

THE EFFECT OF ECOLOGY-BASED NATURE ACTIVITIES ON UNDERGRADUATE STUDENTS' SCIENTIFIC PROCESS SKILLS*

Meryem Nur AYDEDE¹, Ahmet SAVRAN²

¹Dr., Nigde University, Faculty of Education, Nigde, Turkey

²Dr., Nigde University, Faculty of Arts and Science, Nigde, Turkey

ABSTRACT

The purpose of this study was to determine the effect of ecology based nature activities on undergraduate students' scientific process skills. The study was performed in Aladağlar National Park and Bolkar Mountains Region in Turkey. Experimental design was used in the study. The sample of the study was 24 students who study in public undergraduate schools from seven different geographic regions of Turkey. Scientific process skills test, developed by Okey, Wise and Burns and adapted to Turkish by Ozkan, Askar and Geban (1994), was applied as a data collection tool. The scale consisted of 26 items. Mann Whitney U-Test analysis technique was used in the study. Analysis of the scientific process skills test data obtained from the research group indicated that there were statistically significant differences supporting the posttest scores of the research group.

Keywords: Ecology, environmental education, scientific process skills

INTRODUCTION

In order to be effective and successful in solving environmental problems, it is critical that local administrations have the necessary sense of responsibility and sensitivity as well as the legislations issued by the central government. Also, it is critical that the local people acquire a certain degree of sensitivity with education (Gurel, 2008), because, environmental education is the most powerful tool for changing human values in the use and protection of the natural environment (Lungu, 1999)

On the other hand, the protection of environment by various legal statuses is not sufficient to protect them and only one government agency can not take on this responsibility. People who live in this world, have to save the nature and obey the rules and always feel responsible for ecological concerns and nature. People should not only take advantage of living in this environment, they should also avoid some behaviors that disrupt the natural balance. Therefore, public awareness and positive perception of the

* The study was supported by TUBITAK (The Scientific and Technological Research Council of Turkey).
Copyright © International Journal of New Trends in Arts, Sports & Science Education 1

stakeholders must be increased by authority. In this context, nature training activities become very important to enhance the awareness and participation of people (Ogurlu, Alkan and Gundogdu, 2010).

Because of this individuals should be offered quality environmental training activities and awareness of environmental education (Uzun and Saglam, 2005). Natural protected areas offer important opportunities for environment training activities. Therefore, regions where is there are natural protected areas is generally preferable for nature education projects.

Active Learning Activities in Environmental Education

Nowadays, in the field of pedagogy, active learning on educational applications and theory has become a very popular subject. The reason why active learning turned out to be one of the most discussed subjects is because the students are given the chance to make the necessary adjustments in process of education rather than being an inactive listener and note taker (Jayawardana, Hewagamage and Hirakawa, 2001). Active learning based activities force the students to contemplate and to make comments on applied information by involving them in activity- based research practices. In this approach students not only listen to teachers, but also at the same time, they improve their skills through their practices, and analyse, integrate and evaluate the knowledge which they have acquired by applying (Prostko, 1993). Environmental education, students should have an active and a responsible role in their own learning processes. In other words, in active learning based environmental education, the students have the responsibility to reach their academic goals, to their educational and research strategies (Jayawardana, Hewagamage ve Hirakawa, 2001). As a result, the main idea is that the students learn scientific process skills better if the learning process is based on research and student centred activities (Schneider, 2001).

The main purpose of our education system in today's technology should be giving people the skills to get the information rather than giving them **litarel**. This is something

that needs learning with comprehension, problem solving when facing difficulties and the scientific method process skills rather than memorising them. One of the rare subjects is environment where you can get these skills and qualities.

Creating this type of people in Turkish society is under the responsibility of the educators and related institutions of the state. In this regard, obeying the call made by Nature Education and Science Schools, TUBITAK, we aim to train university students in our country and want to demonstrate that we have responsible, respectful to the environmental ethics and conscious young population in our country as well.

Based on these descriptions, the purpose of this study was to determine the effect of ecology based nature activities on undergraduate school students' scientific process skills. The share of actual knowledge regarding the nature training projects would also increase the success of future projects

METHODS AND PROCEDURES

This study was limited to activities carried out by a project called 'Ecology Based Nature Education And Nature Sports School On Aladaglar National Park And Bolkar Mountains (Nigde)'. Experimental method with pre-test and post-test was applied in the study. The project was performed in Aladaglar National Park and Bolkar Mountains Region in Turkey. The study, was performed on 10-17 June 2011 (Eight days). The target group of the study was 24 undergraduate students. During the project, some information and educational applications about flora and fauna, geomorphologic formations, which are observed visually was presented to participants.

Additionally, the participants were informed about some sports activities such as; hiking, climbing, camping and surviving in the nature. The training process of the project was determined to be eight days and it was run by expert staff, instructors, trainers, teaching staff, guides and of course the participants. The participants were camped in the Demirkazık Chalet during the study.

In the study, data collection tool was applied to participants during a hour course perion (45') to determine their initial level of scientific process skills as a pre-test. Then, the ecology based nature activities were carried out after for eight days. After the activities were completed, in order to determine the changes in the participants' scientific process skills, data collection tool was applied again as a post-test.

Participants

The project target group included undergraduate students. It was thought that the outcomes and gains from the project with these participants would be worthy and widespread as well as more positive in terms of the material and spiritual labor. Since the target group who participated in the project was well educated, they are likely to be the pioneers and practitioners of other similar events and projects, also they could use the gained information in their work places in the following years. 24 undergraduate students participated from different universities of Turkey in the study.

Data Collection Tool

To determine the effect of ecology-based nature education program on participants' scientific process skills, 'Science Process Skills Test' was used. Scientific process skills test which was developed by Okey, Wise and Burns (1985) and adapted to Turkish by Ozkan, Askar and Geban (1994) was utilized. Because of the need to use more current data, reability analysis results done by Askar (2007) were taken into consideration in the study. According to the reability analysis results done by Askar (2007), cronbach alpha value of the scale was .80, consisted of 26 items. This scale was applied the research group in the first day of the study as a pretsest and in the last day of the study as a post test.

Data Analysis

The data were analyzed by using SPSS. The results were compared regarding their scores by Mann Whitney U-Test analysis technique. The significant level for outcomes of t-test analyses was approved 0,05.

RESULTS

To understand the effect of ecology-based nature activities on undergraduate students' scientific process skills, Mann Whitney U-Test analysis was concluded and results were presented in Table one.

Table 1: Mann Whitney U- Test Analysis Results of Posttest Scores Pursuant to Scientific Process Skill Test

	N	Mean Rank	Sum of Ranks	U	P
Pretest	24	6.10	36.00	8.00	.004
Posttest	24	9.80	69.4		

The results of the Mann Whitney U- Test analysis on “Scientific Process Skill Test” questionnaire after the training showed that there was a significant difference between the pre-test and post-test results of the research group. The mean rank of posttest results in the research group ($M = 6.1$) have increased more significantly than the mean scores of the post-test ($M = 9.8$, $U = 8$, $p = .004$). Thus, it may be said that the use of ecology based nature activities affected students' scientific process skills meaningfully. Related graphics with this result are shown as follows:

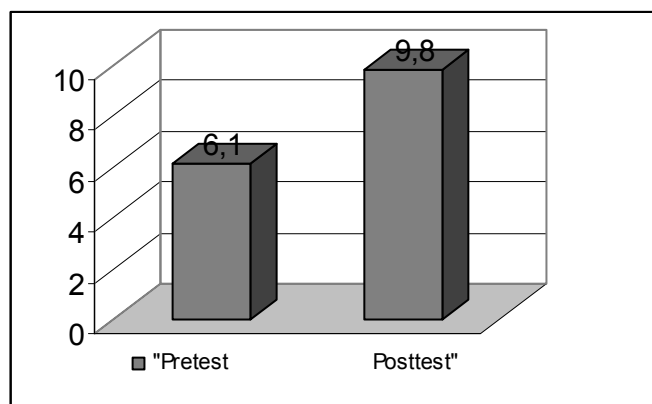


Figure 1. Bar Graphic for Mean Rank Scores of Scientific Process Skill Test of Research Group

Analysis of the scientific process skills test data obtained from research group indicated that there were statistically significant differences supporting the posttest grades of research group.

DISCUSSION

This research outcomes indicated that ecology based nature activities affected students' scientific process skills positively. Pre-test and post-test results obtained from 'Scientific Process Skills Test' showed that there were statistically significant differences supporting the post-test scores.

In the study, the reason of exploring students' scientific process skills was support students to comprehend the nature and its functions, to develop positive attitudes towards nature. As a result, this study aims to support students' use of scientific process skills in every stage of their lives which they acquired from the nature.

There are some researches which support this research's results. One of the research studies that support this study result was carried out by Buhan (2006). Buhan (2006) based her study on the views of pre-school teachers. She found that there was a positive

meaningful statistical correlation between total points of the environmental instrument and knowledge, attitude, and behavior. So, this result shows, that the environmental training activities should be based on active learning activities that support students display actual behaviors.

Another research was created by Keles, Uzun and Varnacı-Uzun (2010). They created a nature education programme on Ihlara Valley. According to their results, nature education program significantly contributed to students' environmental consciousness and environmental attitudes.

Guler (2009) created an outdoor environmental education program for teachers. The results which were obtained from the views of the teachers showed that teachers' efficacies increased as they gained positive perception towards the protection of the environment.

According to the research results of Ballantyne and Packer (2010), environmental training activities had an important impact on students' attitudes towards the environment, their desire to look after the environment, their behaviour in natural areas and their household environmental practices.

REFERENCES

- Aydemir, G. (2010). *The Impact Of The Case Method In Social Studies Teaching On The Environmental Consciousness And Attitudes Of The Students*. (Unpublished master thesis). Marmara University, İstanbul, Turkey
- Buhan, B. (2010). *Okul Öncesinde Görev Yapan Öğretmenlerin Çevre Bilinci Ve Bu Okullardaki Çevre Eğitiminin Arastırılması*. (Unpublished master thesis), Marmara University, İstanbul, Turkey
- Euge`ne, C. (2006). *How To Teach At The University Level Through An Active*

- Learning Approach? Consequences For Teaching Basic Electrical Measurement. 39(10).936-946 <http://www.sciencedirect.com/science> (10 Haziran. 2006).
- Guler, T. (2009). The Effects of an Ecology Based Environmental Education on Teachers' Opinions about Environmental Education. *Education and Science*, 34 (151), 30-43
- Keles, Ö., Uzun, N. ve Varnaci Uzun, F. (2010). Öğretmen Adaylarının Çevre Bilinci, Çevresel Tutum, Dusunce ve Davranışlarının Doga Egitimi Projesine Baglı Degisimi ve Kalıcılığının Degerlendirilmesi. *Elektronik Sosyal Bilimler Dergisi*, 9(32), 384-401
- Keskin-Gurel, Ş. (2008) *The Sensibility About The Environmental Problems And Environmental Consciousness (The Case Of Afyonkarahisar)*. (Unpublished master thesis). Afyon Kocatepe University, Sociology Department, Afyon, Turkey.
- Lunenberg, M. L. ve Volman. M. (1999). Active Learning: Views And Actions Of Students And Teachers İn Basic Education. *Teaching And Teacher Education*, 15, 431-445
- Lungo, V. (1999). Education, Art and Ecology during Summer Camps in Romania: A Local Experience. *Journal of art and Design Education*, 18 (3), 327-335
- Jayawardana, C., Hewagamage, K. P. and Hirakawa, M. (2001). Personalization Tools For Active Learning In Digital Libraries. *The Journal of Academic Media Librarianship*8(1). <http://wings.buffalo.edu/publications/mcjrnl/v8n1/active.html>
- Mattson, K. (2005). Why “Active Learning” Can Be Perilous To The Profession. *Academe*. 91(1), 23-26.
- Prostko, J. (1993). “Speaking of teaching” *Stanford University Newsletter on Teaching*, 5(1),1-4.
- Schneiderx R. M., Krajcik, J., Marx, R. W. ve Soloway, E. (2001). Performance Of

Students In Project-Based Science Classrooms On A National Measure Of Science Achivement. *Journal of Research Teaching In Science Teaching*, 39(5), 410-412

Ogurlu, İ., Alkan, H., Gundogdu, E. (2010). III. Ulusal Karadeniz Ormancılık Kongresi Bildiri Kitabı, 20 (1), 144-152

Uzun, N., Saglam, N. (2005). Effect of Socio-economic status on environmental awareness and environmental academic seccess. *Hacettepe Üniversitesi Eğitim Fakultesi Dergisi*, 29, 194-20