, İzmit, Gemlik, vb.) kontrolsüz endüstrileşme sonucu artan kirlilik yükü						
Endüstriyel bölgelerde (Yatağan, Kayseri, Uşak, vb.) oluşan hava kirliliği						
Hızlı kentleşme – köyden kente göç -						
Toprak erozyonu						
Amaç dışı arazi kullanımı nedeniyle kaybedilen tarım alanları						