International Online Journal of Educational Sciences, 2014, 6 (1), 21-29

iojes
www.iojes.net

International Online Journal of Educational Sciences

ISSN: 1309-2707

Teacher Candidates' Level of Concerns about Environment

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ARTICLE INFO

Article History:
Received 22.10.2013
Received in revised form
04.03.2013
Accepted 11.03.2013.
Available online
21.04.2014

ABSTRACT

This study aimed to examine teacher candidates' levels of concerns about the environment. The study was composed as a survey model. The participants were 271 teacher candidates who are attending Faculty of Education at Gazi University. The Environmental Concern Scale, which was developed by the researcher, was used to gather data. Cronbach's alpha reliability coefficient of the scale was found as .859. Data were analyzed via SPSS 18 by using t-test and ANOVA. The results of the study revealed that the concerns about the environment did not differentiate according to gender, age, geographical region, and department, whereas the variables of "knowledge about the environment" and "environmentally-sensitive behavior" were significant in determining the teachers candidates' level of concerns about the environment.

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Keywords:
Environmental issues, environmental concern, teacher candidates

Introduction

The last century, characterized by innovations and advances in science and technology and experiences of global changes in the history of humanity, was the century of urbanization, industrialization, information, and development. However, perhaps one the most remarkable aspects of that era is the ecological problems which marked the century as the struggle between the nature and the human turned into a power struggle between ecology and economy, and at the end, humans face the threat of extinction (Atasoy & Ertürk, 2008).

With the increase in the ecological problems in the last decades, countries have come to understand the severity of the topic. This is because the ecological problems have threatened the human life worldwide, with no bounds. Climate change, increase in temperatures, melting of glaciers, storms, and changes in the flora, all of which have occurred in the last decades, made the nations work collaboratively and such incidents that threat the environment are considered global issues, rather than international problems (Baykal & Baykal, 2008).

The global nature of environmental issues has made multilateral collaboration essential in solving those issues. These fundamental issues that determine the agenda of the 21st century paved the way for the organization of international activities since the beginning of the 1980s and the international environment agreements have increasingly played an important role in protecting and managing the environment (Sonnenfeld & Mol, 2002). The impact of human activities is one of the most important causes in environmental issues (Kempton, Boster & Hartley, 1995). The environmental issues that the world is exposed

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DOI: http://dx.doi.org/10.15345/iojes.2014.01.003

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to, such as the destruction of the ozone layer, genetically modified organisms, water and air pollution and the decrease in the biological diversity, impact societies (Ojala, 2007).

The negative impact of environmental problems raised a concern about the environment. Stern and Dietz (1994) stated that the environmental interests are based on three moral areas, namely, egoistic, biospheric, and altruistic interests. Egoistic interest indicates that people are rather interested in the problems that are only related to themselves. This interest makes individual focus on the changes in one's lifestyle, health and economic issues. In altruistic interest, the focus is on the impacts of environmental problems on the others, neighbors, and children. Biospheric interest focuses on the impacts of environmental issues on all organisms (Schultz, 2001). Individuals may have those interests at different levels, with the dominant one determining the characteristic interest (Schultz & Zelezny, 2003). The values that are related to the environment are the critical elements that affect the individuals' believes and attitudes toward the environment (Olson & Zanna, 1993).

Environmental incidents that occur on earth make people worried about its future. Humanistic and biospheric values that people have cause people to develop concerns about the environment (Boehnke, Fuss & Rupf, 2001). People are affected by environmental issues and this causes stress and characteristics like excessive emotionality and rebelliousness (Giddens, 1998).

The literature on environmental concern discusses the topic in the context of environmental interest and environmental attitude (Gürbüz et al., 2011; Malkus & Musser, 1997; Şama, 2003; Varışlı, 2009).

The impact of demographic variables on environmental interest and environmental attitude is discussed in several studies (Karpiak and Baril, 2008; Riechard and Peterson, 1998; Tikka, Kuitunen and Tynys, 2000). Whereas the research on environmental attitude in the 1960s and 1970s focused more on some special environmental topics, such as water and soil pollution, in the 1970s and 1980s, the body of research started to focus on broader topics like toxic materials, acid rains, and use of energy. In the 1990s, the destruction of the ozone layer and climate change were the topics that environmental interest focused on (Dunlap and Michelson, 2002).

In his study with primary school students, Eryiğit (2010) examined their value tendencies, environmental optimism levels, and environmental concerns. The results of the study revealed that primary school students' environmental concern levels differentiated significantly according to the grade level and gender variables.

Sam, Gürsakal and Sam (2010) examined university students' environmental risk perception. The results showed that female students have higher environmental sensitivity than male students, and the variables of grade level and mother's education level have an important role in predicting the environmental risk.

Yurtseven et al. (2010) investigated the sensitivity of health vocational college (nursing college) students to environmental risks in their research. The study demonstrated that the students have some concerns about the natural resources and shortage of water.

In the study conducted by Pekel, Kaya and Demir (2007), the thoughts of high school students about the ozone layer were examined. As a result of the study, the thoughts of the students about the thinning of the ozone layer and the consequences that may arise due to the thinning process were explained.

Malkus and Musser (1997) analyzed the concerns of school-age children about the environment. The study found that school-age children had a moderate level of concern about the environment. Furthermore, the students' environmental concern levels did not significantly differ according to gender and higher levels of interest in the environment coincided with a higher environmental concern.

Ojala (2007) examined the effect of environment-related activities on the concerns of the individuals in his study among young people with high levels of environmental interest.

Uljas (2001) conducted a study on the effect of social identity and values on the environmental attitudes and behaviors. The results of the study showed that the social characteristics of the individuals did not have a significant impact on the environmental concern at a global level.

Individuals having concerns about the environment act conscientiously to get those problems to be solved (Rogers, 1996). Environmental risks remind people of their responsibilities for the next generations and for other creatures (Skogen, 1999). For this reason, investigating the levels of concern about the environment might be important in terms of determining the teacher candidates' perceptions about the environment.

Thus, the purpose of the study was to examine the levels of concern about the environment of the teacher candidates who attend different departments of faculty of education, according to the variables of gender, age, geographical region they currently live in, current department they are attending, knowledge level about the environment, and the level of environment-sensitive behavior.

Method

The study was conducted as a descriptive field study designed as a survey model. Survey models are appropriate for research that aims to describe the actual state of a current or past case (Karasar, 1999).

Participants

The participants of the study were 271 teacher candidates from Faculty of Education at Gazi University. 212 were females, and 59 were males. 28 participants were from the Department of Arabic Language Education, 35 from Geography Education, 63 from Biology Education, 56 from Science Education, 24 from Physics Education, 37 from Primary School Teacher Education and 28 from Social Sciences Education.

Instruments

Data gathering was done through a personal information form and the Environmental Concern Scale, which was developed by the researcher. The personal information form included the variables of gender, age, department, the geographical region that the participants currently live in, knowledge level about the environment, and the level of environment-sensitive behavior. Knowledge level about the environment and the level of environment-sensitive behavior were assessed with a 5-point Likert scale: 1 "very low"; 2 "low"; 3 "moderate"; 4,"high, and 5 "very high". The Environmental Concern Scale was composed of 15 items. The reliability coefficient of the Environmental Concern scale was 0.859. KMO value of the scale was 0.76, whereas the Barlett-test was calculated as X^2 =506,155, p=0,000. The scale was a single-factor scale with items about environment-related issues and it included 5 choices for concern levels per item. The concern levels ranged from "very low" to "very high" (from 1 to 5). The maximum point participants could have was 75, and the minimum was 15.

Data Analysis

The data gathered were analyzed through SPSS package statistical software. ANOVA, t-test, Scheffe and mann whitney u test were utilized to analyze the data, and the descriptive data were presented as frequencies and and percentages. The significance level was set at .05 for the study.

Results

This section presents the data analyzed according to the sub-goals. Table 1 shows the findings about the teacher candidates' environmental concern levels.

Table 1. Mean and standard deviation for teacher candidates' environmental concern scores

	N	Minimum	Maximum	$\bar{x}$	SD
Environmental concern levels	271	40.00	90.00	71.60	8.79

As shown in Table 1, the mean of teacher candidates' environmental concern scores was 71.60. Given that the highest score one could get from the scale was 75, the participants' level of environment-related concerns was high.

Table 2 presents the teacher candidates' environment-related concern levels according to the gender variable.

Table 2. The results of the U-test of teacher candidates' environmental concern scores

Gender	N	Mean rank	Sum of Ranks	Mann Whi.U.	p
Female	212	139.44	29561.50	5524.500	0,170
Male	59	123.64	7294.50		

As shown in Table 2, the female participants' mean rank for the scale was 139.44, whereas mean rank for the males was 70.47. The mean score for the environment-related concern levels of the female participants was descriptively higher. The difference in the mean scores between the female and male participants was not statistically significant ($U_{(269)}$=5524.500, p>0.05).

Table 3 presents the mean and standard deviation for the environment-related concern scale according to the age variable.

Table 3. ANOVA results for teacher candidates' environmental concern levels according to age

Age	N	$\bar{x}$	SD	F	p
18 and below	20	71.10	8.97		
19-21	149	70.82	8.81		
22-24	75	72.50	8.74	.922	.431
25 and above	24	73.16	8.59		
Total	268	71.52	8.78		

Table 3 shows the mean scores for environmental concerns of the participants according to age. The participants below 18 scored 71. 10, the age group 19-21 scored 70.82, the age group 22-24 scored 72.50, and the mean score for the age group 25 and above was 73.16. The mean score for the participants in the age group 19-21 was the lowest, while the age group 25 and above had the highest mean score for environmental concerns. The ANOVA results showed that the participants' mean scores did not significantly differ ($F_{(3-267)}$=0.922, p>0.05). This result indicates that the descriptive difference between the age group scores is not statistically significant in terms of environmental concerns.

Table 4 shows the teacher candidates' mean scores of environmental concern according to their departments.

Table 4. Teacher candidates' means of environmental concern scores according to their departments

Department	N	$\bar{x}$	SD	F	p
Arabic Language Education	28	72.46	9.84		
Geography Education	35	72.00	7.38		
Biology Education	63	72.19	7.78		
Science Education	56	69.25	9.50	1.099	.363
Physics Education	24	74.08	7.43		
Classroom Teacher Education	37	71.37	7.09		
Social Sciences Education	28	71.78	12.2		
Total	271	71.60	8.79		

Table 4 illustrates that the teacher candidates from the Physics Department had descriptively the highest mean score on the environmental concern scale ($\bar{x}$=74.08), whereas the teacher candidates from the Science Education Department had the lowest mean score on environmental concern scale ($\bar{x}$=69.25). There was no statistically significant difference between the means of teacher candidates' environmental concern scores according to their departments ($F_{(6-270)}$=1.099, p>0.05). It could be stated that the department variable did not affect the teacher candidates' environment-related concerns according to the ANOVA results.

Table 5 shows the teacher candidates' environmental concern scores and ANOVA results according to their geographical region.

Table 5. Teacher candidates' environmental concern scores and ANOVA results according to geographical region they live in

Geographical region	N	$\bar{x}$	SS	F	p
Marmara region	23	69.26	8.36		
Aegean region	9	74.55	6.54		
Mediterranean region	25	74.32	7.77		
Central anatolia region	168	71.04	8.72		
Black sea region	28	73.67	10.84	1.252	.280
Eastern anatolia region	7	73.00	6.87		
Southeastern anatolia region	4	70.75	9.53		
Total	264	71.64	8.79		

Table 5 shows that the mean for the environmental concern scores of the teacher candidates from the Aegean Region was the highest ($\bar{x}$=74.55), whereas the lowest mean was found for the participants from the Marmara Region ($\bar{x}$=69.26). In addition, the mean scores of the teacher candidates did not significantly differ in terms of the region they currently live in ($F_{(6-263)}$=1.252, p>0.05). The ANOVA results showed that the teacher candidates' environment-related concerns were not significantly different according to their region.

Table 6 shows the ANOVA results for the teacher candidates' environmental concern scores according to their level of knowledge about the environment.

Table 6. Teacher candidates' anova results for the environmental concern scores according to their level of knowledge about the environment

Environment knowledge levels	N	$\bar{x}$	df	F	p	Scheffe
Very low	3	62.33	11.84			Very low-high
Low	16	65.75	10.44			
Moderate	122	70.04	7.79	6.865	.000*	Very low-very high
High	110	73.51	8.17			
Very high	17	76.70	11.37			
Total	268	71.55	8.78			

*p<0.05

Table 6 demonstrates that the teacher candidates who reported their level of knowledge about the environment as very low had the lowest mean for the environmental concern scores ($\bar{x}$=62.33). It also shows that the group reporting their knowledge about the environment as the highest had the highest mean score on the environmental concern scale ($\bar{x}$=76.70). It might be said that the higher knowledge levels the teacher candidates have, the more environmental concern they descriptively obtain. Moreover, their environmental concern scores were significantly different according to their knowledge level about the environment ($F_{(4-}$

$_{267)}$=6.895, p<0.05). The post-hoc results revealed that statistically significant differences occurred between "the lowest" group and the groups "high" and "very high" ($F_{(4-267)}$=6.895, p<0.05).

Table 7 shows the teacher candidates' ANOVA results for the environmental concern scores according to the variable of environment-sensitive behavior.

Table 7. Teacher candidates' environmental concern scores according to environment-sensitive levels

Environment-sensitive behavior levels	N	$\bar{x}$	SD	F	p	Scheffe
Very low	2	60.50	6.36	6.902	.000*	Very low- high, very low-very high, very high-high
Low	10	72.40	8.54			
Moderate	94	69.12	8.75			
High	121	72.27	7.64			
Very high	40	76.72	9.40			
Total	267	71.74	8.71			

*p<0.05

Table 7 shows that the teacher candidates who reported that they have environment-sensitive behavior had the lowest mean score on the environmental concern scale ($\bar{x}$=60.50), while the participants reporting higher environment-sensitive behavior had the highest mean scores on the environmental concern scale ($\bar{x}$=76.72). The teacher candidates' environmental concern scores descriptively increased according to their levels of environment-sensitive behavior. The ANOVA results revealed that the teacher candidates' environment concern scores differed significantly according to their levels of environment-sensitive behavior ($F_{(4-266)}$=6.902, p<0.05). Post-hoc results for analyzing the reason of this difference showed that statistically significant differences occurred between "the lowest" group and the groups "high" and "very high" and these differences were in favor of the groups "high" and the "very high".

Discussion and Conclusions

This part presents the results obtained by the research.

The research reveals that the teacher candidates' levels of anxiety about environment don't differ significantly according to the variable of gender. Many studies suggest that the interest in environment isn't affected significantly by the variable of gender (Erol & Gezer, 2006; Gürbüz et al., 2011; Sağır, Aslan & Cansaran, 2010). Although these results are parallel with those obtained by this research, it is possible to see different results in the literature (Hamplel, Boldero & Holdswortrh, 1996; Schahn & Haldzer, 1990; Stern at al., 1993). Steger& Witt (1989) report that girls are more anxious about acid rains than boys.Brodby et al. (2008) highlights that girls are more anxious about global warming.

Although this study discovers a descriptive difference between the teacher candidates' levels of anxiety about environment in respect of the variable of age, it is presented that this descriptive difference isn't statistically significant. In other words, it is found out that the teacher candidates' levels of anxiety about environment don't vary in terms of the variable of age. Shen& Saijo (2007) assert that the interest in environment grows as the age gets older. Olofson& Öhman (2006) point out that there is a poor relation between the interest in environment and the variables of gender, age and settlement area.

One of the results reached by the research is that the variable of field of study isn't considerably influential on the anxiety about environment. Kahyaoğlu and Özgen (2011) present that the teacher candidates' attitudes towards environmental problems differ significantly according to their field of study. On the other hand, Karakaya and Çobanoğlu (2012) suggest that the variable of field of study is a determining factor in their perspectives on environment.

The research reveals that the teacher candidates' level of anxiety about environment doesn't vary highly in respect of the variable of geographical region where they live. Erol and Gezer (2006) discovers in their study that the variable of geographical region isn't a major predictor of the attitudes towards environment. However, Ek et al. (2009) report in their research that the variable of geographical region is a significant predictor of the approach towards environmental problems. In his study, Şama (2003) concludes that the college students' attitudes towards environment differ highly according to the variable of place.

The research reaches the conclusion that the teacher candidates' level of anxiety about environment differ greatly in terms of level of knowledge about environment. Yurtseven et al. (2010) assert that the students with high level of knowledge and behaviour regarding environment have significantly different interest in environment. Nonetheless, the literature has some studies suggesting that the knowledge about environment produces limited impact on the interest in environment (Lozzi,1989; Hungerford & Volk, 1990). In their study, Hausback et al. (1992) find out that the 11th grade-students have high level of environmental awareness and interest although their knowledge about environment is limited.

It is concluded by this research that the teacher candidates with high level of environmentally-conscious behaviours are more anxious about environment and their sensitivity to it are significantly different. A great number of studies previously carried out indicate that there is a relation between the interest in environment and sensitive behaviours towards environment (Schahn, 1993, Eckes & Six, 1994, Fuhrer, 1995). Malkus &Musser (1997) suggest that there is a linear relationship between anxiety about environment and the attitudes and behaviours towards it.

Consequently, this research presents that the variables of gender, age, field of study and geographical region aren't a determining factor in anxiety about environment but the variables of knowledge about environment and behaviours towards it are significantly influential on determination of anxiety about environment. From this perspective, it can be suggested that the teacher candidates who are interested in environment are more anxious about environmental problems and pay more attention to it.

In line with the results of this study, the following suggestions can be presented:

This study reveals that having knowledge about environment and knowing it increases anxiety about environment. From this perspective, the curriculum of teacher education institutions should include the courses about environment in order to improve the teacher candidates' level of knowledge about it.

One of the results obtained by this study is that living within environment and experiencing it increases the anxiety about environment. Therefore, the teacher candidates should participate in environmental activities more and join the environmental foundations which are required to be more active in the teacher education programs of universities.

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