



Conducting museum education activities within the context of developing a nature culture in primary school students: MTA natural history museum example

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The present study, aiming to develop nature culture in primary school students and to help them to become acquainted with their close environment, is a quasi-experimental study. Museum education activities were conducted with the study group which consisted of 128 fourth-grade primary school students. At the end of the study, the students gained understanding about the significance of the Anatolian land which is rich historically and culturally and has fauna and flora specific to the land. With the activities, the students built up nature culture regarding the country they live in through acquiring information about the Maraş elephant which lived in Kahramanmaraş in the past. The study also tried to increase the cognitive development levels of the students in relation to developing environmental consciousness and critical thinking skills, and interpreting about natural environment they live in.

Keywords: Nature Culture, Environmental Consciousness, Natural History Museums,

INTRODUCTION

Among various definitions of museum, the most comprehensive one was made by the International Council of Museums (ICOM). According to ICOM's definition, museum is "a non-profit permanent institution which serves the society and its development, open to public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of

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education, study and enjoyment” (www.icom.museum) Along with those benefits, museums help developing skills such as observation, use of imagination and creativity, and senses of aesthetics and good taste (Atagök, 1999: 137). According to Item 4 of the Ministry of Culture, Museums Internal Services Regulation, museum is defined as “a permanent institution which searches cultural property, reveals them through scientific methods, examines, evaluates, conserves, exhibits, increases the education level and aesthetic insight of people about cultural and natural heritage, and influences the development of world view of those people” (MEB, 2008). Sözen and Tanyeli (1987: 169) defined museum as a structure built for the purpose of permanently exhibiting artistic, cultural, historical or scientific artifacts; or a structure kept open to the public because of those artifacts it holds. According to Riviere (1962: 23-24), museums are the institutions which houses collections related to art, science, history, health, and technology, functions for public for the purposes of protecting, examining, evaluating, and especially exhibiting for the education of people to increase their aesthetic insights.

Natural history museums have special place within the museum history extending from the 16th century to the present day. The establishment of natural history museums in developed countries, which recognized the importance of these museums, goes at least three-four hundred years back. These countries inventoried their geological heritage long ago, and established a number of natural history museums, geo-parks, geo-sites, geo-topes, and natural parks. They set up technical networks between them to provide information exchange. Through this, people were introduced to Geology; they both gained knowledge about the processes the world has been going through hand contributed to the enhancement of cultural developments of their nations. Today, there is one or sometimes more than one natural history museum in every large city in Europe. For example, the number of large scale natural history museums is 57 in France, and 42 in Spain. These figures become hundreds when small scale museums of the local governments and universities are added (İnan, 2008). These museums, as institutions that follow contemporary museum approach, still function in their historic buildings to exhibit their artifacts.

In these historical spaces where every kind of living or non-living material from nature are kept and scientific studies are conducted, selected materials are exhibited with the aid of audio, visual, audio-visual or interactive tools; and educational activities (exhibitions, conferences, seminars, documentary film shows, etc.) are organized for every educational level. These places are “dynamic” and “universal” institutions where cultural, social and scientific co-operations take place (<http://www.mta.gov.tr>, 2014). According to Demirsoy (1996: 64) natural history museums are the institutions that conserve, in accordance with international standards, the plant and animal samples and fossils, rocks, geological structures of their countries as well as from the neighboring countries and from all over the world, and make them available to national and foreign scientists, and amateur scientists for their scientific studies; conduct empirical research for the purposes of improvement and economical use of plant and animal species; can exhibit interesting plants alive from their botanic gardens and from other countries; educate people by organizing exhibitions and conferences related to the protection of nature and environment; and conduct scientific research.

According to Buyurgan and Mercin (2005: 37), natural history museums are the museums related to science disciplines such as geology, mineralogy, botanic, zoology, physical anthropology, paleontology, and ecology. They are the museums which keep the elements such as fossils, minerals, rocks which generally exist in

nature and are classified according to their features. Different animal and plant species, zoos, aquariums, botanic gardens, natural reservations, and landscapes formed from the natural interactions also form the content of natural history museums.

Sakınç (2007: 149) describes natural history or nature museums as places which inspire people with nature's living and non-living objects. In those places, nature is perceived, internalized, thought about and learned about.

Natural history museums have important functions in terms of education. They have important role in the formation of nature culture, and the collections exhibited in these museums help students develop an understanding of how the past could be interpreted so that it would contribute to the development of critical thinking skills about the past and the History discipline (Marcus, 2007: 105). Natural history museums help bringing up curious and tolerant individuals who search, examine, question so that they become adults who have an understanding of the environmental problems are sensitive about those problems, and can take responsibility in overcoming those problems. Museums also play a role in the formation of participative individuals in social life (Artut, 2009: 108).

While living connected to nature but helpless towards it, human beings have become ruling over nature with the culture and technology they produced in time. However, the relationship between humans and the environment is of the one that puts man at the centre and cast out the environment, as a result of which the ecological balance is damaged permanently. As a result of all these negative developments, studies and researches towards protecting and improving the environment started at the beginning of 1970s. In other words, realizing that they were causing the destruction of nature, mankind started to try to re-establish the balance in human-nature relationship. Families, educational institutions, media, and non-governmental organizations have important roles in the efforts for the development of consciousness of nature and environment (Miser, 2010; Sakınç, 2007; Karataş, 2011).

Various countries, realizing their responsibilities about environmental awareness and establishing consciousness of nature in all individuals, started environmental education in 1970s. According to the common ground reached by 175 countries at the "Agenda 21" meetings in Stockholm and Rio de Janeiro, the environment issue originates from lack of education. The solution to that is the provision of environmental education to be included at every stage of the educational system in every country. Through this, people will become conscious of environment and its productions starting from early ages, sensitive behavioral change will be created, and this education will continue as life-long learning (Kuzu, 2008: 328). Natural history museums have a crucial role in the establishment of environmental consciousness which can be promoted through examining the extinct or endangered living organisms in natural history museum collections.

According to Fidan and Erden (1998: 204), primary education is the most important stage in the educational system in terms of establishing the basic skills needed for life, and prepare them for the upper education levels. The foundations of many behaviors, which later become habits in the adulthood, are laid during the primary education. In other words, most of the information used based on the previous experiences is closely related to the early age experiences. Thus, the knowledge and experience gained at the early ages affect our future. The environmental awareness gained by the child would guide her/him to become a sensitive citizen to the environment (Ciardelli and Wasserman, 2011: 45-56).

One of the natural history museums founded in line with these purposes is the Mineral Research and Exploration (MTA) Natural History Museum in Ankara. The setting up of the Museum started in 1949 with an exhibition hall within the MTA General Directorate which resulted in the natural history museum in 1968. With the mineral, fossil and rock samples collected from every part of the country from the date MTA started to function, and with the addition of artifacts donated by individuals, institutions and organizations, an important collection was formed. Today, the Museum functions with a considerably large collection in its own building. In this study, museum training activities were conducted using samples related to natural history included in the Museum's collections in order to establish nature culture and environmental consciousness in primary school students. Within this context, educational activities about Maraş Elephant, which is specific to Anatolia, were planned.

Significance of the Study

From the examination of previous studies, it could be seen that environmental education programs within formal education play a significant role in the development of knowledge and understanding about the environment, and in the formation of sense of responsibility and positive attitudes towards the environment (Miser, 2010: 91; Krishtalka and Humphrey, 2000). Aspart of the environmental education, natural history museums provide students opportunity to examine extinct or endangered organisms, and to think, evaluate and question about the reasons for their disappearance. The dark ages in the natural world that goes back millions of years come to light through geological, paleontological, and prehistoric studies. It is unfortunate that natural history museums which house valuable clues of the past and present are still not widespread in our country. MTA Natural History Museum has been trying to fill an important gap since its establishment in 1968. As a very special learning environment with its already mentioned features, MTA Natural History Museum can contribute to the development of environmental awareness and nature culture through educational activities using the Museum's opportunities. It is important to start education about nature in the natural history museum in order to learn about the world we live in. These kinds of museums motivate learners to make connection, explore, and understand their close surroundings. Knowledge about and interaction with the environment forms the basis of developing consciousness about nature. For this reason, students obtain information about their close surroundings through activities which involve the investigation and analysis of the materials from nature at the natural history museums.

Awareness, knowledge and skills towards close surroundings help developing an understanding of greater systems, bigger problems and solutions (NAAEE, 2014: 3). Starting museum education from the close environment which the participants are sensitive to and can observe any time helps them communicate with, explore and understand their close surroundings. Observing and interacting with the local surrounding, and seeing the formation and changes occurring in nature form the essential part of the natural history education activities. With this study, it is expected that the museum education activities will help children develop consciousness of nature by forming awareness towards extinct living organisms in their close environment.

Purpose of the study

The purpose of the study is to examine the effect of natural history museums on the development of nature culture and environmental consciousness in primary school students who visit the museum.

STUDY MODEL

The study, aiming to examine the effect of natural history museums on primary school 4th grade students in establishing nature culture by providing museum activities to introduce them their close surroundings, is a quasi-experimental study. In this study, students performed two-dimensioned artistic works which were analyzed by content analysis. With these activities, it could be said that the study has a qualitative dimension as well.

Study Group

The study group consisted of 128 primary school students of ages 7-9 who visited the MTA Natural History Museum between September and June of the 2012–2013 education year. The museum education activities were conducted with 128 students (54 boys and 74 girls) who were from the primary schools in Keçiören and Etimesgut central provinces of Ankara. The students who participated in the study were from the families of average socio-economic status, studied at state schools, and had never participated in a museum education activity before. All of the students were selected randomly.

Data Collection Process

Data in the study were collected in three steps. In the first step, a pre-test consisting of 5 open-ended questions were given to the students to determine their knowledge related to the features of elephants and their existence in Turkey. The items in the test were assessed by three specialists and given their final form. With this test, the knowledge levels of the students before the experiential process were determined.

In the second step, data forming the qualitative dimension of the study were collected. Qualitative data were obtained through the activities done during the museum education. The activities given to the students were two-dimensioned artistic activities and writing activities which were applied by the researcher and the specialists. Data analysis covers the analysis of concept aimed and the written materials about the concepts (Yıldırım and Şimşek, 2005).

In the last step, students were given a post-test consisting of 5 open-ended questions prepared by the researcher. Both pre-test and post-test were scored by two specialists to test the reliability. Scores were determined by two specialists by calculating the average of the scores of each student ($\text{Student Score} = \frac{U1 + U2}{2}$).

Stages of the study are as follows:

1. Providing general information about the Museum, watching a short video about museum visiting rules
2. Discussion on museum visiting rules
3. Pre-test
4. Visiting the Museum with a guide
5. Application of the education package under the observation of specialists
6. Two-dimensioned artistic activities
7. Post-test

Data Analysis

Repeated measures t-test was used to test the efficacy of the experiential process. Shapiro-Wilk was used before t-test to check whether data show a normal distribution. Content analysis was used in the analysis of the qualitative data.

RESULTS AND COMMENTS

MTA Natural History Museum houses a considerably rich animal and plant samples. In the present study, educational activities related to one of these, the elephant species that lived in Kahramanmaraş province of Turkey about 3500 years ago were conducted through a thematic approach. Scores of the pre-test given before the experiential activity and pre-test given following the activity are given in Table 1. From the analysis, the difference between the pre-test mean scores ($\bar{x} = 4.523$) and post-test mean scores ($\bar{x} = 5.281$) was significant. This result could be interpreted as the students' knowledge about the features and the existence of Maraş elephants changed with the museum visit.

Table 1. Pre-test and Post-test Mean Scores

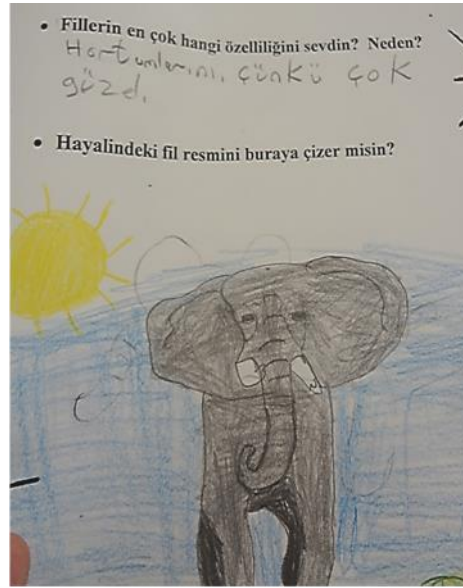
Test	Mean	n	Sd	df	t	p
Pre-test	4.523	128	1.715	127	-7.511	.000
Post- test	5.281	128	1.869			

The study revealed that the students did not know that elephants lived in Turkey (Anatolia); and they had little or wrong information about the living organisms that existed in Anatolia in the past and became extinct for various reasons. It could be said that after the completion of the museum education activities, their awareness regarding the natural heritage of their country increased.

The students who participated in the study had opportunity via this study to examine in depth about the elephant in particular and Anatolia in general. By doing these, nature culture was established in them about the history of the land they lived, and they developed awareness about the cultural heritage, both of which could be considered as significant findings of the study.

Two-dimensioned artistic activities were designed and conducted considering the feelings and thoughts of the students (Ö1 and Ö2). Aesthetic insight worksheets with the question "Which feature of the elephants did you like best?" were given to the students (Ö3 and Ö4). Generally, students stated that they were affected by the "truck, teeth, skeleton, etc." of the elephants. The artistic activities realized by using the information and clues collected during the previous activities were the most creative and enjoyed activities as stated by the students. The students, using the information given and their imagination and courage, made different drawings based on their life experiences.

Ö3



Ö4



Museum education requires the understanding that students should not be motivated to memorization, nor should they be limited to certain statements. For this reason, it is important to get the individuals actively participate especially in the learning processes in museum education. To ensure active participation students were encouraged to express their feelings and thoughts by two-dimensional works as well as by written works such as short stories and poems. One of the students who participated in the national history museum education activities (Ö10) expressed her interest and enthusiasm towards her surrounding by a poem:

Elephants live in Turkey

They have different trucks

How beautiful they are

*Though they can not jump or
run.*

How different the elephants are

Let's travel and recognize them

Let's learn about the past

And cheer up with joy.

It was found in the study that museum education activities were effective in the transformation of individuals to become more knowledgeable about the Maraş Elephant, to become more attentive to their surroundings, and more caring for the past.

DISCUSSION

As a part of the museum education, natural history museums not only transfer ecologic information but also provide a unique opportunity in the development of positive attitudes towards environment which eventually turn into behavior (Doğan, 2010: 137-164). Today's economic and social structures are seen as the negative features of the universal culture. Natural history museums play a significant role in producing effective ways of solutions for those negativities and creating a new culture more sensitive to the humanity and environment. Museum education concept

introduced as an alternative would be beneficial to the student starting from the preschool and primary education in comprehending the roots of the environmental issues, and in creating a conscience to enable them to stand against the negative economic, social and political conditions generated by the industrial culture (Erten, 2004). As Paykoç and Baykal (2000: 103) state, museums have significant role in the social, economic, and political developments of the society. As Natural history museums offer contemporary education and training via various educational activities unlike the traditional methods of the formal education in developing historical and environmental consciousness.

Effects of the individual experiences with the natural world on the environmental consciousness could be seen clearly (Miser, 2010: 91). The general appearance revealed from the related to research proves that natural history museum education programs within the formal education play a significant role in the development of knowledge and understanding related to environment, and in the formation of environmental responsibility and attitudes (Ciardelli and Wasserman, 2011: 45-56).

As Ünder (1995) stated, one of the most important reasons for our disrespect and disinterest towards the lands of our country and natural beings living on this land and around us is the lack and deficiency of our perception of environment. There are unique insects, wild animals, forests, fish, and birds on the lands we live. There is a need for a richer, greener, and environment-focused consciousness embracing the whole natural beings on these lands. Formation of the environmental awareness would be possible through loving, respecting, and protecting not only the plants and animals but also the water, soil and air around us. Of the efforts to protect living and non-living diversity, the most effective way might be to inform people about the environment and warn them about what is slipping through our hands. One of the aims of the natural history museums is to do these warnings. Realization of those warnings could be possible through educational activities conducted by the education units of the museums. Naturally, it is not possible to get to know and love the beauties of the environment we live in without seeing it and interacting with it (Dilli, 2014).

Educational activities in natural history museums provide opportunities to understand oneself, others, and more importantly, the developments of living organisms, maintenance of the cultural heritage, to make meaningful connections between past, present and future, and to understand, protect, and maintain cultural heritage, and develop awareness about values in the close and further surroundings.

CONCLUSION

- It was proved that natural history museums are effective in helping individuals to get familiarized with their surroundings.
- Students acquired the information that elephants lived in Turkey in previous eras, and there is an elephant species specific to Turkey.
- Although it is accepted that the cultural elements formed with the accumulation of hundreds of years cannot be changed overnight, it was proved that museum education activities could be very effective in the development of environmental consciousness and in the formation of nature culture.
- Natural history museums have significant effect on preserving the values of the past which the society has. It was proved that the museum education contributes to the training of children to become conscious of the environment as a treasure inherited by our ancestors and to be passed onto the future generations.
- It was proved that natural history museums promote the curiosity and interests of students towards their surroundings.

- It was found from the study that the museum visits by the schools are generally done in classical meaning (tour the museum and leave), while thematic museum visits are scarce in our country.

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