

The Influence of Short-Term Environmental Education on Graduate Students: an example from Kaz Dagi National Park, Turkey

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Abstract

In 1999, the Scientific and Technical Research Council of Turkey (TUBITAK) decided to educate post-graduate students on environmental matters by using protected areas throughout Turkey. The first program was started in 1999 at Termessos National Park in Antalya and spread through 13 other protected areas of Turkey in 2006. One of the programs has been held at Kazdağı (Mount Ida) National Park (KDNP) and managed by the authors since 2004. More than 350 students have attended the program over a six-year period. The broad goals of the program were to provide basic ecological knowledge, to foster responsible environmental behaviour, and to affect long-term changes of students' attitudes toward conservation and nature. The program provided an indoor learning environment through in-class lectures, and an outdoor education through field trips. The field observations were an essential part of the program and they took more than half portion of the program. Students were taken to the field to see and appreciate the natural and cultural resources of the protected area, to learn how to recognize different components of the ecosystem, and to examine how local people have interacted with park's resources. The results showed that conceptually a positive learning experience took place and the program has increased the awareness significantly in general environmental matters. However, students made less sense of the lectures that were not supported by an outdoor activity. They learn better, even at a later age, if they get a first hand field experience of environmental matters. Probably, the most important influence of the program was that students who were at the beginning stages of their post graduate studies tend to choose environmental issues as their thesis topic, which means a life-long influence.

Key Words: Environmental education, environmental awareness, Kazdagi National Park, Turkey.

Introduction

The main focus of environmental education programs has been to change environmental behaviour through increasing environmental knowledge (Pooley and O'Connor, 2000). Environmental education is "aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve these problems, and motivated to work towards their solution" (Stapp *et al.*, 1969). The main goal of environmental education is to assess environmental issues, find feasible solutions to any problems that are identified, and finally to create pro-environmental behaviour (Magnus, Martinez, and Pedauye, 1997). Therefore, there is a clear assumption in environmental education that we need to give individuals more environmental knowledge to change their environmental behaviour (Hungerford and Volk, 1990).

Keeping these objectives in mind, the Scientific and Technical Research Council of Turkey (TUBITAK) decided to educate graduate students on environmental matters by using protected areas throughout Turkey in 1999 (Ozoner, 2005). The first program was started in 1999 at Termessos National Park and spread through 13 other protected areas of Turkey in

2006. One of the programs has been held at Kazdağı (Mount Ida) National Park and managed by the authors since 2004. More than 350 students have attended the program over a six-year period. The broad goals of the program were to provide basic ecological knowledge, to foster responsible environmental behaviour, and to affect long-term changes of students' attitudes toward environmental programs, conservation, and nature. The program provided an indoor learning environment through in-class lectures, and an outdoor education through field trips. The field observations and activities were an essential part of the program and they took more than half portion of the program. Students were taken to the field to see and appreciate the natural and cultural resources of the protected area, to learn how to recognize the different components of the ecosystem, and to examine how local people have interacted with park's resources. They also engaged in hands on activities such as making herbarium and rock collections, measuring water quality, and expressing the ecological and cultural properties of the park through painting (Figures 1 and 2).

The research design consisted of a pre-test post-test comparison of responses. The tests were administered to 30 participants in 2007. A pre-test was administered to measure the environmental awareness and attitude towards protected areas right after the participants arrived, but before the program started. Two other tests were administered after the program: One immediately after the completion of the program, before the participants left; and the other after six months of completion of the program to measure how the participants used the environmental concepts and knowledge gained in the program in their life and own work after the program.

Ecologically-based Environmental Education at Kazdagi National Park

The Ecologically-based Environmental Education at Kazdagi National Park started as an education project and aimed at creating a positive perception of science, arising scientific curiosity, and providing scientific activities by using natural and cultural resources of Kazdağı National Park and surrounding areas. The principal purpose of the project was to provide a framework for participants to develop desire, curiosity, and motivation, which will provide a base for lifelong learning. The purpose was not to provide mass scientific information without individualizing it. The project thought participants the way nature works on the basis of relationships among different parts, provided an opportunity to observe, set the stage for an interrogative learning environment, increased awareness on contemporary environmental problems, and encouraged individuals to think critically and scientifically. The program was called ecologically-based because the teaching and activities formulated around ecosystem properties of KDNP.

The education program covered topics such as the formation and development of geologic and geomorphologic features; the important nature protection areas and their resource bases; flora and fauna of the area; wildlife conservation activities and programs; underwater biological diversity in the Aegean Sea; possible effects of global warming on the area; sustainable use and management of fresh water resources in the Edremit Bay region; wetland management practices; the archeological, historical, natural, and cultural resources of the national park; the effects of contemporary environmental problems on the critical ecosystems in the area; the cultural ecology i.e., human impact and interrelationships between man and the environment; everyday life and local cultures in relation to the natural resource use.



Figure1: Participants experiencing the flora of KDNP in an outdoor herbarium activity.

The program consisted of two parts of 12 days. The target group in the first part was school teachers working for the Ministry of Education, scout leaders and others who were thought to help disseminate the knowledge gained during the project such as representatives of Non-Governmental Organizations. The participants of the second period, which is the subject of this paper, were research assistants, masters' and doctoral students from different universities. While determining the target groups we thought that the participants should be able to perceive the problems as a result of human-environment interaction, the threads towards the targets of sustainable developments and biological diversity and transfer these understandings to the groups they educate. The assessment here covers only the post-graduate students leaving teachers, scout leaders and others out.

In order to create the desired effect the method went beyond the classical teaching methods. A group of experts made decisions about the curriculum of the program. These topics were taught in a non-traditional class setting putting no hierarchy between the teacher and the learner; the theoretical information was thought with a popular setting and supported by fieldwork. Participatory and interrogative approaches were prioritized and participants were expected to actively involve the learning process. Observation and hands-on activities by using different science kits were provided; nature was used as the main laboratory; students found time and occasions to express their ideas and be part of the learning process; they were given opportunities to determine certain problems and to propose solutions for these problems by forming working groups. At the same time, we aimed to develop the ability of masses to embrace science by teaching the participants the language of nature. The teaching method was holistic, covering a wide variety of natural and social sciences.



Figure 2: An indoor painting activity from the program.

Effects on Post-Graduate Students

In order to measure the knowledge of environmental matters, a pre-test was administered to measure the level of participants. Considering the fact that participants were coming from a diverse multidisciplinary background, the questions aimed at measuring knowledge of general environmental concepts such as biological diversity, sustainability, global climate change, ecology etc. We wanted to see if the participants were aware of what these and similar terms meant. Although the education program was prepared mostly by geographers and biologists, the participants came from such diverse disciplines as engineering, humanities, natural, and social sciences. Therefore, it was essential to have conceptual understanding of contemporary environmental matters. There were ten questions in this category.

The second set of questions aimed at measuring knowledge of the environment of KDNP. Because KDNP possesses unique environmental qualities, the program aimed at making a connection with general concepts to local environmental properties. The park has natural and cultural values without which some of the concepts might have been difficult to teach such as geomorphologic features and water resources. Therefore, another five questions were asked to measure the knowledge on local environmental properties. These questions included endemic species, geologic and geomorphologic resources, sacred and culturally significant places of the park.

The same test was administered at the beginning of the program and at the end of the program. As a last activity of the program, the participants were asked to answer the same questions again. This is meant to measure if the participants gained knowledge of general concepts and local environmental resources. In order to measure whether or not the program had affected the participants' attitude in their daily life, another set of questions were asked through electronic list serves that was started right after the group completed the education program in 2007. These questions were aimed at measuring how they used the information they gathered in the education program and if the program has made a significant effect on

their academic studies. Answers in this category were expected to show if there were any change in participants' behaviour concerning environmental behaviour.

When analysed, the answers of the test showed that although the participants, were curious about environmental matters before the course, they did not have enough knowledge about the concepts of contemporary environmental problems. Only 20% of the participants, for example, were able to give a satisfactory answer to the question 'What is biological diversity?' At the end of the program this was 82%. Almost none (10%) could identify ecological regions at the beginning. More than half of the participants were able to define and identify these regions after the program. Again only a few of the participants had a solid understanding of nature conservation categories in Turkey at the beginning, but more than 90% were able to name these categories and give examples for each category. The participants were more knowledgeable about global warming and 65% of them answered that question correctly and post-course they increased to almost 90%. The higher percentages for the global warming question were not surprising, giving the fact that the topic has been subject to debate for the last few years in media and academia.

The participants knew even less about environmental properties of KDNP. Most of them, for example, did not know why the area had been declared a national park and what the main ecological properties of the park were. Almost none of the participants, except for a few from the region, knew about different cultural groups living around the park and the ways they have utilised resources. The participants answered questions in this category almost fully in the post-test because they had experienced these resources and the environment almost every day during the fieldwork. Only ten percent of the participants knew about endemic species of the area in pre-test and 90% were considered knowledgeable at the end. The post-test percentages of correct answers were higher in this category compared to the answers in theoretical matters.

Participants were asked another set of questions six months after the completion of the education program. These aimed at measuring three different aspects: the first one was whether the participants had used the knowledge gathered from the program in their daily life; the second one was if the program had any effect on their professional career; the third one was whether the program caused any changes in their environmental behaviour. Almost all participants expressed that they used some knowledge from the program and that their behaviour when changed compared to pre-education period.

Twenty percent of participants said that the education program had a significant effect on their professional career. Some of these mentioned that they had even decided to change their thesis topic after the program. Almost 50% said they were more concerned about and placed an emphasis on environmental matters in their academic studies after the program. Twenty percent of the graduates went on to create their own environmental education courses and projects in their regions and some of them secured funding from national and international institutions for such programs.

Conclusion

The results showed that conceptually a positive learning experience took place and the program has significantly increased awareness in general environmental matters and in the particular features of KDNP. The participants became familiar with theoretical framework of environmental problems. This was a significant result because these participants went back to their own universities and taught about these environmental matters. Some engineers even

expressed the view that they would now be more careful about environmental matters in their engineering projects. Probably, the most important influence was that students who were in the early stages of their postgraduate studies tended to choose environmental issues for their thesis topic, which suggests a life-long influence.

Students made less sense of lectures that were not supported by an outdoor activity. They experience better, deeper learning, even at a later stage, if they get a first hand field experience of the matter concerned. Therefore, the curriculum should be designed in a way to link theoretical issues with practical learning.

There were a few concerns raised by the participants: Some expressed the view that the program was too intense leaving no time for other activities. They complained that having an indoor class after a long fieldwork session in the same day was not productive. The interdisciplinary nature of the group was somehow problematic because it was difficult for lecturers and field teachers to find a common language that would be understood by all the participants. Some participants complained that the program made it difficult to develop a holistic understanding because there was too much diversity within it. Despite all of these possible shortcomings, the program was very successful in fulfilling its targets.

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