

DETERMINING THE STUDENTS' VIEWS TOWARDS THE LEARNING STATIONS DEVELOPED FOR THE ENVIRONMENTAL EDUCATION

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Abstract

This study aims to increase awareness in students in relation to environmental consciousness. Therefore, the prepared presentations and the adapted learning stations were used to create awareness of students in the out-of-the-school learning environment supported by the municipality of a county in Ankara the capital city of Turkey. Learning stations serve to people's individual study. The basic goal here is to develop higher order skills and to make sure that students work in stations according to their abilities in a pre-determined order. The study group was composed of volunteering 15 fifth graders of a private school in Ankara. Firstly, the content to be applied in the study was developed. Prior to the application, a readiness presentation was made so as to raise students' interest and awareness in terms of the importance of waste and recycling the waste. As a conclusion of the current study, it may be said that students' interest in and awareness of the environment and collecting the waste developed. Enlarging this pilot project and applying it to bigger groups is important in terms of the success of the educational activities for separating the waste and in terms of the durability of the relevant behavior.

Key words: recycling, learning station, out of school learning, environment education.

Introduction

Increase in world population and the growth of cities in size cause many problems to emerge and to enter into the agenda. We cause more than one kilo of waste per person every day in Turkey. Taking the total population into consideration, the amount exceeds 65-70 thousand tonnes. According to the figures of a hundred years ago, the rate was even smaller than one percent of today (Storrer, 2007).

Natural resources are not unlimited on earth. Unless they are used carefully, humans will soon face the bitter reality of depletion. Both attempts at preventing wastage and efforts to raise the standard of living force developed countries to look for and develop methods for recycling wastes and for re-using them (Chawla & Cushing, 2007). Another reason for this search is the fact that the waste which we throw away after buying and using a product is regarded as a serious economic value (Bonnett, 2007).

Although there are many definitions of recycling, it may also be defined as "the way of waste management which will enable us to use natural resources in the most efficient way, and which is capable of leaving the maximum amount of potential resources possible to the next generations" (Kopnina, 2014).

It is a commonly known fact that educational activities are important in the durable and effective solution of environmental problems (Jeong & Kim, 2015). Raising individuals conscious of and sensitive to the environment, stands the most effective way in solving such

problems. It is an obligation to inform individuals of the environment and to instill in them positive attitudes, and thus to bring about a change of behavior in them. Yet, it is impossible to bring about a change of behavior in individuals and to instill in them positive attitudes only through informing them. Individuals should also be made to take part in long-term applied activities related to the issue (Wiechmann, 2006; Wrede, 1996). The extent to which short-term training conducted on the basis of only informing attains the target is controversial. Thus, the importance of the content of education in solving and preventing environmental problems is manifested. Our success in this respect depends on imposing positive attitudes and behaviors on individuals. It is obvious that individuals with negative attitudes towards the environment will be insensitive to environmental problems and that they will even keep causing problems to the environment (Storrer, 2004; Bonnett, 2007).

An important way of preventing the unfavorableness caused by environmental problems is to educate the whole society beginning with children. In this way, children – who are the experts of the issue- will modify the usual thoughts and behaviors available in their family, and thus will make them develop the desired attitudes and behaviours (Kopnina, 2014). In other words, the solution of environmental problems is possible through a change in the behaviors of families- the institution to start with for the solution of any problem (Stanišić & Maksić, 2014). The most effective way of influencing families is their children. Just as every child pays attention to what their parents say, their parents also listen to what their children say, and they are never indifferent to their children (Storrer, 2005; Storrer & Rohrmann, 2004).

The concept of domestic waste includes the waste we cause in our homes (such as glass, paper, metal, plastic organic waste, and so on). The amount and properties of waste produced as a result of use at home vary according to such characteristics as the socio-economic level and eating habits of a region or a city. Recycling is very important to establish a cycle so that the waste can be re-gained. Recycling is not only for the protection of natural resources and for re-using the waste. It is also for saving energy. This will, in turn, contribute to enlarging dump sites and to collecting garbage regularly. Besides, recycling also makes important contributions to economy. To illustrate this with a simple calculation, the economic value of 3 million tonnes of recyclable waste is approximately 150 million Turkish Liras.

Problem of Research

This study basically has two purposes. One of them is to raise students' awareness of the environmental consciousness, and the other is to determine their views of environmental consciousness by using the learning stations developed. Therefore, the prepared presentations and the adapted learning stations were used to create awareness of students in the out-of-the-school learning environment supported by the municipality of a county in Ankara the capital city of Turkey. Thus, the answers were sought to the following questions:

1. Is it possible to raise students' awareness by means of learning stations adapted?
2. What views do students hold in relation to environmental consciousness?

Research Focus

With its content, this study aims to increase awareness in students in relation to environmental consciousness. Therefore, the prepared presentations and the adapted learning stations were used to create awareness of students in the out-of-the-school learning environment provided by the municipality. Learning in stations serves to people's individual study. The basic goal here is to develop higher order skills and to make sure that students work in stations according to their abilities in a pre-determined order. While placing the educational materials on the tables in learning stations, the directives are presented clearly in writing. The learning stations in this study involve applications to ensure that individuals learn by themselves the recycling cycle of solid waste and of biologically degradable substances and the economic value of this.

Methodology of Research

This research employs case study, which is one of qualitative research methods. Qualitative research studies aim to exhibit perceptions and activities in a realistic and totalitarian way (Büyüköztürk, Kılıç Cakmak, Akgün, Karadeniz & Demirel, 2013; Yıldırım & Şimşek, 2008). The research was conducted with volunteering primary school students selected in purposeful sampling in May 2015. The students' views were obtained through drawing and writing technique. The findings were then put to content analysis.

Study Group

The study group was composed of volunteering 15 fifth graders (eight male, seven female) of a private school in Ankara and their ages ranged from 11 to 12.

Ethical rules were considered in conducting the research. Hence, firstly the negotiations were made with the authorities in the school of application, and thus permissions were received. The participants were offered information on the research and voluntary participation was secured. They were also told that the research results would be used for scientific purposes and that the names would be kept confidential.

Data Collection and Procedures

The data were collected via drawing and writing technique (Karasar, 2002; Mayer 2006). The students were asked to draw pictures and write compositions about the topic after the application so as to determine their awareness and views of environmental consciousness. The data were then put to content analysis.

Firstly, the content to be applied in the research was developed. Prior to the application, a readiness presentation was made so as to raise students' interest and awareness in terms of the importance of waste and recycling the waste. The learning stations were developed within the framework of a project by Prof. Dr. Jürgen Storrer and a research group. The stations are for composting and separating the waste, organic waste cycle and harmful waste, recycling the valuable waste and for preventing the formation of waste. Each group of students is expected to work for 15 minutes in the stations.

The Content of the Stations

1. The station of microorganisms: The aim in this station is to demonstrate through a game of riddle how microorganisms (eight samples) degrade the waste in nature.



Figure1: (a) Learning station of microorganism, (b, c) learning station of earthworm.

2. The station of worms: The basic aim in this station is to explain the importance of the waste degraded in nature and separating the waste we cause. A worm made of a piece of wood with magnets on it represents nature, and what the magnets attract (what waste nature can eliminate) and what the magnets do not attract

(what waste nature cannot eliminate) are demonstrated through a game. At the second stage of the station, a game to show recycling the waste with economic value and prevention of waste was prepared. In this station, the issue of why and how we should separate waste so as to protect nature is emphasized. Here, the aim is to grasp the importance of throwing the waste into the right waste basket according to color. The contributions of valuable waste in particular (paper, glass, metal, electronic appliances, etc.) is stressed with games here.

3. Compost station: This station is a game to show how biological waste, as different from other types of waste, is recycled and transformed into animal food and compost. According to the directive, the natural cycle of organic waste is demonstrated in an entertaining way through puzzle method. What is important here is to emphasize that waste turns back to us (as fruit and vegetables).



Figure 2: Learning station of compost.

Activities Done in Out-of-the-school Learning Environment: A hall of the directorate of technical works of a municipality in Ankara was arranged as the out-of-the-school learning environment. Arrangements to separate the waste (for instance, the importance of the waste for us and for economy, how and on what criterion we should separate our waste, the mechanisms for recycling, etc.) were made in this out-of-the-school learning environment (sample waste, waste boxes, posters, brochures, tables and chairs).

Data Analysis

In order to see how the developed content increases awareness in students in relation to environmental consciousness, the students were asked to draw a picture and write a composition about the topic after the application. The quotations from students' statements were labelled as "St" in order not to use students' names for the sake of observing the ethical rules.

The data obtained with content analysis were divided into three basic categories. The categories were (1) waste sorting, (2) clean environment, (3) recycling.

Validity and reliability analyses were performed for the study. Member checking and expert opinions were obtained for internal validity (Şimşek and Yıldırım, 2013). For internal reliability, participants' views were firstly analysed separately by two experts. 85% agreement was attained between expert opinions of the three categories identified in the first analysis. Then, complete agreement was reached through discussions. Each stage of the study was described in details so as to increase external validity. Thus, it was made possible to do similar research in different settings. The following points were taken into consideration in increasing external reliability: (1) data collection and analysis, (2) determining the participants, (3) describing the social settings and processes in which the study was performed.

Results of Research

This study analyzed the changes caused by content prepared (learning stations and a presentation) so as to create awareness of the environment in fifth graders. The students were asked to give feedback (in the form of written documents or drawings) related to the content applied.

The categories on which students' views were based and the number of students included in those categories in consequence of the analyses are shown in the table below.

Table 1. The number of students in the categories.

Categories	Students (N)
Wate sorting	8
Clean environment	9
Recycling	13

According to Table 1, eight students expressed their views in the category of “waste sorting”, nine students in the category of “clean environment”, and 13 students in the category of “recycling”. As is clear from the number of students in each category, the total is more than 15. This stems from the fact that a student has expressed his/her view in more than one category. The quoted student views for the categories are presented in a holistic perspective.

In this context, it was found that the students stated positive views on recycling the waste. Almost all of the participants said that separating the waste they threw away was important and that the waste should be recycled in a way or other. A student stated his/her view as in the following:

St7: Recycling is important for keeping the environment clean and for our health; so we should keep the environment clean and help recycling. We should put paper into the paper box, glass into the glass box, plastic into the plastic box, and oil into the oil box. We should warn those who do not obey this rule and who throw litter on the street and pour oil into the sink, and we should raise their consciousness in this respect. We can also make compost from natural waste, and can use it as fertilizer in our garden.

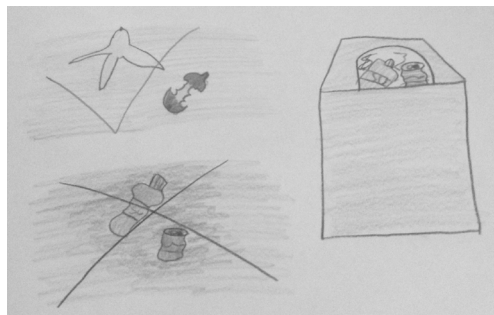


Figure 3: Student's drawing about separating of waste.

Furthermore, the drawings made in relation to separating the waste is shown in Figure 3. In the drawing, the student stressed the need for collecting plastics and metals separately because they did not decompose for a long time in nature.

Another student expressed the idea that recycling was important in environmental cleaning through a drawing. The student meant in the drawing that nature could be kept clean when recycling is performed (see Figure 4).

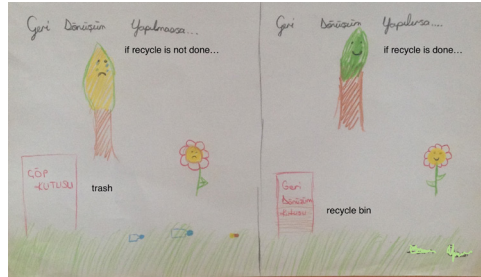


Figure 4: Student's drawing about recycling.

The student also emphasized with a drawing of sad flowers and trees that environmental waste which did not decompose for a long time in nature would be a risk to nature, and that nature would consequently be damaged. The quotations pointing to this case are as in the following:

St5: Recycling is an issue that needs to be considered important all over the world. We should leave clean and green fields to the next generations. Packages, batteries, paper, lids thrown on streets should be thrown into "recycling boxes", which are within walking distance. If we want a clean life, we should perform our duty and we should make a habit of it. We should instill in our friends and acquaintances these duties and responsibilities.

St9: We must know very well how to do recycling, and this must be cared for all over the world. Packages, batteries, paper, lids thrown on streets... They must be thrown into recycling boxes, and thus a clean life must be secured, and we should make a habit of it.

When the feedback given by the students is taken into consideration, it becomes evident that content related to waste management should be prepared in schools, and that the content should effectively be presented by expert educators. It was observed during this application that students' readiness level in relation to separating and recycling the waste was high, and that environmental consciousness could be created through easily understandable course contents.

Discussion and Conclusions

Environmental education directed to students has gained importance as a consequence of increasing environmental problems (Bierle & Singletary, 2008). Raising individuals conscious of and sensitive to the environment, is apparently the most effective way for the solution of those problems (Kopnina, 2014; Stanišić & Maksić, 2014). The findings obtained in this study were divided into three categories which were considered important for the environment. It may be said that students' interest in and awareness of the environment and collecting the waste developed. It became clear from students' statements that learning stations for environmental education were an effective method.

Elective courses as well as additional subjects were included in school programmes so as to establish environmental consciousness and to raise sensitivity to the environment (Tanrıverdi, 2009). An effective environmental education for children should be supported with out-of-the-school learning environments (Hickmann, 1996; Duvinage, 2006; Eberwein & Thielen, 2006). It is important for children to gain experience by doing and by experiencing in an effective environmental education. While it is possible to say that environmental education offered in schools is effective in instilling in students' nature-centered thought structure, it is apparent that it is inadequate in changing the behavioral dimension. The goal of a high quality

environmental education should be to raise individuals who have knowledge of environmental consciousness and who can reflect the knowledge into their behaviours (Bauer, 1997; Sabo, 2013). Enlarging this project and applying it to bigger groups is important in terms of the success of the educational activities for separating the waste and in terms of the durability of the relevant behavior.

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