

Expanding the Horizons through Field Trips: Developing Global Action Plan For Saving Endangered Species and Threatened Environments

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Abstract: *The purpose of this study is to develop an action plan for protecting endangered species and threatened environment together with children from different countries. Out of 60 students, 41 students from Turkey, 13 students from Romania and 6 students from the USA have been involved in developing this action plan. At the beginning of the study, the students in each country formed a project team which was responsible for developing their part of action plan. Under the guidance of the coordinator teacher, each team was required to determine an endangered species specific to their region, and a study area nearby their school.*

Key Words. Endangered species, Threatened environment, Field trip, Water-soil experiments

1. INTRODUCTION

Outdoor activities give pupils to experience outdoor involving direct contact with the various aspects of natural environment [1]. Further, the outdoor activities, i.e. field trips, enable students to develop in-depth knowledge regarding the interaction among living and non-living organisms [2] and also affect (i.e. attitude, responsibility) and action skills (i.e. responsible behavior) as well as cognitive skills (i.e. observation, data collection) [1, 3]. Field trip is one of the examples of the outdoor activities. The professional literature and previous studies revealed that taking students to field trips help the students obtain first hand experiences through the use of scientific processes (i.e. observation, data collection and draw conclusion) [2, 4, 5]. In addition to, outdoor activities (field trips...etc) provide teachers and the students with opportunities [3] to study environmental issues first hand [6], and this

approach has been effective in helping students develop an awareness of the environment [1,7]. By considering the importance of encouraging students to be involved in nature-related studies, Save Our Species Project (Project S.O.S.) was developed with the joint cooperation of primary schools from Turkey, Romania and America. The project was mainly grounded on nature studies which provided the students with not only hands-on but also minds-on experiences. The ultimate aim of this project is to develop environmental literacy and responsible behaviors of students for saving endangered species and threatened environment. Project S.O.S. is mainly based on the data and findings of the previous pilot project Unique and Universal which lasted three years [2, 5, 5, 12, 13]. For further details, please also read the article entitled “*A Unique Call for S.O.S.: Students around the World are Getting Together for the Project ‘Saving Our Species’*” within the conference proceeding book.

2. METHOD

During the 2009-2010 academic year, The Project S.O.S. was undertaken with primary school students (4th to 8th graders) from Turkey (five schools), Romania (one school), India (one school) and America (one school). Due to several reasons (illness, heavy school schedule), only three schools from Turkey, one school from Romania and one school from America sent the completed data collection instrument to the project coordinator on time. Only the data obtained from these schools were analyzed.

2.1. Participants

The participants of the study were 4th to 8th grades students from three countries; Turkey (n=41), Romania (n=13), and the USA (n=6). Twenty-two of the students were boys while 38 were girls. 21 students enrolled in 4th-5th grades while the remaining students enrolled in 6th-8th grades. The distribution of the demographic characteristics of the participants is given in Table 1 below.

Table 1. Students' gender and grades versus country

	Turkey	Romania	USA
<i>Gender</i>			
Girls	23	9	6
Boys	18	4	-
<i>Grades</i>			
4 th -5 th	21	-	-
6 th -8 th	20	13	6

2.2. Study areas and species

Each participating school assigned a project teacher who established a project team from that school. Project coordinator prepared a guideline which would help the project teacher coordinate the project activities within and out-of school. Project teachers were guided by the instructions given in the handbook '*Nature Education in 22 Steps*' during the project period. [11] They had meetings with the project team (within the school) and decided on the study area and endangered species that they worked throughout the 2009*2010 Academic year. The study areas and endangered species selected are given in Table 2.

Table 2. Study area and species by school and country

	School	Study Area	Study Species
Turkey	School A (Ankara)	Beynam Forests	Imperial Eagle (<i>Aquila heliaca</i>)
	School B (Ankara)	Atatürk Forest Farm	Angora Rabbit Oryctolagus cuniculus
	School C (Diyarbakır)	Dicle-Fırat Rivershed	Euphrates Soft- shelled Turtle (<i>Rafetus euphraticus</i>)

Romania	School D (Satu Mare)	Satu Mare RiverTur Valley	Noctule Bat (<i>Nyctalus noctula</i>)
USA	School E (Baltimore)	Maryland Cheseapeake Bay	Monarch Butterfly (<i>Danaus plexippus</i>)

2.3. Data Collection Instruments

Developed by the first two authors [1], three data collection instruments were utilized to assess students' knowledge, attitude and behavior regarding endangered species and threatened environments and two instruments to assess students' ability to collect and analyze the data, and then conclude the results.

Knowledge Test (with behavior items); This test included both open-ended and closed-ended items. The items were associated with students' knowledge regarding endangered species, threatened regions and water quality parameters (pH, heat, dissolved oxygen, turbidity), and their source of knowledge, and also types of action needed to be taken on these topics.

The Attitude Questionnaire; This test was used to investigate primary school children's attitudes toward endangered species and threatened regions. The instrument consisted of 13 closed-ended items on a 4 point Likert-type scale (1-strongly disagree, 2-disagree, 3-agree and 4-strongly agree). For each item, the students were required to explain the reasons behind their tendencies and responses.

The picture form; This form was used to determine to what extent the students know the characteristics of the endangered species they focused. The students were asked to draw a picture of the species. They were also required to indicate the characteristics of this species.

Field trip tests; Two field trip tests were used (1) to determine students' knowledge about the scientific experiments (identifying problem(s), determining variable(s), collecting data, interpreting data and presenting the results/findings) carried out during the field trips; and (2) to determine the students' knowledge of the endangered species upon which they focused.

2.4. Data Collection

During academic year, the students were taken to the study area more than once for close examination. In the field studies, the students

took water and soil samples for investigating the effects of water and soil quality not only on flora and fauna of the study area but also on selected endangered species. At the beginning and at the end of the field trips, field trip tests were administered. Other data collection instruments (knowledge test, attitude questionnaire and picture form) were given to the students during regular meetings at the end of the spring semester.

2.4. Data Analysis

Open-ended results from the data collection instruments were subjected to content analysis. On the other hand, quantitative data were assessed by making use of SPSS 11.5.

3. RESULTS

3.1. Students' knowledge

Turkish students believed that the species are being endangered due to excessive and uncontrolled hunting, water and air pollution, people ignorance of the natural environment and other species, loss of natural habitats, lack of protection measures, global warming, urban sprawl, over-population and damaging the forests. Ignorance, lack of awareness, lack of protection measures and uncontrolled hunting were seen to be more effective reasons causing the species to be endangered. On the other hand, the students believed that natural regions are threatened due to unawareness, lack of environmental policy, factory wastes and discharges, water and air pollution, chopping-down, uncontrolled usage of natural sources, littering, droughts, global warming, uncontrolled pesticide usage, urban sprawl and uncontrolled industrialization. Unawareness, uncontrolled usage of natural resources and littering were indicated to be more influential reasons.

To Romanian students, species are being threatened due to water and air pollution, littering in the natural habitats, uncontrolled constructions, usage of chemicals, lack of food and loss of habitats and excessive and uncontrolled hunting. Pollution and loss of habitat were the most important ones influencing the species to be endangered. They believed that natural regions are threatened due to cutting down trees, destroying parks, excessive constructions, littering, pollution, lack of interest in the environment, ignorance and chemical

usage in the land. Excessive constructions, littering and ignoring the environment were indicated to be more negative impact on the natural regions.

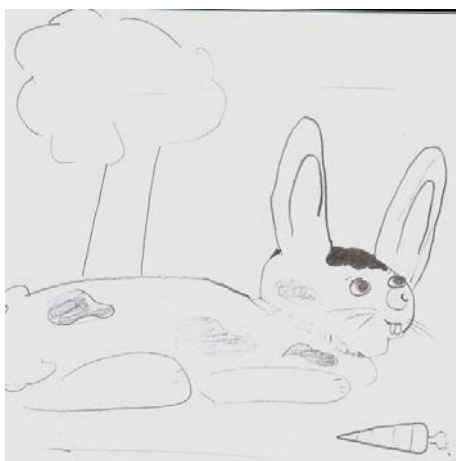
American students indicated that hunting, loss of habitat and food, and littering were main reasons causing the species (Monarch Butterfly) to be endangered. Loss of habitat was cited to be most influential one. Over population, over-use, invasive species, littering and chopping down the forest were the main reasons of being threatened of natural regions. Invasive species and over population were seen as more negative impact on the natural regions.

School (including curriculum and science teachers), media (TV, internet and magazines) and the project they were involved (S.O.S.) were the main information sources regarding endangered species and threatened regions for the students in three countries. Even though the school was rated as one of the information sources, nearly all of the students within the project reported that course textbooks, class activities and subject taught in the classroom were very limited and not sufficient to be knowledgeable about the species and natural regions. The students in all countries reported the importance of field trips activities and out-of school activities to do more observation and more practice in the natural regions.

Students' knowledge regarding the species selected for the study (see Table 2) was also assessed by using picture forms. In the picture form, students drew the species on which they focused and wrote the characteristics of the species. Their pictures and identifications of the species revealed that some of the students knew very well the characteristics of the species whereas the others indicated very limited identification. Examples from the students' drawings are presented in picture 1 to picture 5.



Picture 1. A picture of Imperial Eagle (*Aquila heliaca*) drawn by a student in School A



Picture 2. A picture of Angora Rabbit (*Oryctolagus cuniculus*) drawn by a student in School B



Picture 3. A picture of Euphrates Soft- shelled Turtle (*Rafetus euphraticus*) drawn by a student in School C



Picture 4. A picture of Noctule Bat (*Nyctalus noctula*) drawn by a student in School D



Picture 5. A picture of Monarch Butterfly (*Danaus plexippus*) drawn by a student in School E

Students' responses to the questions assessing their knowledge on field trip experiments indicated their lack of knowledge on water and soil quality parameters. However, the field trip test administered after field trip activities revealed students increased knowledge on these parameters (physical, and chemical parameters such as pH, dissolved oxygen, heat...etc).

3.2. Students' attitudes

Turkish students strongly supported that the endangered plants and animals should be protected (95% Turkish students, %83 Romanian students, 100% American students), pesticides should only be used under the control of agriculture engineering (88% Turkish students, %50 Romanian students, 100% American students), natural resources should be very

carefully used (88% Turkish students, 75% Romanian students, 100% American students), each individual in the society should do something for protecting species (85% Turkish students, 58% Romanian Students, 88% American students). The students were excited when doing search about the endangered species (80% Turkish students, 100% Romanian students, 100% American students). They thought that unplanned industry and urban sprawl had negative impact on endangered species (68% Turkish students, 33% Romanian students, 67% American students). They become unhappy when they saw people doing nothing for endangered species and threatened natural regions (83% Turkish students, 83% Romanian students, 100% American students). They felt happy when they thought of solution for preserving endangered species and threatened regions (83% Turkish students, 92% Romanian students, 100% American students) and when they came up with solutions for saving them (88% Turkish students, 92% Romanian students, 100% American students). They were observed not to approve the construction of new building over the natural regions (54% Turkish students, 58% Romanian students, 100% American students). Almost all of the students from three countries reported that wild animals should not be killed because they are a part of ecological cycle and they have right to get by within the nature. Despite few, the students thought that the projects aiming to protect endangered species and threatened natural areas in the World and in their own country were adequate.

3.3. Students' suggestions and actions

Students from all countries were appeared to be very motivated to take action for protecting species and natural regions. They indicated several action strategies for taking protection measures.

Turkish students were more concerned about informing and warning people about the species and natural regions through campaigns, posters, e-mail groups, forums and projects. Even though some participated already, some indicated that they had not yet done anything, but volunteer to participate in environmental protection studies and projects. Some prepared posters for increasing the awareness of other people on the species and natural regions. They believed that giving fines, putting new laws, creating special areas for the plants and animals located in those

threatened areas, putting much more information about these topics in the textbooks, holding conferences and seminars, and warning people who are polluting the natural areas were very significant precautions for helping protect endangered species and threatened regions.

To Romanian students, three actions should initially be taken for helping protect endangered species and threatened regions; (1) Putting much more information about these topics in the textbooks, (2) creating special areas for the plants and animals located in those threatened areas and (3) sharing the findings of the project with other students and teachers in the school. They all so motivated to take part in the environmental-related projects aiming to save species and natural regions. Many of them appeared to be involved in waste management activities (i.e. recycling).

American students indicated the importance of raising the awareness of people about endangered species and natural regions through conferences, seminars and school curriculum. They also believed that people should not be allowed to enter the threatened regions.

4. CONCLUSION

This study was, one more time, indicated the significance of field trip activities to realize the ultimate aims of environmental education; developing students' environmental literacy and thus environmentally responsible behaviors [8, 9, 10].

Students reported low level of knowledge on the endangered species and threatened environment at the beginning of the study. Also, they had limited knowledge on different varieties of species. However, during the academic year, they developed their knowledge on this topic through internet search, series of field trips nearby their school, and interaction with other students in the project. The picture they drew showed to what extend they were familiar with the species they focused. The project they were involved provided opportunities them to go through for the possible reasons that have negative impact on the species and the natural habitats regions. The information sources they used were reported as school environment, media and the project S.O.S.

The study further revealed that most of the students were observed to be highly concerned about the endangered species and threatened habitats. They reported high level of motivation

and willingness to take action for saving the species and natural habitats. They strongly believed in their strengths to take part in protection studies.

As reported by the students, the classroom activities and text-books were seen insufficient in terms of their content regarding endangered species and threatened habitats. In this regard, the teachers are suggested to include more field-trip activities in school curriculum.

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