

Investigation of Pre-service Classroom Teachers' Environmental Awareness and Attitudes

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Abstract

The purpose of the current study is to determine the pre-service classroom teachers' environmental awareness and attitudes and to elicit the relationship between their awareness levels and attitudes in terms of gender, grade level and state of membership to an environmental organization. The study was designed according to relational survey model. The study group of the current research is comprised of the pre-service classroom teachers attending two universities located in the Aegean Region in 2015-2016 school year. "Environmental Awareness Scale (EAWS)" developed by Okur (2012) and "Environmental Attitude Scale (EATS)" were used to collect data. The collected data were analyzed with SPSS 20 program package by using descriptive statistics and Pearson coefficient. As a result of the analyses, it was found that the pre-service classroom teachers' environmental awareness levels and attitudes are high; there is a positive and medium correlation between their awareness levels and attitudes. Moreover, it was found that environmental awareness can predict 27% of environmental attitude. In light of these findings, it can be suggested that within the courses given throughout the undergraduate education, pre-service classroom teachers should be informed about environmental issues and encouraged to participate in environmentally-oriented social and cultural activities.

Keywords: Environmental education, pre-service classroom teacher, environmental awareness, environmental attitude

Introduction

As a result of industrial revolution, besides developing science and technology, environmental issues occupied an important position in social life. The first initiation related to environmental issues was taken by Public Health Committee in Massachusetts (The USA) in 1869 and a declaration about environmental problems was issued (Solmaz, 2010: 40). However, the concept of "environmental education" was first introduced in the Stockholm Conference in 1972. In the International Environmental Education Workshop held in Belgrade and in the Tiflis Declaration issued in 1978, emphasis was put on the necessity, importance and objectives of environmental education (Timur, Yılmaz and Timur, 2013: 192). With these initiations, the concept of environmental education came to the fore in the international arena. What is aimed with environmental education is not only inculcate information and skill but rather to create environmentally literate people who are aware of environmental problems and have attitudes and motivation to develop solutions to these problems

and to prevent prospective problems. In order to be able to overcome environmental problems, individuals' behaviors towards environment should be changed and individuals should be encouraged not to view environment as something to be exploited for their ends rather as a precious asset worth being protected for the survival of man because for environmental education to achieve its goals, individuals' attitudes and behaviors towards environment need to be changed (Sinha, Jangira & Das, 1985: 8). Here, the attitudes towards environment are closely associated with affective characteristics as in educational objectives (Özçelik, 2010:15).

Schultz, Shriver, Tabacino and Khazian (2004: 31) define attitudes towards environment as the individual's beliefs about environmental activities and problems, the effect of these beliefs and the accumulation of behavioral intentions. As can be understood from this definition, environmental attitude is closely associated with environmental awareness. This same relationship can be seen in the definition of environmental awareness. According to Solmaz (2010), environmental awareness can be defined as being cognizant of what should be seen and known related to environment and the state of paying attention to a thing that should be grasped. In this regard, it cannot be expected from an individual to pay attention to something of which he/she is not aware and heard.

For the inculcation of environmental awareness and the development of positive attitudes towards environment, required importance should be attached to environmental education starting from early ages. Environmental education should be given by the family, society and school. Environmental education should start at home and in the close surrounding of the child and be further nurtured by schools (Çabuk, 2001: 40). Within the context of formal education, environmental education should be started as early as possible. Given that there is no special course for environmental education at the first level of schooling, that is elementary school, the classroom teacher should take the main responsibility for developing students' environmental awareness and attitudes.

In elementary education, environmental education is not considered to be a separate discipline; instead, it is incorporated into the curriculums of other courses; primarily that of life sciences. According to Ahi and Özsoy (2015: 34-35), the classroom teacher should put an emphasis on environmental education during classes and enable his/her students to live experiences related to issues of environment and sustainable development, provide them with opportunities to enhance their capacities and to construct their own knowledge and help them develop visions for sustainable future and effective solutions to environmental problems. As such, classroom teachers should provide the guidance for students to develop environmental awareness and positive attitudes.

For this process to achieve its objectives, the classroom teacher should have the necessary information, skills, awareness and attitudes related to environment and be able to impart required information and skills to students. Within the context of pre-service teacher education, in the classroom teacher education programs of education faculties, there is a special course with the name of environmental education. Within the context of this course, pre-service teachers are provided with opportunities to develop their skills, information, environmental awareness and attitudes that they can use in their professional lives.

As it takes long time to determine environmental behavioral changes in individuals through educational research, indirect changes are tried to be determined by means of the observation of various variables such as environmental attitudes, awareness, sensitivity (Okur-Berberoğlu and Uygun, 2012: 460). On the basis of the fact that for helping individuals accomplish behavioral changes, environmental awareness and

attitudes are important, it can be argued that classroom teachers' having adequate level of environmental awareness and positive environmental attitudes is of great importance for them to get their students to achieve the environment-related objectives in curriculums. Therefore, it seems to be important to investigate the environmental awareness and attitudes of pre-service teachers who will be the actual teachers of future.

Thus, the purpose of the current study was set to be to determine the pre-service classroom teachers' environmental awareness and attitudes and to elicit the relationship between their awareness levels and attitudes in terms of gender, grade level and state of membership to an environmental organization. To this end, answers to the following questions were sought.

1. What are the pre-service classroom teachers' environmental awareness and attitude levels?
2. Is there a significant relationship between the pre-service teachers' environmental awareness and environmental attitudes?
3. Do the pre-service teachers' environmental awareness and attitudes vary significantly depending on the variables of gender, grade level and the state of membership to an environmental organization?
4. What is the extent to which the pre-service teachers' environmental awareness predicts their environmental attitudes?

Methodology

Research Model

In the current study conducted through quantitative method, one of the general survey models, relational survey model was used. According to Karasar (1995: 81-82), relational survey studies can be divided into two as correlation studies and comparative studies. In correlation studies, the aim is to determine the existence of covariance between two or more variables and/or the degree of this covariance; on the other hand, in comparative studies, the aim is to determine whether the dependent variable differs among the groups constructed according to independent variables.

Participants

The study group of the current research is comprised of the pre-service classroom teachers attending the classroom teacher education departments at the education faculties of two universities located in the Aegean Region in 2015-2016 school year. In the selection of the participations, availability sampling method was used. Demographic features of the participating pre-service teachers are given in Table 1. .

Table 1.

Demographic Features of the Participants

Variables	University A		University B		Total		
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Gender	Female	126	58,9	88	41,1	214	100
	Male	45	40,5	66	59,5	111	100
	Total	171	52,6	154	47,4	325	100
Grade Level	1 st grade	69	69,9	39	36,1	108	100
	2 nd grade	38	50,7	37	49,3	75	100
	3 rd grade	41	54,7	34	45,3	75	100
	4 th grade	23	34,3	44	65,7	67	100
	Total	171	52,6	154	47,4	325	100
Environment Organization	Member	18	46,2	21	53,8	39	100
	Nonmember	153	53,5	133	46,5	286	100
	Total	171	52,6	154	47,4	325	100

Data Collection Tools

In the collection of the data, “Environmental Awareness Scale (EAWS) developed by Okur (2012) and “Environmental Attitude Scale (EATS)” were used. EAWS and EATS are five-point Likert-type scales. While EAWS does not include any inversely worded items, in EATS, items 3, 6, 7, 9, 10, 17, 18, 19, 21 and 22 are inversely worded items. Goodness-of-fit values for EAWS and EATS are given in Table 2 (Berberoğlu-Okur, 2012).

Table 2.

Goodness-of-fit values obtained as a result of exploratory and confirmatory factor analyses of the Environmental Awareness and Environmental Attitude Scales

Analyses	Recommendation Scores	EAWS	EATS	
Exploratory Factor Analyses	Number of item	18	22	
	Number of factor	1	1	
	Cronbach alpha	≥ 0,80	0,858	0,800
	KMO	Close to 1	0,895	0,832
	Bartlett test	Close to 0	0,000	0,000
Confirmatory Factor Analyses	<i>X²/df</i>	3-5	3,39	3,23
	p	<0,05	0,000	0,000
	RMSEA	≤ 0,08	0,08	0,08
	SRMR	≤ 0,08	0,05	0,07
	GFI	0,80- 0,89	0,86	0,84
	AGFI	0,80- 0,89	0,82	0,80

Moreover, reliability coefficient was calculated to be 0.95 for EAWS and 0.82 for EATS.

Data Analysis

In the analysis of the data, SPSS 20 program package was used. The scale items can be responded by marking one of the options ranging from 5 “Strongly Agree” to 1 “Strongly Disagree”; inverse items in EATS are scored as 5 “Strongly Disagree” to 1 “Strongly Agree”. The lowest score to be taken from EAWS is 18 and the highest score is 90. The lowest score to be taken from EATS is 22 and the highest score is 110. In the determination of the pre-service classroom teachers’ environmental awareness and attitude levels, descriptive statistics were used; for the elicitation of the relationship between them, Pearson Product-Moment Correlation and for the investigation of the extent to which awareness predicts attitude, regression analysis was used. The other ranges of values used in the interpretation of the scores taken from EAS and EATS are presented in Table 3.

Table 3.

Ranges of Values used in the Interpretation of the Scores taken from the Environmental Awareness and Attitude Scales

Environmental Awareness Scale		Environmental Attitudes Scale	
Low awareness score	18-41	Low attitudes score	22-50
Medium awareness score	42-66	Medium attitudes score	51-79
High awareness score	67-90	High attitudes score	80-110

The ranges of values of the scales shown in Table 3 were determined by dividing the score range between the lowest and highest scores to be taken from the scales into three equal parts. Thus, a score ranging from 18 to 41 was interpreted to be low, a score ranging from 42 to 66 as medium and a score ranging from 67 to 90 as high for EAWS. For EATS, a score ranging from 22 to 50 was interpreted to be low, a score ranging from 51 to 79 as medium and a score ranging from 80 to 110 as high.

Findings

Table 4.

Descriptive Statistics related to The Pre-service Classroom Teachers’ Environmental Awareness and Attitudes

Scale	<i>n</i>	Min.	Max.	\bar{X}	<i>SD</i>	Score
Environmental Awareness	325	42	111	80,14	10,71	High
Environmental Attitudes	325	56	110	80,67	12,3	High

When Table 4 is examined, it is seen that the lowest score taken from the environmental awareness scale by the pre-service teachers is 42 and the highest score is 111. From the environmental attitude scale; on the other hand, the lowest score taken is 56 and the highest score is 110. When the means of the scores taken from the scales by the pre-service teachers are examined, it is seen that the mean score taken from the environmental awareness scale is high (\bar{X} =80.14) and the mean score taken from the environmental attitude scale is high, too (\bar{X} =80.67).

Table 5.

Pearson Correlation Test Results related to the Relationship between the Pre-service Teachers' Environmental Awareness and Environmental Attitudes

Scale	<i>n</i>	\bar{X}	<i>SD</i>	<i>R</i>	<i>p</i>
Environmental Awareness	325	80.14	10.71	.523	.000
Environmental Attitudes	325	80.67	12.3		

When Table 5 is examined, it is seen that there is a significant relationship between the pre-service teachers' environmental awareness and environmental attitudes ($p < .05$). When the direction and level of this relationship was examined, it was found that there is a positive and medium level relationship ($r = .523$).

Table 6.

Independent-samples t-test Results related to whether the Pre-service Classroom Teachers' Environmental Awareness and Attitudes Vary Significantly depending on the Variable of Gender

Scale	Gender	<i>n</i>	\bar{X}	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Environmental Awareness	Female	214	80.04	10.54	-378	323	.705
	Male	111	80.52	11.42			
Environmental Attitudes	Female	214	81.56	12.44	1.805	323	.072
	Male	111	78.97	11.89			

When Table 6 is examined, it is seen that the mean scores taken by the pre-service teachers from both the environmental awareness scale and the environmental attitude scale do not vary significantly depending on gender ($p > .05$). In light of this finding, it can be argued that the pre-service teachers' gender does not have a significant effect on either their environmental awareness or environmental attitudes.

Table 7.

One-way Variance Analysis Results related to whether the Pre-service Classroom Teachers' Environmental Awareness and Attitudes Vary Significantly depending on the Variable of Grade Level

Descriptive Scores					ANOVA Results					
Scale	Group	<i>n</i>	\bar{X}	<i>SD</i>	Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
EAWS	1 st grade	108	78.61	11.89	B.Groups	714,150	3	238.050	2.046	.107
	2 nd grade	75	79.45	11.56	W.Groups	37345.038	321	116.340		
	3 rd grade	75	82.24	10.25	Total	38059.188	324			
	4 th grade	67	81.34	8.28						
Descriptive Scores					ANOVA Results					
Scale	Group	<i>n</i>	\bar{X}	<i>SD</i>	Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
EATS	1 st grade	108	81.76	10.74	B.Groups	4677.432	3	1559.144	11.285	.000
	2 nd grade	75	77.21	10.83	W.Groups	44349.645	321	138.161		
	3 rd grade	75	86.37	13.88	Total	49027.077	324			

When Table 7 is examined, it is seen that while the pre-service classroom teachers' scores taken from EAS do not vary depending on their grade level ($p > .05$), their scores taken from EATS vary significantly depending on grade level ($p < .05$). Thus, in order to determine the source of the difference, confirmatory analyses (posthoc) were conducted. First, variance homogeneity was tested and variances were found to be not homogenous ($p < .05$). Therefore, Tamhane's T2 test was run and the obtained data are presented in Table 8.

Table 8.

Results of Tamhane's T2 Test Conducted to Determine between Which Groups the Environmental Attitude Scores Differ Significantly depending on the Variable of Grade Level

Groups (i)	Groups (j)	$\bar{x}_i - \bar{x}_j$	$Sh_{\bar{x}}$	p
1 st grade	2 nd grade	4.555	1.766	.086
	3 rd grade	-4.604	1.766	.081
	4 th grade	5.350*	1.827	.037
2 nd grade	1 st grade	-4.555	1.766	.086
	3 rd grade	-9.60*	1.919	.000
	4 th grade	.795	1.975	.983
3 rd grade	1 st grade	4.604	1.766	.081
	2 nd grade	9.160*	1.919	.000
	4 th grade	9.955*	1.975	.000
4 th grade	1 st grade	-5.350*	1.827	.037
	2 nd grade	-.795	1.975	.983
	3 rd grade	-9.955*	1.975	.000

When Table 8 is examined, it is seen that the pre-service teachers' mean scores taken from the environmental awareness scale vary significantly between the first-year and fourth-year students in favor of the first-year students ($p < .05$); and between the third-year, second-year and fourth-year students in favor of the third-year students ($p < .05$).

Table 9.

Independent-samples t-test Results related to whether the Pre-service Classroom Teachers' Environmental Awareness and Attitudes Vary Significantly depending on the Variable of the State of Membership to an Environmental Organization

	Variables	n	\bar{X}	SD	T	df	p
Environmental Awareness	Member	39	78.07	12.95	-1.284	323	.200
	Nonmember	286	80.42	10.36			
Environmental Attitudes	Member	39	80.41	13.97	-.144	323	.886
	Nonmember	286	80.71	12.08			

When Table 9 is examined, it is seen that the pre-service teachers' mean scores taken from EAWS and EATS do not vary significantly depending on the state of membership to an environmental organization ($p > .05$). Thus, it can be argued that membership to an environmental organization does not have a significant effect on the pre-service teachers' environmental awareness and attitudes.

Table 10.

Simple Linear Regression Analysis Results related to the Extent to Which the Pre-service Teachers' Environmental Awareness Predict their Environmental Attitudes

Dependent Variable	Independent Variable	β	Standart Error β	Standardized β	t	F
Attitudes	Awareness	.600	.054	.523	11.018	121.390
		R= .523		R ² =.273		p= .000

When Table 10 is examined, it is seen that there is a positive and medium level correlation between the pre-service teachers' environmental awareness and environmental attitudes ($R = .523$; $p < .05$) and the pre-service teachers' environmental awareness predicts nearly 27% of the total variance of their environmental attitudes ($R^2 = .273$).

Discussion

At the end of the study, it was found that the pre-service classroom teachers' environmental awareness and attitudes levels are high. The attitudes possessed by teachers are of great importance in terms of their making connections to environmental issues in their classes (Kim & Fortner; 2006: 16). In this connection, possession of high levels of environmental awareness and attitudes by the pre-service classroom teachers who will educate future generation with environmental sensitivity seems to be a positive finding of the study.

Yumuşak, Sargın, Baltacı and Kelani (2016) found that the pre-service teachers' environmental awareness level is high. When other studies conducted on pre-service teachers are examined, it is seen that there are some studies reporting medium level of environmental attitudes (Güven; 2013; Kahyaoğlu and Özgen, 2012; Polat and Kırpık, 2013) or high level of environmental attitudes (Aksu ve Erduran, 2009; Özsoy, 2012). Thus, this finding of the study concurs with the findings reported in the literature. On the other hand, there are some studies in the literature reporting that pre-service teachers' environmental attitudes are low (Erol and Gezer, 2006; Şama, 2003). In a study, Erol (2005) investigated the second-year pre-service classroom teachers' interest in and attitudes towards environmental problems and found that the pre-service teachers' attitudes towards environment and environmental problems are low. Özsoy (2012) conducted a study on pre-service teachers' environmental awareness and found that the participants have a medium level awareness.

In the current study, it was also found that the pre-service classroom teachers' environmental awareness and attitudes do not vary significantly depending on gender. When the research focusing on pre-service teachers' environmental attitudes is examined, it is seen that there are some studies reporting, parallel to this finding of the current study, that gender does not have a significant effect on environmental attitudes (Aksu and Erduran, 2009; Aslan, Uluçınar-Sağır and Cansaran, 2008). However, in great majority of the studies, significant gender-based differences in environmental

awareness and attitudes in favor of women have been reported. Researchers such as Ek, Kılıç, Öğdüm, Düzgün and Şeker (2009); Erol and Gezer (2006); Kahyaoğlu and Özgen (2012) reported that women have more positive attitudes towards environment than men and the difference is significant. In a study by Çelikler and Aksan (2015), in terms of environmental awareness, a significant difference was found in favor of women.

While no significant difference was found between the pre-service classroom teachers' awareness levels in terms of grade level, a significant difference was found in their environmental attitudes between the first-year students and the fourth-year students in favor of the first-year students and between the third-year students, the second-year students and the fourth-year students in favor of the third-year students. In their study investigating the third-year and fourth-year students' environmental awareness of environmental problems, Çelikler and Aksan (2015) found a significant difference in favor of the fourth-year students.

No significant difference was found in the pre-service classroom teachers' environmental awareness and attitude mean scores depending on the state of membership to an environmental organization. However, Eket al. (2009) determined that participation in an environmental activity or taking an environmental course significantly affected the pre-service teachers' environmental attitudes. This difference might be because the environmental organization membership of the participants of the current study is not as much active as to affect their awareness or attitudes.

It was finally determined that there is a positive and medium level correlation between the pre-service classroom teachers' environmental awareness and attitude mean scores and their environmental awareness can explain 27% of the variance in their environmental attitudes. When the literature is examined, it is seen that environmental awareness, environmental attitudes, sensitivity towards environmental problems have been found to be related to each other. Determination of environmental awareness is viewed to be important in terms of developing positive environmental attitudes and behaviors (Ünver, Avcıbaşı and Kızılcık-Özkan, 2015: 283). Okur-Beberoğlu and Uygun (2012) found a high level of correlation between environmental awareness and attitudes.

Conclusion

The findings obtained in the current study can be summarized as follows:

1. The pre-service classroom teachers' environmental awareness and attitude levels were found to be high.
2. The gender variable was found to be not leading to a significant difference in the pre-service classroom teachers' environmental awareness and environmental attitude mean scores. In terms of the grade level variable, while no significant difference was found in the pre-service classroom teachers' environmental awareness, a significant difference was found between the first-year students and the fourth-year students in favor of the first-year students and between the third-year students, the second-year students and the fourth-year students in favor of the third-year students in terms of their environmental attitudes.
3. The state of membership to an environmental organization was found to be not resulting in a significant difference in the pre-service classroom teachers' environmental awareness and attitude mean scores.

4. It was determined that there is a positive and medium level correlation between the pre-service classroom teachers' environmental awareness and environmental attitudes and the pre-service classroom teachers' environmental awareness predicts their environmental attitudes to some extent.

Recommendations

On the basis of the finding that environmental awareness and attitudes are positively correlated, throughout the undergraduate education of pre-service teachers; besides the required environmental education course, some elective environmental education courses can be offered to pre-service teachers, thus, their environmental awareness can be improved more.

It should be taken in mind that the environmental education given to pre-service teachers will have direct impacts on their prospective students; thus, this education should be connected with the real life. To this end, the existing environmental education courses should be focused more on practice and pre-service teachers should be encouraged to participate in environmental activities. More social activities related to environment should be incorporated into the curriculums of teacher training programs of universities. By promoting pre-service teachers' participation in environmental activities, their environmental awareness and attitudes can be improved.

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