

Preschool Students' Perceptions on Environmental Problems

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ABSTRACT

According to the preschool teaching program, since the students at this stage forge closer ties with nature, it is important to reveal their awareness and perceptions of the environmental problems in nature. Within this respect, the study aims at determining concepts that the preschool students have in their cognitive structures related to the environmental issues and their perceptions related to these problems. The study was carried out with 5 students who study at a preschool institution in Rize province in Turkey. Phenomenology which is one of the qualitative research designs was used in this study. The data were obtained by having carried out interviews about the events and circumstances. 5 pictures about soil pollution, light pollution, noise pollution, water pollution and air pollution were used as data collection tool. The students were asked to look at these pictures and state their comments related to them. It was aimed to establish with which concepts in their minds students associated the environmental pollutions illustrated on the pictures and their perceptions in this regard. When the students' comments on the pictures were analysed, it was established that most of them used directly relevant and meaningful concepts related to the subject. On the other hand, it was found out that some of the students had deficient or incorrect concepts in stating environmental problems. It was also determined that students associate all environmental problems with the human concept, and they are of the opinion that problems are caused by the human.

KEYWORDS

Environmental Education, Environmental Problems,
Preschool Students

ARTICLE HISTORY

Received 20 June 2017
Revised 30 October 2017
Accepted 07 November 2017

Introduction

The environment is a physical, biological, social, economic and cultural setting in which human beings and other creatures manage the relationship and have a mutual interaction (Daştan, 1999; Yıldız, Sipahioğlu and Yılmaz, 2008;

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cited by: Seçgin, Yalvaç, Çetin, 2010). In brief, all of the extrinsic factors that affect living being can be identified as environment. However, unfortunately environment which has a great importance started to be destroyed by certain factors. These factors are; rapidly increasing world population, unplanned industrialization, pesticides, the use of chemicals, and people's unconscious harm to nature (Seçgin, Yalvaç and Çetin, 2010; Vural and Yılmaz, 2016). Environmental problems which seriously threaten the world can be listed as increasing population, agricultural problems, air pollution, soil pollution, and water pollution (Aksoy et al. 2005; Gökçe, 2009; Türkmen, 2008; Türküm; 1998; cited by: Seçgin, Yalvaç, Çetin, 2010; Gür, 2009; Yıldız, Sipahioğlu and Yılmaz, 2005, s.92).

One of the most remarkable situations of our century is having environmental problems which result from the conflict between the human being and nature (Atasoy and Ertürk, 2008). These environmental problems that are experienced also destroy the natural setting where human lives. In addition to environmental problems, lack of education on this subject also accelerates the course of the period (Basal, 2003; cited by: Seçgin, Yalvaç, Çetin, 2010). At this point, it is vital to raise a more sensitive society towards the solutions of existing problems via a good environmental education in order to provide for the next generation with a healthier environment where they can live. Environmental education aims at raising sensitive individuals, who can deal with environment and environmental problems entirely, and who can prevent or solve the problems (Ayvaz, 1998; cited by: Atasoy and Ertürk, 2008). Environmental education starts with the family and involves in the preschool education, and it continues for a lifetime. Since there is an environmental problem threat, next generations need to be raised with a quality environment education starting from that period (Seçgin, Yalvaç, Çetin, 2010). It is stated that sensitivity of the individuals and the effect of the environmental education that they have are vital for the solutions for the environment because there is a direct relationship between the sensitivity towards environmental problems and environmental education (Çabuk and Karacaoğlu, 2003).

Environmental awareness needs to be raised beginning from the early ages. The more the next generation live together with nature from the preschool period, the more they become aware of the environmental problems and contribute to the solutions for these problems (Armağan, 2006; cited by: Özpınar, 2009). Even if the environmental education that cannot be given in the preschool period, is given later years, it may not meet the expectations in developing a positive attitude towards nature (Taşkın and Şahin, 2008). It is argued that preventing environmental pollution is possible only via an educated society, and the most effective groups for the solutions of the environmental problems are teachers, and environmental education should start from the preschool period (İbiş, 2009; Maskan et al., 2006). Developed countries pay attention to have environmental education in the curriculum. Besides, it is agreed that the environmental education is based on the primary and secondary schools, and accordingly, qualified teacher education is valued (Summers, Kruger and Childs, 2000). According to the preschool teaching program, it is vital to find out the students' awareness towards the environmental issues since at this period children engage with nature. Besides, in literature, it is seen that there are studies which are carried out mostly with university and secondary school

students about the environmental education, environmental awareness, and environmental pollution (Akkurt, 2011; Akçay and Pekel, 2017; Artun and Okur, 2015; Artun and Özsevgeç, 2015; Ateş and Karatepe, 2013; Dede, 2016; Kahyaoğlu, Daban and Yangın, 2008; Yılmaz and Gültekin, 2012; Özyürek and Aydın, 2015; Uyanık, 2016; Vural and Yılmaz, 2016; Yerlikaya and Sönmez, 2017).

The Purpose of this Study

In this study, it is aimed at determining the concepts of environmental problems in preschool students' cognitive structures and their perceptions of these environmental issues.

For this purpose, the following sub-problems were tried to be answered:

- 1- What are the preschool students' conceptions in their minds related to the environmental problem?
- 2- How are preschool students' perceptions related to the environmental problems?

Method

This study was carried out with phenomenology which is one of the qualitative research designs. In phenomenology studies, it is intended to find out and interpret the individuals' perceptions or perspectives related to a certain phenomenon (Yıldırım and Şimşek, 2011).

Study Group

The study was carried out with five of the four years old age group students at Centrum Nursery School in Rize province in Turkey.

Data Collection Tool

As a data collection tool, interviews on events and situations were administrated in order to establish the conceptions and perceptions that preschool students have related to environmental problems. Interview on event and situation is the interview which is carried out in order to investigate the individuals' perspectives towards a subject and to take their opinions. In this bilateral interview, the expert tries to find out the students' comments on the events and the existing conceptions that they have on these topics. The students are shown drawings that illustrate a situation or an event on a small piece of paper, and they are asked to analyse these pictures. Their opinions about them are asked by asking questions (Atasoy, 2004; p.225). There are pictures in the assessment tool related to soil pollution, water pollution, air pollution, light pollution, and noise pollution (Appendix 1). The students were asked to analyse and interpret these pictures. After the students' statements were written down, the conceptions that they revealed about the pictures and their perceptions on these environmental issues were established. Descriptive analysis was applied to the students' statements in the data analysis of the study. In the descriptive analysis, direct quotations are frequently included in order to dramatically reflect the opinions of the individuals who were interviewed or observed (Yıldırım and Şimşek, 2011).

Findings

The conceptions that preschool students associated with the environmental issues, and the frequencies are included in Table 1. Later, the students' interpretations related to 5 pictures were evaluated along with the findings in the table and presented.

1. The Findings related to the Conceptions that Preschool Students Associated with Environmental Issues

As a result of students' interpreting the prepared pictures related to various environmental issues, the conceptions that they revealed about these pictures and their frequency of occurrence were determined. The frequencies related to the conceptions' frequency of occurrence are included in Table 1.

Table 1. The conceptions that students associated with environmental problems

Related Conceptions	Water Pollution (f)	Air Pollution (f)	Soil Pollution (f)	Noise Pollution (f)	Light Pollution (f)
Trash	5		5		1
Fish	5				
Clean	1		2		
Sea Pollution	1				
Rubber, bottle etc.	1				
Sad Fish	2				
People	4		5	1	3
Harm	4				
Other Living Creatures in the Sea	1				
Dustbin	4		5		
Collect garbage	4		5		
Cloud		5			
Sad Sun		5			3
Smoke		5			
Trees		1	1		
Smoke Pollution		1			
Smoke of automobile engine		1			
Air Pollution		3			
Stove		1			
Factory		1			
Sky		1			
Chimney		3			

Loud Noise		5	
Tools		5	
No Pollution		2	3
Be Quiet		1	
Air	1		
Noise Pollution		1	
Music		3	
Be Annoyed		3	
Volume Down		2	
Music Pollution		1	
Paper Pollution	1		
Trash Pollution	1		
Environmental Pollution	1		
Light			5
Energy Saving in the Building			3
Light Pollution			2
Too much light			4
Money			2

2. The Findings related to the Preschool Students' Perceptions on Environmental Pollution

In this part, the conceptions in Table 1 that students associated, and their interpretations are involved, and the students' perceptions about water pollution, air pollution, soil pollution, noise pollution and light pollution are tried to be determined.

Students' Interpretations related to Water Pollution

In the comments made about water pollution, the students associated it with the concepts such as garbage (f:5), fish (f:5), human (f:4), dustbin (f:4), collect garbage (f:4), harm (f:4), and upset fish (f:2) (Table 1). In the picture describing water pollution, the students made interpretations as "*Children throw rubbish into the sea. Then it becomes sea pollution. There are rubber and a bottle. People should throw their rubbish into dustbin, not into the sea.*"; "*The rubbish thrown away into the sea saddened fish so they collected the rubbish*". It is inferred that there are students who are aware of the fact that people cause pollution and fish are upset because of the pollution and this situation destroys the environment.

Students' Interpretations related to Air Pollution

When the students' explanations on air pollution are analyzed, it is found out that they used the conceptions such as cloud (f:5), smoke (f:5), sad sun (f:5),

chimney (f:3), air pollution (f:3) (Table 1). In the picture describing air pollution, the students made interpretations as: *“Clouds are very angry because they do not want smoke. This smoke mixes in the air. It pollutes the air. That’s why we do not have a stove in our house. So smoke cannot be emitted. People shouldn’t use stove in order not to pollute the air.”*, *The sun feels sorry because of the grey smoke and clouds because they pollute the air.”* However, when it comes to air pollution, they stated that smoke is emitted from the chimneys so that stove shouldn’t be used. It shows that they are of the opinion that smoke is only emitted from the chimney of stoves; whereas, there are other ways of formation of smoke. Besides, students mostly were not able to offer any suggestion in order to prevent air pollution.

Students’ Interpretations related to Soil Pollution

When the students’ interpretations about soil pollution were analysed it was found out that they used the conceptions related to the subject such as garbage (f:5), people (f:5), dustbin (f:5), collect the garbage (f:4), clean (f:2) (Table 1). The interpretations that students made about the picture describing the damage caused by waste such as plastics and paper in the environment are as: *“There is rubbish here. if the environment is polluted, fire breaks out. Children throw away the package of their food and pollute the environment.”*; *“Rubbish pollutes the air and environment. There is rubbish pollution here. If we collect them, pollution does not occur.”* Students considered the picture about soil pollution as environmental pollution in general framework so they did not use any conception related to soil. One of the students stated that it is a paper waste but he/she was not able to state that there may be other things that cause pollution. Besides, only one of the students was able to remark about the precautions that can be taken as: *“if we collect garbage around, pollution does not occur”*, and he/she was not able to state any better precautions. It can be stated that in accordance with their age since students are at the preoperational stage they have simpler opinions instead of in-depth statements.

Students’ Interpretations related to Noise Pollution

When the students’ interpretations about noise pollution are analysed, it is seen that they associated noise pollution with the conceptions such as loud noise (f: 5), tools (f:5), music (f:3), be annoyed (f:3), noise pollution (f:1) (Table 1). In the picture describing noise pollution, some of the students’ interpretations are as: *“The child in this picture covers his/her ears with his/her hands because there is too much noise. We need to turn down the things that cause noise”*; *“The child shuts her/his ears. There is noise pollution here”*. As a solution against noise pollution, students suggest that sounds can be turned down (f: 2). On the noise pollution point, two students stated that there was not any pollution because everywhere in the picture is tidy. It can be concluded that they are of the opinion that there must be a concrete visual when it comes to pollution.

Students’ Interpretations related to Light Pollution

When the students’ interpretations about light pollution are analysed, it is found out that they associate this pollution with human (f:3), sad sun (f:3), light (f:5), too much light (f:4) and energy saving in the building (f:3) (Table 1). For this picture describing light pollution caused by the developing technology and urbanization, the students made interpretations as *“The sun lights the*

buildings. In the buildings, the lights are turned on. These lights come from the sun. The sun may think that lights are used excessively so it becomes sorry. If it lights for a long time, light pollution occurs". However, three of the students stated that there isn't pollution because they stated that pollution can be removed by a situation that can be thrown away and light pollution means excessive use of light. Based on this statement they said that their money can be wasted (f:2). The number of the students who think that light pollution can be prevented by saving energy is (f:3).

Results and Discussion

In this study, the conceptions about the environment in the preschool students' mental frameworks and their way of perceiving the environmental issues were tried to be determined via an interview on events and situations and the students described the environmental problems in different ways. This situation may be the preview of the fact that in their future lives these students can be active individuals about the environment and environmental awareness and can have the necessary knowledge. People around the world are generally concerned about environmental problems because of the consequences that result from harming nature, but they differ as to which consequences concern them the most (Schultz, 2001). Findings show that students were most concerned for their health, family and the future of their children, followed by concern for all living beings and animals (Torkar, 2016). As a result of the study, it was concluded that children have correct conceptions in their minds and also the children describe these issues one by one. Since they are at the pre-operational stage in accordance with their age, they were not able to establish a cause and effect relationship between the issues.

Besides, when the children's interpretations about the pictures were analysed, it was determined that most of them used related and meaningful conceptions about the subject. According to the students, the environmental problems described in the pictures were associated with the conceptions such as; garbage, pollution, people, damage. In the study which was carried out by Seçgin, Yalvaç, and Çetin (2010), when the conceptions related to environmental problems in the caricatures that students were asked to draw were analysed, it was found out that the concepts such as garbage, pollution, and human were repeated. In the study which was carried out by Sadık, Çakan, and Artut (2011) when the students' drawings related to environmental problems were analysed, it was determined that students illustrated the conceptions such as garbage, pollution, damage the environment. In the study which was done by Demirbaş and Pektaş (2009), it is seen that students have the basic conceptions related to the environmental issues. It was identified that students mostly gave correct responses to the environmental problems (erosion, soil pollution, water pollution etc.) that they frequently face in their daily lives; however, there are problems about the intelligibility of the subjects such as greenhouse effect, global warming etc. which are among the current problems. But it is thought that their reasons are not mentioned enough in the educational environment. The results of the other research have revealed that the perceptions of students about environmental problems, and their causes and solutions are very limited. The vast majority of students have stated that environmental problems are the problem of throwing garbage on ground (Doğan, Saraç and Çiçek, 2017). Similar

results were found in literature (Littledyke, 2004; Yavuz, Balkan-Kıyıcı and Atabek-Yiğit, 2014; Yücel and Özkan, 2014).

In this study, it is pointed out that the conceptions that students used related to the environmental issues are at various frequencies. It was concluded that these conceptions are among the conception groups included in their immediate surrounding, but as far as it is understood from the given responses, the conceptions related to some environmental issues are not at a desirable level, and they have imperfect conceptions or misconceptions in expressing the environmental problems. When the pollution which poses a problem was mentioned, the children looked for a concrete pollution indication. Therefore, they did not understand that the conditions such as noise and light pollution can be types of pollution. As a reason of this fact it can be said that students' interests on the environment are at different levels. In other words, it can be one of the reasons of the differentiation in the students' responses that most of the conceptions related to the environmental problems are abstract. Within this context, it can be stated that in order for students to learn the conceptions more clearly at the environmental education process, it is vital for the environmental education to teach abstract conceptions by concretizing them. In literature, this situation can be supported with the study which claims that it is better to teach environmental issues with concrete conceptions (Artun, 2013). In addition, in another study which was carried out with students related to the light pollution, it was established that students' awareness increases and they can do better explanations after the activity (Özyürek and Aydın, 2015). In this study, the concepts that students use for the light and noise pollution problems, and their frequencies are fewer, and it can be thought that young students' not being able to internalize the mentioned conceptions or absorb these conceptions completely are the reasons of this fact. Or it can be stated that they do not have enough resources so they do not have experiences related to the environmental issues.

Also, in this study the students emphasized that the main factor polluting the environment is garbage or people. The fact that students mentioned these conceptions more and not put emphasis on other factors much can be stem from their not knowing that there are different conceptions among the concepts that pollute the environment or these conceptions pollute the environment. In literature, it is stated that there are similar results in a study that was carried out by Artun and Okur (2015). This situation may cause trouble for the environmental education that will be presented, as Seçgin, Yalvaç and Çetin (2010) mentioned in their study. Because it is seen that the students do not know the environmental education conceptions entirely and they have scarcely any knowledge about the conceptions.

It was also concluded that the visual materials having used are effective in terms of the students' interpreting and criticizing the environmental issues. This finding of the study is similar to findings in the study that was carried out by Ersoy and Türkkan (2010) and which concluded that students' making use of caricatures was efficient in their decisions about the problems, critical thinking, interpreting and offering solutions.

Suggestions

It should be given more importance to the environmental education starting from the preschool in order for students to gain awareness about the

environment subject. During this education, students can be made prepare smaller projects which will enable them to contribute to the environmental cleaning and recycling. Since it was proved that students do not have enough idea about the actions to be taken, students' inadequacies can be made up via such projects. Considering this fact, preschool teachers can be provided with in-service training related to the environment and environmental education. Teachers can concentrate on the activities related to the environment in their programmes, and they can use the methods with which students can take active roles. The use of story and tale books which are environment themed during the preschool period, will be functional in terms of the environmental knowledge and sensitivity of the children.

Disclosure statement

This study was presented as verbal presentation on the 12th National Congress on Science and Mathematics Education, held on 28th-30th September, 2016, in Karadeniz Technical University in Turkey.

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Appendix 1. Pictures used in study



Solid pollution



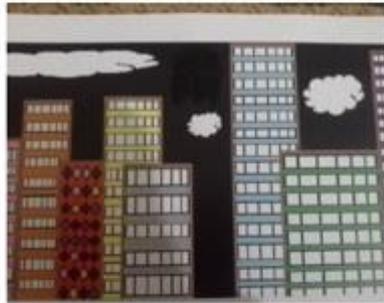
Air pollution



Sound pollution



Water pollution



Light pollution