Investigating Elementary School Students’ Perceptions about Environment through Their Drawings

Sibel ÖZSOY
Aksaray University

Abstract
The purpose of this study is to determine elementary school students’ perceptions about environment through their drawings. The study was carried out during the spring semester of 2010-2011 academic year. A total of 429 elementary school students, including 68 fourth grade, 78 fifth grade, 97 sixth grade, 85 seventh grade, and 101 eighth grade, participated in the study. The study was conducted by descriptive method and the data of the study were collected by draw-and-explain task. During the data collection students were asked to draw a picture of environment and explain their drawings. The results revealed that elementary school students usually draw humans, different kinds of plants and animals, constructions like houses and factories, abiotic factors such as mountains, lakes, sun in their drawings. Besides, 35.43% of students drew dirty, 59.21% of them drew clean and 5.36% of them drew both clean and dirty environments in their drawings. The results of the study also showed that with increasing age there is a decrease in the number of students drawing a clean environment and an increase in the number of students drawing a polluted environment. Students usually drew local environmental problems such as air pollution, soil pollution, water pollution and disordered urbanization. Based on the drawings it can be concluded that children see human as a part of the environment, think that they are affected by environmental problems as other living things and human based activities are the main causes of environmental problems.

Key Words
Environmental Education, Drawings of Environment, Elementary School Students, Elementary School Students’ Perceptions about Environment.

Since the first appearance of the human beings on earth, they have been affected by events taking place around and at the same time they have put influences on earth in various ways, somehow changed and destroyed it. In the ancient times, human beings created weapons from stones and metals, hunted animals to feed themselves, used animal skins to cover their bodies, and took shelters in caves (Adams, 1996). Until the 19th century, human beings thought that earth’s resources they used for different purposes are limitless and inexhaustible, and did not realize the impacts of the harms they gave to environment on themselves (Doğan, 1988).

Unconscious exploitation of natural resources and the nonrenewable nature of some of these resources resulted in continuous destruction of the natural balance and increase in environmental problems experienced on earth. Global warming, extinction of plant and animal species, rapidly increasing population, increasing consumption, irresponsible exploitation of natural resources, pollution of air, water and land, and nuclear pollution are the most important environmental problems we face today (Brown, 1991; Brundtland, 1987; Goodland, 1995; MacNeill, Winsemius, & Yakushiji, 1991; Redclift, 1984). These environmental problems came to an extent threatening the future of humanity.

Environmental problems came to the agenda of the international community for the first time with the conference organized in Stockholm and since then they have become a common topic of discussions. In Brundtland Report issued in 1987, the term ‘sustainable development’ was mentioned for the first time and this term was described as “meeting the needs of the present, without compromising the
ability of future generations to meet their own needs" (Brundtland, 1987, p. 43). For the measures determined in various meetings and conferences to be effective, education has an important role to play since through education people's awareness of environmental problems can be raised and as result people may develop more sensitive and responsible attitudes towards environmental problems (Plogati, 2006).

Though environmental education started to draw the attention of people in 1970s in the world, it came to the notice of the public with the approval of environment right in 1982 constitution in Turkey. The 56th article of the constitution stated that every human being has the right to live in a healthy environment and improving the environment and preventing pollution are the responsibility of every citizen and state. The Seventh Development Plan designed by President's State Planning Board put great emphasis on environmental education (Akçay, 2006). The Eighth and Ninth Development Plans drew the attention to sustainable development and the importance of education for sustainable development, and education for raising environmental awareness and attempts to inform the public about environment have entered into the priorities of the country. Moreover, the purpose of environmental education was described as equipping the citizens with required information, skills and values to exhibit environmentally-responsible behaviors. With renewal of course programs in 2004, environment-related issues were incorporated into the curricula of various courses.

Children should be interested in, aware of environmental problems and they should have positive attitudes towards, concerns and information about them so that these problems can be solved. Hence, studies carried out on environmental issues at elementary level of schooling are of great importance. Studies conducted in the world and in our country mostly focus on issues such as knowledge of environment, environmental literacy, and attitudes towards environment; hence, there is a paucity of research focusing on children's opinions about environment, their perceptions of environment and meanings they assign to environment. When the relevant literature is examined, it is seen that in general interviews have been used to elicit students' opinions and the means of getting students to draw pictures has been underexploited. Nevertheless, getting young children to draw pictures and then analyzing them can be an effective means of eliciting their opinions about an issue and exploring their inner worlds (Falk, 1981; White & Gunstone, 1992). According to Vygotsky (1971) picture and thought are closely interrelated. Arneheim (1969) states that visual arts are the sources of visual thinking. According to Arnheim, thinking calls for symbols and symbols include thoughts. While children are drawing pictures, they clearly express their opinions and inner worlds. According to Artut (2002) as picture is considered to be a way of a child's perception of the outer world, it can help adults to communicate with the child. During the process of picture drawing, children express their opinions and feelings about an issue through colors, shapes and lines by synthesizing these opinions and feelings through their observations (Malchiodi, 2005).

Drawing picture is both fun and a means of expression for a child (Hayes, Symington, & Martin, 1994; Johnson, 1993). In addition to these, use of pictures to explore children's opinions is a way of avoiding matching the children's opinions with those of the researcher (White & Gunstone, 1992). While children do not like answering the questions asked during interviews, when they are asked to draw pictures, they do it willingly, easily and without getting bored (Lewis & Greene, 1983). Moreover, drawing picture is an alternative means of expression for children who have some difficulties in expressing themselves orally (Chambers, 1983; Rennie & Jarvis, 1995). When the pictures drawn by children are analyzed well, they can provide detailed information about knowledge they possess and their development for the researcher (Yavuzer, 1997). Due to these potentials, children's drawings about environmental issues can yield valuable data about their opinions on environmental issues, information they posses about these environmental issues and their attitudes towards environment (Barraza, 1999).

There are few studies in the relevant literature looking into children's drawings about environment (Alerby, 2000; Barraza, 1999; Fleer, 2002; Keinath, 2004; Sadik, Çakan, & Artut, 2009; Shepardson, 2005; Shepardson, Bryan, Priddy, & Harbor, 2007). In the relevant literature produced in Turkey, there are some studies using children's drawings to elicit their opinions about some issues such as the image of a scientist (Buldu, 2006; Oğuz, 2007; Türkmen, 2008), perception of European Union (Belet & Türkkan, 2007), perception of family (Türkkan, 2004), perception of the Internet (Ersoy & Türkkan, 2009) and there is very limited research dealing with the analysis of children's pictures drawn about environmental issues. The research done so far indicates that there is a need for further studies looking at how children perceive environment and assign meaning to it (Yardımı & Kılıç, 2010). Therefore, the present study aims to analyze the elementary school children's perceptions of environment through their drawings.
Method
Research Method
The present study aiming to determine elementary school students’ perceptions about environment was carried out through survey method. Survey method is an approach which is used to describe the past and the present as it is (Karasar, 2000). One of the qualitative research methods, content analysis method was used in the collection, analysis and interpretation of the data.

Universe and Sampling
The study group in the present study consists of 429 elementary school students attending different elementary schools in Aksaray. Out of these students, 68 are fourth graders, 78 are fifth graders, 97 are sixth graders, 85 are seventh graders and 101 are eighth graders. The participants of the study were selected through convenient sampling method.

Instrument
Draw-and-explain technique is used to elicit the students’ opinions about environment (Brackett-Milburn, 1999; Shepardson, 2005). Draw-and-explain technique is a descriptive method used to understand how students construct thoughts and concepts (McWhirter, Collins, Bryant, Wetton, & Bishop, 2000). In practice, the students were asked to draw a picture about environment and then explain it. Students were handed out an activity paper to make their drawings and explanations. The students’ personal information was collected with a personal information form.

Data Collection
The data collected for the present study were analyzed through content analysis method, one of the qualitative analysis methods (Ball & Smith, 1992; Banks, 2001). Descriptive content analysis includes the determination and description of themes, topics and phenomena involved in the collected visual and written data (Giarelli & Tulman, 2003). For the storage of the data obtained, grouping of the codes under themes, comparison of great amount of collected data, fast repetition or correction of the data when needed, access to the data when wished, NVivo 8 program was used. Prior to coding, all the drawings were examined by the researcher to have a general idea and determine meaningful data units. Following this examination, all the themes detected in the drawings were determined to be the codes of the study. After the codes were determined, themes were sorted out and the codes were subsumed under these themes. To establish the validity and reliability of the data collected, the determined codes and themes were reviewed by the researcher; and at the same time they were examined by an expert on the field of science education by following the same procedure. Miles ve Huberman’s (1994) reliability formula was employed for the reliability calculation of the study, the consistency between the two encoders was found to be 90%.

Results
As a result of the analysis of the data, totally 59 codes were determined. In general, it is seen that students’ drawings included humans, various plants and animals, houses and factories, mountains, lakes, and the sun. The most commonly used ones among these objects are trees. 75.29% of the drawings were composed of trees. Other objects most commonly used in the drawings are humans, the sun, houses, and smoke. While 33.29% of students’ their drawings included humans, 31.00% of them contained the sun, 26.11% of them were comprised of houses and 21.21% of them included smoke. The most frequently used animal in the drawings was bird and 11.18% of the students included birds in their drawings. Moreover, while 35.43% of the students drew polluted environment in their drawings, 59.20% of them drew clean environment. On the other hand, 5.36% of the students included both polluted and clean environments in their drawings.

Thoughts Focusing on Clean Environment: In the drawings included in this theme, the students drew environment as clean and beautiful settings. In these drawings, generally there are trees, grass, flowers, one-storey houses, mountains, lakes and rivers. Frequent inclusion of trees and grass in the drawings indicates that the students relate environment to green areas. Humans are frequently seen in the clean environment drawings. The students usually drew happy children playing in a park or standing in a clean environment in their drawings. In all three themes, facial expressions were frequently used and the students did not only use facial expressions for human figures but also for the sun, trees, clouds and houses (see Figure 1). In the drawings involved in this theme, the students did not draw any sign of pollution or rubbish; in contrast, they drew clean air, a shining sun and clean rivers. In these drawings, no factory was included. The houses drawn in the pictures are usually one-storey houses rarely with chimneys. When a chimney was drawn, either there was no smoke coming out of the chimney, or there was a very thin smoke. In car figures, there was no exhaust gas emitted. Even when smoke coming out of a chimney or exhaust was drawn, it was drawn not as a sign of pollution but rather as a sign of life.
Figure 1.
Facial Expressions Used in Clean Environment

Figure 2.
A Drawing of Houses and Cars in a Polluted Environment
Thoughts Focusing on Polluted Environment: In the drawings depicting polluted environment, the student generally included environmental problems such as air pollution, water pollution and destruction of trees. Moreover, in the drawings included in this theme, usually there is smoke being emitted by factories and cars, industrial wastes and litters scattered on land, sea and river. In these drawings, students usually preferred to draw apartment buildings rather than one-storey houses. Moreover, in order to emphasize pollution, dense smokes coming from the chimneys of factories or exhausts of cars were drawn (see Figure 2). As in the drawings of clean environments, the students made use of facial expressions in their figures; yet, they used sad or crying facial expressions. The animal figures drawn in clean and polluted environments were seen to be different from each other. While the animals depicted in clean environments are usually birds, butterflies and rabbits, flies and dogs are depicted in polluted environments. Moreover, dead fish are figures frequently drawn in polluted environments. In these types of drawings, it was emphasized that animals are badly affected from pollution, particularly from water pollution. In polluted environments, trees were depicted either fallen or dead. Besides animals and plants, humans were also included in polluted environment drawings. In these drawings, humans were depicted standing in a polluted environment, cutting down trees, littering environment, throwing rubbishes around or trying to clean a polluted environment. As far as understood from these drawings, the students think that humans are responsible for the pollution of environment.

Thoughts Focusing on Both Clean Environment and Polluted Environment: The third theme deducted from the drawings of the students consists of the drawings depicting both clean and polluted environments. In general, in these drawings, the students divided the page into two from the middle, and they drew a clean environment on one side and a polluted environment on the other. In some pages, a line was used to separate two drawings, and in some others, a path or a river was used. The drawings included in this theme share the characteristics of the pervious two themes (see Figure 3).

Discussion
The present study aimed to determine the students’ perceptions about environment and for this purpose, the paintings drawn by the students were used. The findings of the present study exhibit some similarities with the findings
of the studies reported in the relevant literature. In studies by Keinath (2004) and Alerby (2000), it was revealed that children include biotic and abiotic factors which they can observe in their close environment in their drawings. It is remarkable that there is a frequent use of human figures among the figures of living things in the students’ drawings. This indicates that the students view humans as a part of environment. The results of the studies dealing with the children’s environment-related descriptions show that the students use living and non-living things in their descriptions of environment; however, the same studies also show that children do not see human as a part of environment (Littledyke, 2004; Loughland, Reid, & Petocz 2002; Shepardson et al., 2007; Yardımcı & Kılıç, 2010).

The findings of the present study show that the students’ thoughts focus on clean environment (59.21%), polluted environment (25.43%) and both clean and polluted environments (5.36%). In a study by Alerby (2000) the students’ drawings were grouped under the headings of clean environment, polluted environment and activities to be performed to keep the environment clean. Alerby reported that one of the two children from 7-10 age group and one of the three children from 13-16 age group drew a clean environment. Why the number of clean environment drawings is higher than the other drawings can be explained by the high number of students from young age group. In both studies, elements depicted in the drawings have similar characteristics. In the drawings produced in both studies, the students usually drew trees, while they drew healthy trees with leaves in their clean environment drawings; they drew trees with fallen leaves or dry trees in their polluted environment drawings. In both studies, the students depicted air pollution, land pollution, water pollution and distorted urbanization in their polluted environment drawings and among these problems, air pollution is the one most commonly emphasized. The children drew smokes coming from factories and cars to depict air pollution. This finding concurs with those reported by Šadik et al. (2009). In these three studies, air pollution is more emphasized than the other types of pollution. Yardımcı and Kılıç (2010) carried out a study with elementary school students and found that the students mostly emphasize pollutions resulting from rubbish and exhaust gases. When the environmental problems depicted in the drawings are examined, it can be easily said that these are mostly the problems that can be observed by the students in their surroundings. In none of the drawings produced within the context of the study, global environmental problems such as global warming and thinning of the ozone layer were depicted. Another finding of the present study is related to human figures found in the drawings. In all the themes, human figures were frequently used. In these drawings, humans were depicted polluting the environment or trying to clean the environment. This indicates that the children think that like other living things, humans are also affected from environmental pollution and at the same time, they are among the causes of environmental pollution.

When the students’ grade levels are considered, the findings obtained revealed that with the increasing grade level; that is, with increasing age, the number of the students drawing clean environment decreases; yet, the number of the students drawing polluted environment increases. This result is parallel to the results reported by Alerby (2000), Barraza (1999) and Fleer (2002). In all three studies, it was observed that with increasing age, the students have more negative opinions about world/environment. This can be explained by the fact that with increasing age, the students’ level of awareness of environmental problems rises and their concerns about these problems also increase. While young children mostly aware of the events taking place in their close surroundings, with increasing age, their awareness of global events starts to rise.

Children’s daily experiences have important place in shaping their thoughts. Though the number of the codes found in the present study is high, the number of varieties in plant and animals species is limited and there is a lack of varieties in environmental problems, which indicates that the students have limited experiences about environmental problems. The purpose of environmental education at elementary level should be to create awareness of environment and environmental problems (Ayyaz, 1998). When the fact that solving environmental problems can be possible only through the efforts of humans is considered, it becomes quite clear that children’s awareness of environment and environmental problems need to be raised. The studies revealed that field trips and activities carried out in nature facilitate children’s understanding of the relationships between living and non-living things in nature and the effects of human activities on nature (Balantyne & Packer, 2002; Manzanal, Barreiro, & Jimenez, 1999). Learning settings provided for children about environmental issues should have the potential to impact children’s environment-related expe-
riences and accordingly their thoughts. With the renewed teaching programs, more importance is attached to environment-related issues and science-technology-society-environment relations within the framework of science and technology course curricula, though these relations and issues are integrated into the contents of all the topics presented in science and technology courses, in practice, it is highly difficult to argue that children are provided with learning environments embedded in nature. Children’s isolation from nature during teaching is an important concern for environmental educators (Miller, 2007; Louv 2005; Sobel, 2008). As children get away from nature, their physiologic and psychological emotions gradually diminish, and this limits their experiences with nature (Louv). However, nature provides children with an enhanced learning environment where they can improve their knowledge about and awareness of environment-related issues. Having positive experiences by means of interacting with nature, children can improve their imagination, creativity, observation skills and communication skills (Crain, 2001; Moore & Wong, 1997; Palmer, 1993). For students to gain these skills and improve their opinions about environment, it is suggested that the topics with a suitable content should be taught outside the class in nature.

Ersoy, A. ve Türkkan, B. (2009) İkİgretim öğrencilerinin re-simlerinde Internet algısı. İkİgretim Online 8 (1), 57-73.

References/Kaynakça


