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Nature-Themed Teaching Methods for Deaf Students

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***Abstract*— Dazzling technological developments, increasing workload, examination syllabuses that are gradually getting difficult, in brief, many developments in our daily lives are in fact, building invisible walls between us and the nature. This situation is inescapable especially for the ones who live in city centers. The very importance of bringing the people and nature together made researches on this subject a current issue. On this topic, much project research has been prepared and some of them were materialized and supported by research institutes and some foundations. Regardless the age, gender, social status and profession group of any person, the education is a unescapable necessity. Therefore, it is a necessity to consider targeting the whole society while planning education research proposals. In this sense, it should be enabled the hearing impaired individuals, to have education.**

In this research, it was given education to hearing impaired students of 5, 6, 7 and 8th classes of elementary education levels by experts and trained academicians on nature education. The aim of this research is, to be able to develop an integrated multidisciplinary education-teaching program on environment education, involving social, scientific, technological and cultural aspects of nature by using the language of nature and to create an awareness on hearing impaired elementary school students.

At the end of this study, it was found to have a positive effect on students of Nature-Themed Teaching Methods.

***Keywords*— Nature education, Deaf student, Rural areas**

I. INTRODUCTION

Disability is a concept with many definitions in various disciplines and is subject to different purposes. This concept is explained medically, sociologically and politically, and is used in different ways in different languages and cultures. One of the most focused typical definitions is “a person's condition of being insufficient for any reason” [1].

A secondary analysis of data from the Disability Survey that held in 2002 in Turkiye has revealed that disabled people are exposed to enormous social disadvantages. Social inequalities caused by social disadvantage have made disabled people one of the extraordinary groups of community [2]. Disabled people can participate in social life, but it depends sustaining an independent life. To the extent that we can achieve this, the self-sufficient people with disabilities will increase. In fact, our real goal should be to increase the number of "self-sufficient people with disabilities", more than to increase the number of disabled people “we can help”.

The number of disabled people in Turkiye corresponds to 12.29% of the population according to research by Turkiye's Statistical Institute (TUIK), and accordingly, there are about 8.4 million disabled people in the country. The distribution by disability groups, disabled people are as follows [3]:

-Visually impaired 8.4%

-Hearing impaired, speech and language disabilities 6.1%

-Orthopedic impairment8.8%,

-Mentally handicapped 29.2%

-Psychological and emotional 3.9%

-Derived diseases 25.6%

-Multiple disability groups 18.0%

Hearing impaired whose number approach 2.5 million according to the report of the United Nations, are the disabled groups attracting attention at least since they have no visible defects.

Hearing impaired who don’t seem to be disabled when you look at from the outside, faced a life that increasingly requires the use of social skills during and after their educational lives. Studies abroad are discussed various aspects of the social skills of hearing impaired. Some studies have examined social attitudes, social development [4], psychotic reactions [5], neurotic tendencies [6] withdrawnness [7] in hearing impaired. In studies comparing the hearing impaired and those with normal hearing, the hearing impaired has been observed to have weaker social cohesion, weaker growth of empathy and weaker self-understanding than those with normal hearing [8].

Upon analyzing the social interactions of hearing impaired, it is stated that social skill level of hearing impaired is lower compared to their hearing peers; that they cannot communicate enough with their surroundings, therefore they show compliance and behavior issues. Overall, hearings impaired are defined

as socially undeveloped and backward because of their communication skills are inadequate [9].

The main aim of this research is to investigate the applicability of nature-themed education for hearing impaired students.

For this purpose, hearing impaired students from 5, 6, 7 and 8th grades of elementary schools and from different provinces will walk the national parks, nature parks and ecological - biologically important areas, museums, and other areas they might encountered with wild animals located in Isparta; so they will be introduced and taught biological and ecological objects, concepts, the natural events and formations through this areas; by doing this, we aim to inform them about nature, protected natural areas and nature education; to raise their awareness of the environment and ecology and to enable students to love this topic; and eventually to contribute to the dissemination of nature and ecology culture, thanks to their transferring the information, culture and experience they receive to fellow students.

Also, contributing the development of students' ability to understand nature and society by perceiving the nature and the surrounding social tissue as a classroom and laboratory and to help their socialization with theatrical events like drama are among the objectives of the project.

II. MATERIALS AND METHODS

The data of this research were obtained from hearing impaired students participated in the 4004 TUBITAK nature education called Quiet Nature 3 [10]. A total of 48 hearing impaired elementary school students who were previously selected from different provinces, and who haven't been participated in a similar organization such as training program, seminars, courses, etc. taken to the scenic areas of Isparta and they were trained by Botanists, Ecologists, Wildlife Expert, Geologist, Educator, Trainer, Entomologists academics who are all experts in their fields. In this training, some plants, animals, rock samples have been introduced, and as well as artistic activities such as t-shirt painting, marbling, making ornaments by clay, some dramas and games were also played (Figure 1).

Fig.1: Botany education in forest

Also the students camped out for one night in tent and were given information about ecosystems, wetlands, horse riding, swimming and the natural protected areas (Figure 2).

Fig.2: Bird watching in natural protected areas

An 11-question survey was conducted in order to determine the factors those influence the decision to join of the deaf students. In this survey, by scoring each question 0 to 100, the students have identified the factors that affect their decision of participation. These factors and mean scores are given in Table 1. Also 17-question pretest and posttest was administered to the participants in order to determine the effect of education. The pre-test was administered at the beginning, and the post-test was administered at the end of the training period. The test questions were generally asked under the headings scientific activities, artistic activities and sports events. In these tests, it was provided to observe the changes before and after training on a variety of plants, insects, animals and geological formations that participants can recognize. Also, the changes have been identified in their level of knowledge on artistic activities like marbling, making ornaments by clay and t-shirt painting, and sporting events such as horse riding and swimming (Table 2).

Non-numeric variables were introduced into the analysis by making digital. While pre-test and post-test questions were multi-choice, the answer choices were given as "I have no knowledge, I have some knowledge, I have a moderate knowledge, I have a wide knowledge". They have been digitized in ascending order as I have no knowledge:1, I have some knowledge:2, I have a moderate knowledge:3, I have a wide knowledge:4 and made available to the analytical assessment [11; 12].

Wilcoxon Rank statistics which from non-parametric tests and used for two dependent variables were performed to determine whether there is statistical difference between pretest-posttest. Test evaluation was made with SPSS statistical software [13].

III. FINDINGS

The findings of results of the survey about the importance values of the criteria affecting participation decision are given in Table 1.

As can be seen, the idea of seeing new places was the factor that most influence the decision of students to participate (%95.9),and the idea of a good opportunity to address the fatigue of a year (48.2%), to provide an opportunity to assess the spare time (45.3%) and to be free of the training program (36.5%) appear to be the least influencing factors.

Table 1. Criteria affecting the decision to participate, and the importance percentage (%)

Criteria	The average score (%)
The idea of seeing new places	95.9
To have more information about the nature-human interaction	94.5
To have more information about the wildlife and fauna	92.5
To have more information about flora, the types of plants and trees	89.9
Providing the opportunity to explain nature in more detail and scientifically	95.2
Better recognition of plant and animals (ecology, geology, etc.)	83.8
To have more information about the landscape and visual values	75.2
The opportunity to meet new people especially with nature lovers and scientists	68.2
The idea of a good opportunity to take a year of fatigue	48.2
To provide an opportunity to assess the free time	45.3
Being free of the training program	36.5

Wilcoxon Rank statistics which from non-parametric tests and used for two dependent variables were performed to determine the results of pre-test and post-test that applied to see the difference between the level of pre and post-training knowledge of participants. And results of test statistics are presented in table 2.

Table 2: Results of the Wilcoxon rank statistic

Knowledge about	Pretest Mean	Posttest Mean	Z	Asymp. Sig.
Nature	1.556	3.444	3.589a	0.000
Camp	1.333	3.667	3.800a	0.000
Wetlands	1.778	3.000	4.066a	0.000
Insects-Fungi	2.111	2.333	1.414a	0.157
Sky & Space	2.333	3.667	3.619a	0.000
Forests grow	2.889	3.222	1.613a	0.107
Nature park	1.778	2.111	2.089a	0.067
Nature photography	2.444	2.556	0.816a	0.414
Wild animals	2.333	3.000	2.585a	0.010
Geology	1.889	2.111	1.155a	0.248
Plants	1.778	3.222	3.839a	0.000
Ecology	1.222	2.222	3.819a	0.000
Horse riding	1.667	2.000	1.897a	0.058
Swimming	2.000	2.000	0.000b	1.000
Marbling	1.222	3.556	3.800a	0.000
Ornaments	1.556	3.222	3.038a	0.002
T-shirt painting	2.333	3.222	4.000a	0.000

a. Based on positive ranks

b. The sum of negative ranks equals the sum of positive ranks

When Table 2 is examined participants' Hiking, Camping, Wetlands, Sky and Space, Plants, Ecology, M, Clay Ornaments and T-shirt Painting knowledge levels were determined to be increased by 0.1% significance level statistically. The level of knowledge about wild animals was determined that an increase of 1% level of significance. A significant change was not observed in knowledge levels about Insects and Fungi, Forests, Nature Photography, Geology and Rocks, Horse Riding and Swimming.

4. Discussion and Conclusion

When the findings of results of the survey about the importance values of the criteria affecting participation decision examining, it is understood that the idea of seeing new places and elements of nature (plants, animals, insects, rocks, etc.) are important for the students due to taking over 80 points. The idea of a good opportunity to take a year of fatigue (48.2), to provide an opportunity to assess the free time (45.3), being free of the training program (36.5) appears to be the least influencing factors for students' decision of participating. With these findings it is understood that vacation, recreation or free education was not important for the students and they came to see new places and learn the elements of nature.

A significant change was not observed in knowledge levels about Insects and Fungi, Forests, Nature Photography, Geology and Rocks, Horse Riding and Swimming. It is considered that the students might already have information about these subjects, or the training time was insufficient on these subjects.

When the difference between pretest and posttest results are analyzed participants' Nature, Camping, Wetlands, Sky and Space, Plants, Ecology, Marbling, Clay Ornaments, T-shirt Painting and Wildlife Animals knowledge levels were determined to be increased.

When Table 2 pre-test averages examined level of knowledge of these matters prior training of the participants seems to be very little (Average ranged from 1.22 to 2.33). It is understood by the average of the posttest that knowledge levels about the same subjects reached to 'moderate/high' levels from 'very few' after the training period (Average ranged from 2.22 to 3.67). Results of the Wilcoxon rank statistics support this conclusion. The obtained results revealed that the nature education may apply for the hearing impaired students.

When other studies examined it is stated that nature is one of the important factors in human development. Being in constant contact with nature is an important factor for the development of the people. Because when the system of nature understood, people feel happy with this. Since, the laws of nature are the basis of science and the arts [14].

Nature is also an Outdoor Therapy Unit. It acts on rehabilitation in two ways as directly and indirectly.

Direct effect represents the image of the natural areas or in the form of a view to that field, and indirect

effect comes up with the patients' recovery or their feeling good and manifests itself by improving the environmental health quality and with the effects as patients feel comfortable and peaceful [15]. Even the gardens that designed in accordance with nature are reported to affect the moods of patients in a positive way [16]. Similarly, being outdoors in natural or natural-like environment, to feel the sunlight, to watch trees and flowers, listening to the sounds of water and birds, to realize garden components that decorate the garden causes stress reducing effect on people [17].

It is known that even video images, slides and photos of gardens and natural areas in the outdoors help people feel good about themselves and these positively affect their health [18]. Therefore, arranging accommodation and closed spaces like classrooms considering elements of nature is important to ensure students feel good about themselves and to facilitate their learning as a result.

Scientific, social and sporting events that students participated in are important in terms of their personal and social development. Students help their intellectual development with activities such as science-nature, drama, and art. Through sporting activities as well as to help directly physical development, they can indirectly contribute to the psycho-social development [19].

As a result of the study, the activities carried out by living, seeing and applying in the nature have been determined in a significant increase in the level of knowledge of students. Considering the positive results of the other studies mentioned in the Nature

To support the teaching techniques performed in the classroom by activities in the nature and to organize classes with nature-themed elements were concluded to be important both in terms of their knowledge level and social development.

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