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A PRELIMINARY STUDY ON EVALUATION OF ENVIRONMENTAL AWARENESS OF THE STUDENTS IN SCIENCE AND ARTS FACULTIES AT TRAKYA UNIVERSITY (EDIRNE)

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Abstract

In this study, it was aimed to determine and evaluate the sensitivities and awareness on environmental problems of the students attending two different faculties of Trakya University, in the Province of Edirne, Turkey. For this aim, it was made interviews face to face with a total of 100 students who have been in education at different areas of science and art. The students answered a totally 30 questions related to environmental problems. At the end of these individual interviews, the results were evaluated and it was made some suggestions to increase the sensitivities of the students. The interviewees showed knowledge of the students on some environmental concepts changed between the faculties. Also, the evaluation showed that women had a stronger awareness than men.

Keywords: Environmental problems, mathematical methods, students, science, art

1. Introduction

Increasing human population and pollution depending on that leads to irreversible negative effects to environment day by day. Population growth, urbanization, industrialization, and improvements in technology and modern life has occurred a lot of pollution type. Not only pollutions of air, water and land, but also other pollutions caused by the noise, magnetic area, food, nuclear energy, light, etc. observe in the current century.

While atmospheric, aquatic or land pollutions can affect humans directly, the other pollution types can lead to suffering from ecosystems or living things indirectly. To know ecosystems and their relationships with each other is very important to provide sustainable management and protect the natural balance by a human. Therefore, education must begin during childhood to create 'awareness' on environmental problems. We have to pay more attention to environmental behaviour (Mabee, 2004; Olsson et al., 2004).

Environmental resources are called as renewable and non-renewable. To know this distinction when using the resources will provide different consumption habits to human. Environmental awareness can change between the populations as a topic in the economic and social development schemes (Alcalá et al., 2006; Starr et al, 2000). Therefore, different communities are consulted, both individually and collectively by interviews (Kerlinger, 1988;.Kos et al., 2003; Alcalá et. al., 2006; Balderrama et al., 2012). Environmental Awareness of the Young in a Rural Community in the Sierra Tarahumara, Chihuahua, Mexico was performed by Soto-Cruz et al. (2014). Also, the similar study on Knowledge and Awareness of Recycling Amongst the Students of Near East University was performed by Tiryakioğlu et al. (2017) and the awareness of the importance of recycling was evaluated.

The objective of this study was to determine the awareness of the notable and special problems of the environment between a group of the student attending the different departments of arts and science faculties. Thus, it was aimed to evaluate both current awareness on environmental problems and providing the solutions for the educational area.

2. Material and Methods

The study was performed in the students of Faculties of Arts and Sciences at Trakya University, Edirne city, Turkey. The students were divided into two main branches as science and art which together account for 100 individuals. A total of 30 questions was answered by a total of 12 students attending in Mathematics, 6 students attending in Physics, 11 students attending in Chemistry, 12 students attending in Biology, 12 students attending in Turkish Language, 12 students attending in History, 11 students attending in Art History, 12 students attending

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in Archaeology, 12 students attending in English Language department. Interviews were made in the year 2016. The questions were about to know of the knowledge on recycling of the wastes, awareness of the activities caused to air and water pollution, evaluate their sensitivities to magnetic and food pollution. Table 1 showed that the questions and answer options. Also, some analysis was used to evaluate differences between the sampled groups.

Table 1. Questioned items and answer options to determine the sampled groups on environmental awareness

Question Number	Question
1	Can you say you are a sensitive human to the environment?
2	Do you sort your home waste?
3	What is yours prefer in short distance: public transport, bicycle, walking, your own vehicle?
4	What do you do with your waste when you are out?
5	How often are you in tree planting works?
6	Do you throw items in the recycling bin?
7	How do you dispose of used cooking oil?
8	Do you know how long it takes fragmentation of gum?
9	Would you give money to beggars?
10	Do you have any information about additives?
11	Do you know how to prepare barbecue sauce in chips?
12	In your opinion, what is global warming?
13	How do you save water in your home?
14	Do you turn your phone off at night??
15	What do you do with your old phone?
16	In your opinion, do nuclear power plants only pollute the air?
17	Do you use solar energy in your home?
18	Do you prefer easily recycled products?
19	What is the most threatening pollution in the world?
20	Which disease is caused by DDT?
21	Where does Edirne Province's sewage go?
22	What kind of there cycling materials do you save in your home?
23	Do you think how many litres of water contaminate 1 Litter of use oil?
24	How many tons of CO_2 does your car pollute the air nearly for 20 years?
25	Which irrigation method would you use in garden and nursery irrigation?
26	Which of the following are polluted by radioactive substances?
27	How much is the average waste generated by a human per year?
28	Do you use energy efficient items in your home?
29	What do you do with waste water in your pet bottles?
30	How many decibels is the noise pollution on the human ear?

3. Results and Discussion

While the fifty per cent of the subjects were divided as women and men who age ranged from 21 to 25, forty-one per cent of the objects were from the science faculty and 59 % were from arts faculty (Fig 1).

Question 1 was answered as positive awareness with 67% participants. It was considered this level of awareness was low considering the half of the interviewed population's science student. In this question, it was observed that the students attending Maths have to be the most awareness with 17%.

Question 2 was answered as negative awareness with 62% participants. It was considered this low level of awareness on recycling of the wastes was low educational considering. In this question, it was observed that the students attending History have to be the most awareness with 20%.

Question 3 was answered as positive awareness with 84% participants as equal in all departments. It was considered this high level of awareness was the students have used the bus for transporting.

Question 4 was answered as "I throw in the bin" by 85% participants, as "I drop litter" by only 2%. It was considered this high level of awareness was equal to all departments except the student attending Physics.

Question 5 was answered as negative awareness with 85% participants. In this question, it was observed that the students attending Art History have to be the most awareness with 27%.

Question 6 was answered as positive awareness with 32% participants, as negative awareness with 24%. In this question, it was observed that the students attending History has to be the most awareness with 22%.

Question 7 was answered as "I throw in the bin" by 40% participants, as "I pour down the sink" by 37%, as "I dispose of in a recycling bin" by 23%. In this question, it was observed that the students attending Chemistry have to be the most awareness of recycling.

Question 8 was answered wronglyby71% participants, correctly by 29%.In this question, it was observed that the students attending Chemistry have to be the most awareness with 22%.

Question 9 was answered as negative awareness with 56% participants. In this question, it was observed that the students attending Archaeology, who don't give money the baggers and reduce visual pollution, has to be the most awareness with 17%.

Question 10 was answered as "additives with E numbers are very harmful" by 35% participants, as "additives in cosmetics like deodorants are harmful" by 18% participants. By the way, 47% of participants have no idea about the subject. In this question, it was observed that the students attending Art History have to be the most awareness with 17%.

Question 11 was answered as negative awareness with 80% participants. In this question, it was observed that the students attending Maths, who have correct ideas about the subject, has to be the most awareness with 26%.

Question 12 was answered as "nature destruction by human" by 50% participants, as "glacial melting" by 28% participants. In this question, it was observed that the students attending Turkish Language have to be the most awareness with 16%.

Question 13 was answered as "for not wasting water, I take shower quickly / wash aggregately the dishes or clothes" by 78% participants, as "I don't pay attention" by 14% participants.

Question 14 was answered as "I don't turn off, put it in the room, where I sleep" by71% participants. Only 9% of participants turn the phones off and leave in another room. In this question, it was observed that the students attending Physics have to be the most awareness with 45%.

Question 15 was answered as "I leave it in-home" by 57% participants, as "I give it to someone else to use" by 38% participants. Only one male student attending History answered as "I give it for recycling".

Question 16 was answered as positive awareness with 81% participants. It was considered this high level of awareness was equal in all department students.

Question 17 was answered as "yes" by15% participants, "no" by 85% participants. In this question, it was observed that the students attending Chemistry (33%) and Biology (27%) have to be the most awareness.

Question 18 was answered as positiveawarenesswith30% participants. It was considered this level of awareness was almost equal in students attending Chemistry, History, Art History and Archaeology.

Question 19 was correctly answered as "air and water pollution"by38% participants. In this question, it was observed that the students attending Biology have to be the most awareness with 21%.

Question 20 was answered as negative awareness with 74% participants. In this question, it was observed that the students attending Biology has to be the most awareness with 27%.

Question 21 was answered as positive awareness with 60% participants. It was considered this high level of awareness was equal in all departments except for students attending Archaeology.

Question 22 was answered as "paper, plastic, glass" by 35% participants. It was observed that all departments except for students attending Physics, Chemistry and Art History are saving their cycling materials in their home.

Question 23 was answered as negative awareness with 80% participants. In this question, it was observed that the students attending. Translation and Interpreting department has to be the most awareness with 25%.

Question 24 was answered as negative awareness with 47% participants. In this question, it was observed that the students attending History have to be the most awareness with 17%.

Question 25 was answered as positive awareness with 63% participants. It was considered this high level of awareness was almost equal in students attending Chemistry, History and Archaeology.

Question 26 was answered as positive awareness with 90% participants. It was considered this high level of awareness was equal in all departments except for students attending Physics.

Question 27 was answered as negative awareness with 59% participants. In this question, it was observed that the students attending Maths has to be the most awareness with 22%.

Question 28 was answered as positive awareness with 83% participants. It was considered this high level of awareness was equal in all departments except for students attending Physics.

Question 29 was answered as positive awareness with 83% participants. It was considered this high level of awareness was equal in all departments except the students attending Physics.

Question 30 was answered wrongly by 50% participants, correctly by 50%.

In the quested issues, the department of Maths had the highest awareness level in the question 11^{th} but the department had the lowest level in the questions 17^{th} and 23^{rd} (Table 2). While the department of Physics had the highest awareness level in a total of 14 questions (question numbers 6., 7.,8.,11.,16.,17.,20.,23. and 24), the department of Chemistry had the highest awareness level in the question 8^{th} but the lowest in the question 14^{th}. The department of Biology had the highest awareness level in the questions 17^{th} and 20^{th} but the lowest in the question 11^{th}.

According to the answers from the departments of arts faculty, the department of Turkish Language had the highest awareness in the question 11^{th} like the department of Maths (Table 2), but the lowest in the question 14^{th} like the department of Chemistry. The department of History had the highest awareness level in the question 6^{th}, but the lowest in the questions 14^{th} and 17^{th}. While the department of Art History had the highest awareness level in the question 5^{th}, but the lowest in the question 14^{th}, the department of Archaeology had the highest awareness in the question 14^{th}, but the lowest in the question 8^{th}. The department of English Language had the highest awareness level in the question 23^{rd}, but the lowest in the question 14^{th}. Furthermore, the results which were answered high awareness level were shown in Figure 2.

Table 2. Number distribution of questions, answered correctly by students in the faculties of science and arts Trakya University.

Departments	***Highest***	***Lowest***
Science Faculty		
Mathematics	11	17, 23
Physics	14	6, 7, 8, 11, 16, 17, 20, 23, 24
Chemistry	8	14
Biology	17, 20	11
Faculty of Letters		
Literature	11	14
History	6	14, 17
History of art	5	14
Archaeology	14	8
Translation and interpreting	23	14

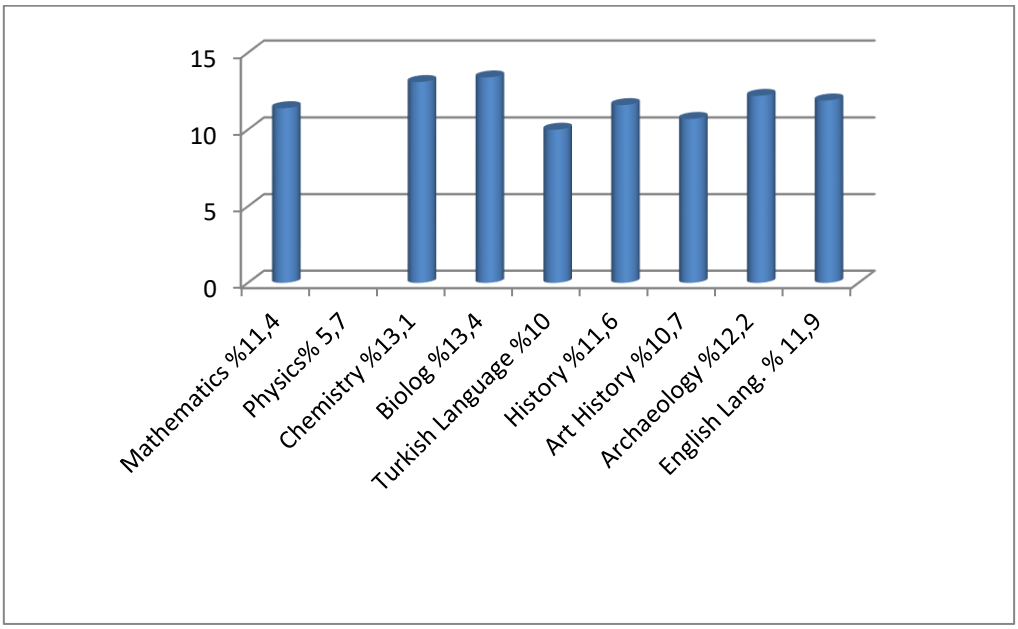

Figure 2. Percentage distribution of the awareness answer, given by students in faculties of Science and Arts at Trakya University

According to the results, the awareness of environmental problems and suggestions were found the highest in the students attending Biology. It was followed by the departments of Chemistry, Archaeology, English Language, History, Maths, Art History, Turkish Language, and Physics, respectively.

Also, the Bray-Curtis similarity index was used to determine the similarities between the departments. The results showed that the answers of the students attending the History and Art History were found to be the most similar (80% similarities) to each other (Figure 2, Table 2). The results were supported by Principal Components Analyse (Figure 3).

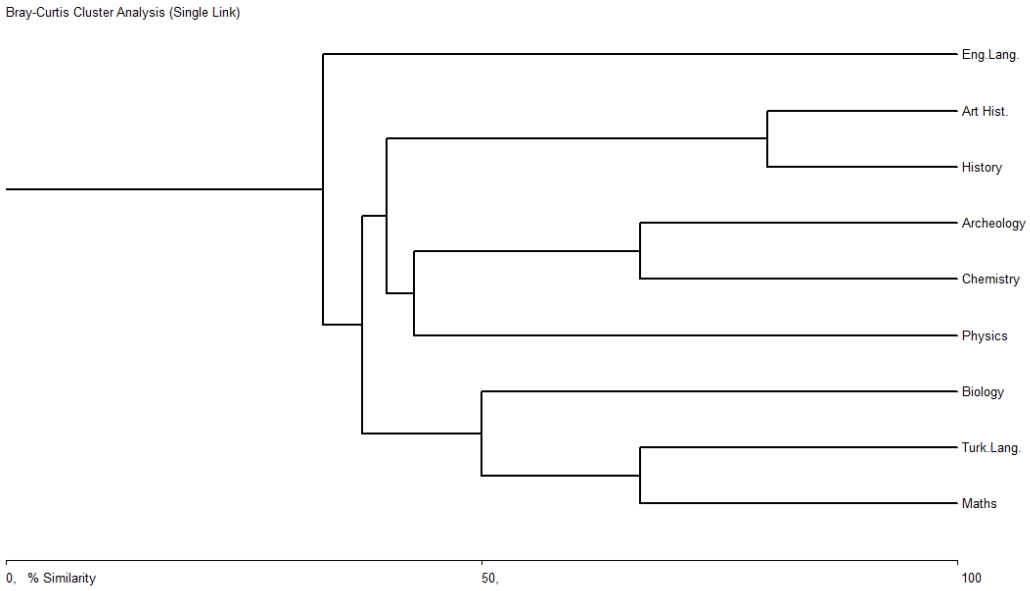

Figure 2. Bray-Curtis dendrogram on similarities of the environmental awareness of the attending students as department.

Table 2. Similarity rations for the departments attending the study.

Similarity Matrix

	Mat.	Phys.	Chem.	Biol.	Turk.L.	Hist.	Art His.	Arch.	Eng.L..
Maths	*	28,5	0	50	66,6	28,5	22,2	0	0
Physics	*	*	28,5	37,5	28,5	40	35,2	42,8	28,5
Chemistry	*	*	*	0	33,3	28,5	22,2	66,6	33,3
Biology *	*	*	*	25	22,2	18,1	0	0	
Turk.Lang.	*	*	*	*	*	28,5	22,2	33,3	33,3
History	*	*	*	*	*	*	80	28,5	28,5
Art Hist.*	*	*	*	*	*	*	22,2	22,2	
Archeology	*	*	*	*	*	*	*	*	33,3
Eng.Lang.	*	*	*	*	*	*	*	*	*

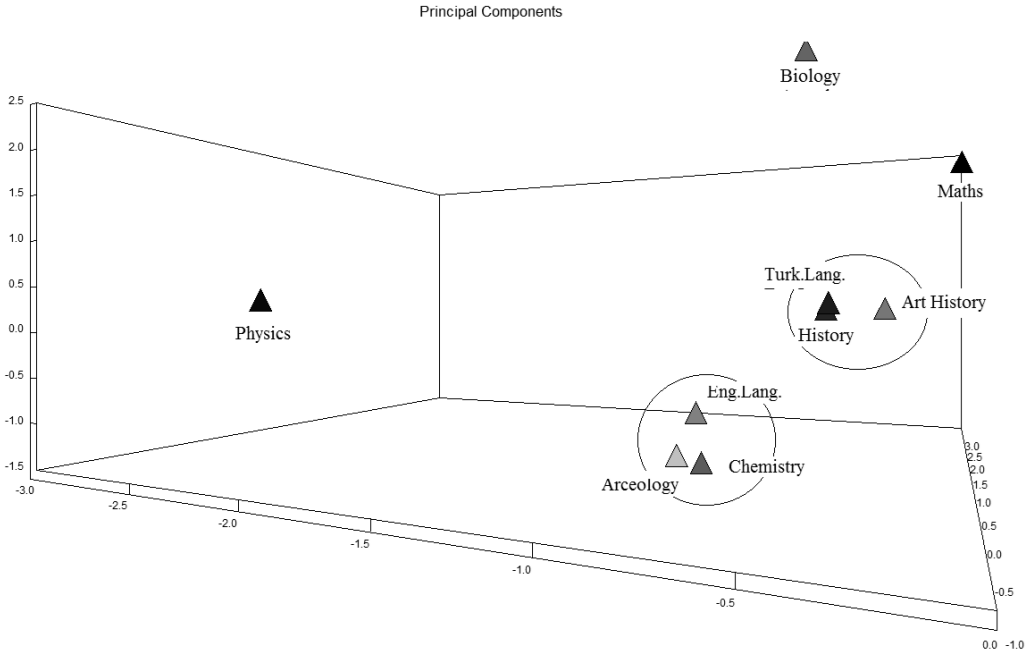

Figure 3. Principal Component Analyses results.

It was also observed between the departments of science faculty that the departments had answered the questions related with their issues as correctly. For example, the students in the department of Chemistry had answered the questions related with chemical recycling, the students of biology department had answered the questions related with natural resources pollution, and the students of Physics had answered the questions related with magnetic and nuclear pollution. It was observed between the departments of art faculty that the students of History and Archaeology had very sensitive for forestry.

According to the answers, there was not a consensus between the groups on the environmental problem. But, some special issues were answered as current by different related groups. The awareness levels for the students may be associated with the effectiveness of formal education programs.

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