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Are the Primary Pre-service Teachers Aware of Environmental Problems

¹Mustafa Metin, ¹Kerem Coskun and ²Yavuz Topkaya

¹Department of Primary Education, Faculty of Education, Artvin Coruh University, Artvin, Turkey

²Department of Social Science Education, Faculty of Education, Artvin Coruh University, Artvin, Turkey

Abstract: The aim of study is to investigate the pre-service teachers' awareness of environmental problems. The study was carried out during spring semester of 2010 educational periods. The sample of the study consisted of 120 pre-service teachers at the Department of Primary Teacher Education in Faculty of Education at Artvin Çoruh University. In the study, qualitative research method was used. As a result of study, it was found that pre-service teachers have knowledge about air, water, soil pollution, garbage problem and green house effect. Besides, although pre-service teachers know that they have been damaging and protecting activities on environment; they were not inclined to give up their damaging behaviour.

Key words: Environmental education • Environmental problems • Primary pre-service teachers

INTRODUCTION

The people in the modern societies have employed so many wide ranges of technologies from communication to transportation technologies [1]. So, humans have always had huge effects on the environment by means of the technology [3]. Therefore, it is inevitable that human effects on the environment have caused environment problems. Also environmental problems have occurred due to technological development, increase of human population and unconsciously usage of natural resources [4]. The emergences of these problems are caused many environmental factors.

There are many types of environmental problem in world. The most widely known environmental problems are global warming, green house effect, decrease of biodiversity, deforestation, air, soil, water pollutions, water shortage and garbage problems [5, 6] one of the these environmental problem is global warming. Global warming is remarkable change in climate and can be felt through the increase in temperature. Global world temperature has risen 0.7 Celsius for one hundred years. Due to the increase in the temperature, frequency of storms and floods have gone up, droughts are inevitable [7]. The warming's disastrous effect can be observed everywhere from arctic zone to Sub-Saharan zone. Another environmental problem is the green house effect

that mainly result from emissions of carbon dioxide has brought about the dangerous increase in the temperature [8]. Decrease of biodiversity is one of the biggest problems. It is very important for human existence in the world because of the fact that the biodiversity provides functioning ecosystems [9]. Just as population level rises, biodiversity decreases. Half of the major species in the world has driven to the extinction [10]. As a result of decreasing biodiversity, ecosystem functions become more defenceless and less able to meet human needs [9]. Another environmental problem is deforestation. Deforestation can be described as temporary or permanent cutting of forest for agriculture or other purposes [2]. It was estimated that approximately 19 percent of world's forest and woodlands have been eradicated since 18th century [11]. Some of these environmental problems can be stated as water pollution which means dirties of sea and rivers by chemical and nuclear wastes, air pollution which is dirties on the air that it has some toxic gas from factory chimneys, automobiles and the carbon dioxide from the consumed fossil fuels, soil pollution which is the dirties of soil resulting from the rubbishes, acid rains, fertilizing and applying disinfectant [12-14]. The other important environmental problem is water shortage. It can be counted as the global environment problems because it threatens entire the world. Fresh water is limited resource all over the world.

This limitation stems from increasing demand for the fresh water [15, 16]. Besides 10 percent of the total water in the world is fresh water. 2.8 billion People in the world live in water scarcity [17].

Human have been realized the environmental problems after its have affected negatively human life. Awareness of the environment problems has been in agenda since the 1980's in western countries. These problems have been shared not only by environmental groups by also customers, local administrations, companies [18]. United Nations declared between the years 2005 and 2014 as Education for sustainable development in order to create an awareness of environmental problems. Besides, a lot of efforts have been made to solve those fatal dangers in the world. Local or international organizations have been arranged many campaigns and local or national governments have been developing policies to solve these problems and activities changes from country to other country [19]. Likewise, there are numerous nongovernmental organizations in Turkey. One of the most well-known nongovernmental organizations is Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA) and other nongovernmental organization is Environmental Foundation of Turkey (EFT). They have been working to solve the environmental problems and create awareness on the environmental problems [20].

Environmental problems cannot be solved by only governmental and non governmental organizations. It is necessary that students must have awareness of environmental problems in order to understand and solve them. In this case teachers and primary pre-service teacher have an important role. Because teachers have enough knowledge on environmental problems to teach students this topic and aware and consult them for solving these problems. Because of the fact that pre-service teachers will be in-service teachers in future, their' knowledge and awareness on environmental problems are very important.

When the literature is investigated, it can be seen that there are many studies [21-32] about behaviours, knowledge, attitudes on the environmental problems. Besides there are also enough studies [18, 33-35] on awareness of environmental problems but there is lack of study on the pre-service teachers' awareness of the environmental problems in the literature. So, it is believed that this study provide an important contribution to literature on environmental awareness of pre-service teachers.

The aim of study is to investigate the pre-service teachers' awareness of environmental problems.

Method: The aim of study is to investigate the pre-service teachers' awareness of environmental problems. Phenomenological study, one of the qualitative research methods was used. Many researchers said that interview was the best appropriate way of data collection [36-38]. Therefore, a semi-structured interview was carried out collecting data in the study.

Sample: The study was carried out during the spring semester of 2010 with 120 pre-service teachers, who studied Faculty of Education Primary Education Department at Artvin Coruh University. Sample of study consists of 67 men and 53 woman pre-service teachers. In the sample, there are 40 freshmen, 30 sophomore, 25 junior and 25 senior students.

Process: The study was completed in three stages. At the first stage, it was examined two studies related environment, environmental education and awareness of environment [4,39] and also face to face interviews were carried out with three randomly selected pre-service teacher in order to determinate interview questions. Then, draft interview form was developed. At the second stage, the semi-structured interview form was examined carefully by four experts. Two of them were Turkish teachers and others were experts of measurement and assessment. In the light of experts, it was made the necessary corrections and the semi-structured interview form was revised. It was decided that the semi-structured interview form consist of four open-ended questions and each of them included sub-problems up to the research question. At the third stage, the semi-structured interview form was conducted with the pre-service teachers. During the interview neither the researchers did not influence the participants nor they reflected their thoughts and judged the participants' thoughts and ideas. Besides, the pre-service teachers answered questions by feeling relaxed and comfortable and without any hesitation. They allowed the participants to explain what they thought. Furthermore in order to investigate more deeply, extra questions such as "*what do you mean to say*", "*why*", "*what*" were asked. Each interview was recorded by teyp.

The questions which were asked, was displayed below:

- *What do you think which kind of environment problems are there? Please explain*

- *What kinds of activities have been made against the environmental problems? Please explain*
- *What do you think the activities made to solve the environmental problems? Please explain*
- *Which activities are damaging or protecting the environment in daily life? Please explain*

Data Analysis: It is not possible to mention that there is a standard way of data analysis in qualitative researches [40]. So researchers were able to prefer different techniques while data were analyzed. In this study, the first step taken in the analysis of the interviews was to organize data procedures. In organizing the data, the researchers review each interview and listened to each audiotape while reviewing the transcripts to ensure the accuracy of the data. Each participant's interview transcripts were later analyzed which call for development of coding categories, mechanical sorting of the data and analysis of the data within each coding category. The initial codes were supplemented with emergent main categories and sub-codes [41]. In this study, a realist mode was used to represent the participants' perspectives through closely edited quotations and interpretations of those quotations [42,43]. Thus, the researchers neither claim to be arbiters nor assess the right answers about questions related with environmental problems, but the researchers let the participants share their views on this topic.

The interview data were coded and classified into categories by the researches. Then the categories were grouped and reduced to the following set of descriptions and themes: 1) *Known environmental problems*, 2) *The activities for solution of environmental problems*, 3) *Recommendation for solutions of environmental problems*, 4) *Daily activities damaging or preserving environment*. Besides, it was regarded that many sub-codes could be constituted from the replies of the pre-service teachers. It was taken into consideration that extra sub-codes might have been formed from the answers which were given by pre-service teachers. After researchers had formed main categories and sub-codes, frequency was kept about sub-codes. In the finding,

main categories, sub-codes and values of sub-codes frequency were displayed with tables below.

The results of the interview data are presented as a description of the emergent themes that were developed through the content analyses. All participants in the study were given pseudonyms (such as: Pre-service Teacher 1, Pre-service Teacher 2, Pre-service Teacher 3, ...) in order to keep their identity anonymous.

Findings: As the first question of the interview form, it was asked that *"What do you think which kind of environment problems were there? Please explain"*. Sub-themes and frequencies are shown in table 1 obtained from pre-service teachers' answers to the first question.

As seen in Table 1, 49 of pre-service teacher said that "air pollution", 42 of them said "water pollution", 28 of them said "green house effect", 18 of them said "garbage problem" and 15 of them said "soil pollution" were main environmental problems.

The answers that were given by the pre-service teachers were shown below:

"I think air pollution is the most important problem because we polluted mostly the air every day. For instance perfume that most of the people use everyday life damage the air. (Pre-Service Teacher 64)"

"It is very clear that Turkish people is unconscious about the environment. In our country the air pollution and the water pollution are major problems. Fresh water has decreased day by day and our seas are too filthy to swim. Our seas are not blue as much as twenty years ago (Pre-Service Teacher 1)"

"The Green House Effect is the biggest problem for Turkey and the world. If the people is not informed, it is inevitable that the world turn into desert (Pre-Service Teacher 63)"

As the second question of the interview form, it was asked that *"What kinds of activities have been made against the environmental problems? Please explain"*. Sub-themes and frequencies are shown in table 2 obtained from pre-service teachers' answers to the second question.

Table 1: Sub-Themes and Frequencies of known environmental problems

Known environmental problems	f	Known environmental problems	f
Air pollution	49	Desertification	10
Water pollution	42	Water shortage	9
Green house effect	28	Erosion	9
Garbage problem	18	Waste of water	8
Soil pollution	15	Not to recycle the matters such as glass, paper	8
Noise pollution	14	Population increase	4
Unplanned urbanization	14	Extinction of animal species	2

Table 2: Sub-Themes and Frequency of the Activities for Solution of environmental problems

Activities for Solutions of environmental problems	f	Activities for Solutions of environmental problems	f
Non government organizations such as TEMA	50	Enacting the laws by the government	5
Forestation campaigns	22	Forestation by the government	4
Information from media and press	17	Using natural gas instead of fossil fuel	4
Instruction in schools	16	Activities by local government and municipality	4
Recycling activities	15	Use of green fuel	2
Filtration of factory chimneys	5	Planned urbanization	1

Table 3: Recommendations for solutions of environmental problems

Recommendation for solutions of environmental problems	f	Recommendation for solutions of environmental problems	f
Activities for solution of pollutions are not enough	37	Lack of interest towards the activities for solution to the environment problems.	8
Deficiency of environment education and its improvement	17	Personal effort and responsibility about environment	8
Deficient information activity	17	Government Applications	7
People must be sensitive about environment problems	12	Cooperation between the states around the world	3

Table 4: Daily Activities harming or protecting environment

Daily Activities damaging or preserving environment	f	Daily Activities damaging or preserving environment	f
Not to waste water	22	Caring the recycling	3
Using the cosmetics	18	Neglecting the recycling	3
Not to leave the garbage	16	Using the plastic materials	3
Saving the electricity	14	Leaving the garbage	3
Consuming the water excessively	9	Keeping mobile phone open perennially	2
Not to use the cosmetics	8	Using the electric gadgetry exorbitantly	2
Using the fuels for the purpose of warming	5	Using transportation vehicles-car	1
Warning people who leave the garbage	5	Using the chemicals for the purpose of cleanliness	1

As seen in the Table 2, 50 of pre-service teachers thought that the activities for solutions of the environmental problems were actualized by “non-governmental organizations”, 22 of them “forestation campaigns”, 17 of them “information from media and press”, 16 of them “instruction in schools” and 15 of them recycling activities”.

The answers that were given by the pre-service teachers were shown below:

“TEMA Charity Foundation has operation in forestation and against erosion. Foundation of Animal Preservation and Foundation of Nature Preservation try to work in favour of nature and environment (Pre-Service Teacher 81).”

“Nowadays forestation campaigns have been organized. One Message One Sapling Campaign which was arranged by the TEMA Foundation, is admirable activity (Pre-Service Teacher 49)”

“People are informed through internet, newspaper and TV but it is not enough (Pre-Service Teacher 36).”

“People are informed thanks to the education. There are some lessons about the environment in elementary education curriculum (Pre-Service Teacher 47)”

As the third question of the interview form, it was asked that “What you think the activities made to solve the environmental problems? Please explain”. Recommendations for solutions of environmental problems are shown in table 3 obtained from pre-service teachers’ answers to the third question

As seen in the Table 3, 37 of pre-service teachers thought that the activities for the solutions were not enough. 17 of them stressed deficient environment education and deficient information activity.

The answers that were given by the pre-service teachers were shown below:

“I think all the campaigns and actions for solution the environment problems are not enough. I am very disappointed when the people make an effort for futile activities. As a Turkish Nation we have to do something. Turkish people are really unconscious about the environment (Pre-Service Teacher 8).”

“I think actions for the solution to the environment problems are not sufficient. People must be educated about the environment at younger ages not at university. I think the education given at younger ages is more effective (Pre-Service Teacher 54)”

“I think personal consciousness is more important than the actions for the environment. The actions are useful to inform people but not efficient. These activities must have wider social base. In other words the activities must be conducted worldwide (7th Pre-Service Teacher 7).”

As the fourth question of the interview form, it was asked that “Which activities are damaging or protecting the environment in daily life? Please explain”. Daily activities that harm and protect environment are shown in table 4 obtained from pre-service teachers’ answers to the fourth question

As seen in the Table 4, 22 of the pre-service teachers cared not to waste the water, 18 of them used cosmetics, 16 of them did not leave the garbage and 14 of them saved the electricity.

The answers that were given by the pre-service teachers were shown below:

"I don't keep the faucet open excessively. Probability of water shortage scares me too much (Pre-Service Teacher 1)".

"Even though I know using perfume is harmful to the nature, I use it every day. I don't think I damage the nature anyway excluding usage of perfume (Pre-Service Teacher 9)."

"I don't have any harmful attitude for the environment. I never leave the garbage to the environment. I remember carrying the chocolate package for hours until I found a bin (Pre-Service Teacher 79)."

"I stay in dormitory. When I get up, I turn off the light in the lights in corridor are open. I turn off them and then I go to WC and turn off them. I also close the open faucets. This gives me happiness (Pre-Service Teacher 56)."

DISCUSSION AND CONCLUSIONS

The aim of study is to investigate the pre-service teachers' awareness on environmental problems. For this aim, semi-structure interview was carried out with the pre-service teachers. After analyzing interview data, many results were revealed. These results were collected into four categories. These categories were called as "*Known environmental problems*", "*The activities for the solutions of the environmental problems*", "*Recommendations activities for solutions of the environmental problems*" and "*Daily activities damaging and preserving on environment*".

Known Environmental Problems: in this category, it was determined that pre-service teachers made huge emphasis on air and water pollution and thought that green house effect, garbage problem and soil pollution are another environmental problems, a few pre-service teachers denoted that water shortage, extinction of species, desertion and erosion are serious environmental problems in world and Turkey. Although environmental problems such as water shortage, extinction of species, desertion and erosion negatively affected in a lot of region of world, small number of pre-service teacher have knowledge on these problems. From this result, it can be said that the

pre-service teachers are aware of air, soil and water pollution, green house effect and garbage problem on environment. But they have not enough awareness on water shortage, extinction of species, desertion and erosion and not aware of these problems. This result was supported [5, 26, 43, 44]. These studies were revealed that pre-service teachers had too low awareness of the environment and environmental problems. But there are many studies [45, 46, 47] which were dictated that pre-service teacher enough knowledge about environmental problems and aware of environmental problems. It was thought that this condition arise from, pre-service teacher consisted of study sample were not learn an environmental science lesson or no succeed this lesson.

The Activities for the Solutions of the Environmental Problems:

A great number of the pre-service teachers underlined that most of the activities against the environmental problems had been by non governmental organization in Turkey. Also almost all of them thought that TEMA associations played very effective role for the activities. TEMA Associations mainly focused on deforestation, forestation and desertion [22]. Our findings in the activities for the solutions of the environmental problems theme displayed us that the pre-service teachers knew TEMA Association closely rather than Turkish Environment Association and other environmental associations. Even though very few of the pre-service teachers stated desertion related to deforestation in the previous theme, many pre-service teachers thought that forest ration campaigns was the most prevalent activities organized by TEMA Association in this theme. In addition to that many pre-service teachers stated that forestation campaigns were one of the activities against the environmental problems and also a lot of the pre-service teachers referred information by media and press, instruction in schools and recycling as the activities against the environmental problems in Turkey. The pre-service teachers considered information by media and press and instruction in the schools as the activities for the solutions of the environmental problems. Our findings for this theme showed us that informal education by media and press can be regarded in the context of the activities against the environmental problems in Turkey. In addition the pre-service teachers probably believed in usefulness of education for the activities against the environmental problems. Purpose of the environmental education is to educate people on the environment and its problems through either informal education or formal education [48, 49]. Moreover the environmental education

is such a lifelong progress the formal education can't equip people with necessary knowledge on the environment and its problems [50]. Their statements on information by media and press implied importance of informal education.

Recommendation for Solutions of Environmental Problems:

In this category, it can be seen that pre service teachers' opinions are very pessimistic. Majority of them dictated the activities against the environmental problems not enough and efficacious. 17 of the pre-service teacher said that environmental education and information activity deficient. Also 12 of them thought that people's awareness on environmental problems was too low and 8 of them thought that people had lack of interest towards the activities for solution against the environmental problems. The traditional science oriented environmental education caused the students to feel powerlessness and passiveness [51]. Early Turkish Environmental Education Curriculum's traditional science oriented nature may have caused those pessimistic opinions. Besides, the pre-service teachers emphasized the environmental education in order to create awareness on environment and its problems. They thought that Turkish Environmental education must be started as possible as early ages and personal consciousness and awareness about the environment and its problems. Also they agreed the idea that the awareness and consciousness must be constituted from elementary education. This results was supported The Tbilisi Report. The Tbilisi Report declared that environmental education aimed to encourage people to think on ecological issues and act to solve the environmental problems [48, 49]. According to Bryant [52], the environmental education is a lifelong process therefore informal education has very crucial role to create awareness on the people.

Daily Activities Damaging and Preserving the Environment:

In this category, the pre-service teachers mostly protected the environment by not wasting water too much, not leaving garbage and saving energy. Also they thought to damaging the environment by using cosmetics and consuming water excessively. Form their statements it can be inferred that nevertheless pre-service teachers know that they have been damaging the environment; they were not inclined to give up their damaging behaviour. Environment education based on the action competence aims to give the environmental knowledge and awareness and get them to act while behaviour modification approach gives direction students

how to think and behave about the environment rather than to act [52]. When we examine the pre-service teachers' statements, we can easily understand that many of them did not act effectively although they were aware of the environmental problems. This inefficacious action may have stemmed from the deficiency of the environmental education and pre-service teachers have not enough environmental consciousness. Turkish Primary and Secondary Education adopted behaviourist approach till 2005. Behaviourist Primary and Secondary Education curriculum is similar to the behaviour modification environmental education so the pre-service teachers were educated by the behaviourist primary education curriculum. It can be comprehended that Turkish environmental education's behaviour modification characteristics may have taught the environmental knowledge and awareness but failed to get them act actively. Because of the drawback of behaviour modification approach, Turkish environmental education must adopt action competence approach in all educational divisions

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