International Online Journal of Educational Sciences, 2015, 7 (3), 27 - 37

iojes
www.iojes.net

International Online Journal of Educational Sciences

ISSN: 1309-2707

Preschool Teacher Candidates' Sensitivities And Attitudes Towards Environment

Handan Asûde Başal[1], Rabia Özen[2], Pınar Bağçeli Kahraman[3]

[1, 2,3]*Uludag University Education Faculty, Department of Elemantary Teacher Education, Preschool Teacher Education Program, Bursa, TÜRKİYE*

ARTICLE INFO

Article History:
Received 28.01.2015
Received in revised form 05.05.2015
Accepted 01.07.2015
Available online 12.08.2015

ABSTRACT

The aim of this study is to investigate the effect of an enriched environmental education course on the attitudes, behaviors and sensitivities of 4th grade teacher candidates who study in Undergraduate Program of Preschool Education. A pretest-posttest control group design and quasi-experimental design has been used in this study. Based on this method, the workgroup was formed of 77 teacher candidates, of whom 39 in experimental group and 38 of whom in control group. "Enriched Environmental Education for Children" course was conducted on the experimental group for 14 weeks. Environmental Sensitivity Scale for University students has been applied to teacher candidates simultaneously as pretest-posttest. In addition to this, "Scale of Affective Tendencies towards Environment" and "Environmental Behavior Scale" were also used within the last week of course. It was seen that environmental sensitivity of teacher candidates who took the course, was significantly more influenced than environmental sensitivity of teacher candidates that did not take the course.

© 2015 IOJES. All rights reserved

Keywords:
Environment education, teacher candidates, environmental sensitivity, attitudes toward environment, environment.

Introduction

Environment is the place where all kinds of biological, social, cultural and economical activities occur. The environment surrounds people. But in recent years, the people especially living in the city have spent their life far from wildlife and they uninterested in the environment. They also misjudge nature.

Past century is remembered as an age of urbanization, industrialization, information and development when great inventions and progresses were made and global changes took place (Atasoy and Erturk, 2008). Along with these developments, one of the biggest problems of our age started to increase (Dunlap, Gallup and Gallup, 1993; Yücel and Morgil, 1998; Tor, 2009; Ozsevgec and Artun, 2012; Ayvacı and Şenel-Çoruhlu, 2012). hese environmental problems are caused by irresponsible attitudes of individuals (Erol and Gezer, 2006; Bozkurt, 2006). Considering that education is also an attitude-changing process, it can be seen as an effective solution in preventing environmental problems through the education of environmentally conscious and environmentally literate individuals (Uzun and Sağlam, 2006; Çabuk and Karacaoğlu, 2003) One of the most necessary duties of societies for a sustainable existence is to raise consciousness, awareness and values among individuals (Güler, 2009). This can only be achieved by a qualitative environmental education or, in other words, "sustainable development education" (Doğan, 2007).

The general purpose of environmental education is to give individuals skills to protect and improve the environment (Moseley, Huss, Utley, 2010; Doğan, 2007). Therefore environmental education not only aims to

[3] Uludag University Education Faculty, Department of Elemantary Teacher Education, Preschool Teacher Education Program, Bursa.
Telephone: 02242942189
Fax: 02242942199
e-mail:pinarbag@uludag.edu.tr
DOI: http://dx.doi.org/10.15345/iojes.2015.03.017

© 2015 International Online Journal of Educational Sciences (IOJES) is a publication of Educational Researches and Publications Association (ERPA)

inform individuals about environment but also give them the necessary attitudes and behaviors to protect and improve the environment (Uzunoğlu, 1996). According to Şengül (2001), there are three main purposes of environmental education. These purposes are informing people about environment, raising awareness among individuals about environment and creating behavior changes. However, environmental education must go beyond being an education that raises environmental awareness and conscious (Atasoy and Ertürk, 2008). Environmental education must be an education supporting individuals in developing critical thinking skills, problem solving skills and sense of responsibilities about environment and education policies and making them participate in the decision-making process. By this means, it is stated that this education can be useful for individuals when they develop their personalities (Doğan, 2007; Özdemir, 2007).

The most effective way of dealing with environmental problems is to inform society about environment. This can only be achieved through a deliberative environmental education (Yılmaz, Morgil, Aktuğ and Göbekli, 2002). So, educators and educational institutions that educate qualified and informed individuals play the most import role (Çabuk and Karacaoğlu, 2003). The first thing to do is to educate educators or future educators (Sahin and others, 2004). Teachers who will be role models for children and who will give them proper learning methods and quality knowledge need to increase their awareness and knowledge levels first (Güler, 2009). Only an environment-friendly teacher can efficiently educate children on environment (Moseley et al., 2010; Doğan, 2007; UNESCO-UNEP, 1988).

Although environmental education has been given for more than thirty years, it is known that teachers still find it difficult to add environmental education into their academic programs. According to field researchers, the most important reason for this is the low preparation levels of teachers about environmental matters (Cherif, 1992: Alvarez, Fuente, Perales and Garcia, 2002). Ham and Sewing (1988) also state that teachers have doubts about their own self-sufficiency levels to give environmental education and although these teachers exhibit positive attitudes towards environment, they express that they do not have enough experience and knowledge about environmental education.

Perhaps the most important aspect of environmental education is the pedagogical formation of teachers relating to the subject and how they believe in this matter. At this juncture, it is very important to practice environmental education in an effective manner (Doğan, 2007). When previous researches were analyzed it was seen that environmental education given in our country is not on the ideal level (Ünal, 1998; Yücel and Morgil, 1998). Environmental education has been in the organized education in our country since 1991. Since then, students have been able to select courses directly related to environment from among the elective courses (Erol and Gezer, 2006).

When the field was investigated, it was seen that teacher candidates' attitudes and sensitivities for environment were analyzed with descriptive researches (Kahyaoglu and Ozgen, 2012; Aksoy and Karatekin, 2012; Yalmanci and Gözüm, 2011;Yurt, Cevher-Kalburan and Kandir, 2010; Aydın, 2010; Erol and Gezer, 2006). But there were very few experimental researches on their attitudes and sensitivities for environment (Uzun and others, 2013; Efe-Aslan et al., 2012; Tal, 2010; Alvarez and others, 2002).

Although environmental education begins in preschool period, no study can be found targeting preschool teacher candidates. A child gains the necessary knowledge, skills, attitude and habits during preschool education period when child's development rate and learning capacity are at their peak (Oktay, 2010). Child's experiences during this period may affect every aspect of the rest of his life (Ari, 2005). That is why every single bit of education that teachers give in a preschool education institution will influence his life. Value judgments and behaviors gained in this period play a very important role in developing both empathy and love for nature (Erten, 2005).

This study's goal is to analyze the effect of an enriched environmental education course on the attitudes, behaviors and sensitivities of 4th grade teacher candidates who study in Undergraduate Program of Preschool Education. In accordance with this purpose, we intended to analyze the relation between environmental consciousness and awareness of teacher candidates, who took on the task to educate future generations before and after they took the course.

This study plays an important role due to its efforts in making courses like Environmental Education become widespread in undergraduate education programs by reflecting positive changes in teacher

candidates' affective tendency, attitude and behaviors. Since there are no such studies targeting preschool teacher candidates, it is believed that it will shed light on future studies and offer a different point of view for academicians studying subjects like environmental education.

Method

A pretest—posttest control group design and quasi—experimental design has been used in this study. Studies, which comprise randomly paired experimental groups, are considered quasi-experimental designs (Büyüköztürk et al., 2012). Pretest—posttest control group design, on the other hand, requires that participants be analyzed in respect of responding variable before and after experiment process (Büyüköztürk, 2001). Experimental group (n=39) in this study comprises teacher candidates that have chosen "Applied Environmental Education for Children" as an elective course in Uludag University Program of Preschool Education. As for the control group (n=38), it comprises teacher candidates that did not choose this course.

In accordance with the aim of this study, pretest and posttest have been applied to experimental and control groups. Initially, experimental group consists of 53 teacher candidates. However, there have been some teacher candidates that did not participate in pretest and posttest, so the number of people was determined to be 39. Group pairing method is used to even the two groups in respect of ensemble average in experimental study (Büyüköztürk et al., 2012). That is why the number of teacher candidates in control group was limited to 38 in order to set the teacher candidates in experimental and control group on even ground. A total of 77 teacher candidates – 39 in experimental group and 38 in control group - were used within the scope of the study.

Study Group

Descriptive statictics of study group are shown in Table 1.

Table 1. Descriptive statistics of study group

	Female		Male		Total	
	f	%	f	%	f	%
Experimental	34	87,2	5	12,8	39	50,6
Control	32	84,2	6	15,8	38	49,4
Total	66	85,7	11	14,3	77	100

Study participants are 85.7 % female teacher candidates and 14.3 % male teacher candidates. 87.2 % female teacher candidates and 12.8 % male teacher candidates make up experimental group, 84.2 % female teacher candidates and 15.8 % male teacher candidates consist of male teacher candidates.

Data Collection Tool

In this research, "Environmental Sensivity Scale for University Students", "Scale of Affective Tendencies towards Environment" and "Environmental Behavior Scale", were applied.

E**nvironmental sensitivity scale for university students.** Environmental Sensitivity for Children Scale which was prepared for children and developed by Basal, Doğan and Atasoy (2007), was adapted, has adapted to the university students in order to determine environmental protection, development and the level of environmental information (Başal, Bağçeli-Kahraman, Özen, 2015). The research was conducted on a total of 275 university students- 136 who took a course related to environmental education and 139 who didn't take a course related to environmental education- from Education Faculty of Uludag University. In the first phase item analysis was applied to 90-item-scale and a random t-test was applied to total points of top 27% and the last 27% of the group and, finally, number of items in the scale was decreased to 82.

Simultaneity validity was analyzed within the scope of criteria referenced validity, relations between Environmental Sensitivity Scale for University Students and Scale of Affective Tendencies toward Environment and Environmental Behavior Scale were calculated with the help of Pearson Moment Correlation coefficient (r=.76), and it was determined that correlation coefficients of calculated points were at a significant level ($p<.05$).

In order to allow for structure validity, he difference between Environmental Sensitivity Scale for University Students average points of teacher candidates, who take a course related to environmental education and average points of teacher candidates that do not take such a course were calculated with independent sample t-test ($t=2.3$; $p<.05$). As a result, it was determined that there is a significant difference in favor of teacher candidates that take a course related to Environmental Education.

As a result of Test – Retest studies conducted in 3-week-periods for reliability purposes, reliability coefficient was calculated as $r=.76$. This result shows that there is a highly positive and significant relation between test – retest calculations. Cronbach Alpha reliability coefficient of Environmental Sensitivity Scale for University students was calculated as $r=.85$.

Scale of affective tendencies toward environment. In order to determine teacher candidates' affective tendencies toward environment, Karatekin (2011) adapted the report called Environmental Education in Wisconsin: "Are we walking the talk?" which was published by Wisconsin Center for Environmental Education. As a result of validity and reliability study, Cronbach Alpha factor was determined to be .78. Scale consists of 27 items that were structured in form of 5 point likert scale. 16 of items were positive and 11 of them were negative. Item mark as 5= absolutely agree, 4= agree, 3= unstable, 2= not agree, 1= never. High point is shown that affective tendencies toward environmet is high.

Environmental behavior scale. In order to determine teacher candidates' behaviors towards environment, Karatekin (2011) adapted Environmental Behavior Scale into Turkish. The original scale consists of 16 items of 5 point likert scale which is found in report named Environmental Education in Wisconsin: "Are we walking the talk?" published by Wisconsin Center for Environmental Education. However, number of items was increased to 19 as a result of pilot study of the researcher. Cronbach Alpha reliability factor of the scale was determined to be .85. This result shows that the scale is considerably reliable. Item mark as 5=always , 4= usually, 3= sometime, 2= rarely, 1= never. High point is shown that person has positive environmental behavior. All items are positive.

Process

Environmental Sensitivity Scale for University Students has been applied to experimental and control group teacher candidates simultaneously as pretest and posttest. While experimental group was offered activities related to environment and environmental education within the scope of the course "Enriched Environmental Education for Children", control group was left alone.

Primarily, within the scope of Enriched Environmental Education for Children course, it was intended to determine environment oriented gains and indicators in Preschool Education Program of 2013 and these findings were presented to three experts. One of them is studying environmental education, the other one is studying environmental on preschool education and the other one is studying preschool education. After that, an activity plan was prepared for gains and indicators determined based on Significant Days and Weeks for Environmental Education, which was determined by Gülay and Ekici (2010). Gülay and Ekici (2010) determined such days as follows: Power Saving Week (second week of January), Forest Week (March 21 – 26), Traffic and First Aid Week (first week of May), Museums Week (May 18 – 24) and Environmental Protection Week (second week of June). According to the experts' views; Animal Welfare Day (October 4th) was added to these days by researchers.

Teacher candidates were informed about how the lesson is taught and given pretest in the first week of the course (3 hours). Groups were formed within the scope of Significant Days and Weeks. Teacher candidates were asked to design various activities based on gains and indicators related to their subjects.

A theoretical knowledge about concepts, principles and scope of environmental education was given in second week (3 hours). Information about environmental education was given in third and fourth weeks (6 hours). In addition, sample activities, which would be applied within the scope of environmental education, were presented.

Teacher candidates, who were supposed to design activities for the next week, were interviewed each week and steps were taken to arrange their activities. After fifth week, six subjects were tried to present practically every week. Groups recorded the activities they did with children in preschool, where they do

their internship, and tried to present them in the next course. After each presentation, discussions and assessments were made.

Tours were arranged for children to Yalova Karaca Arboretum where many tree species can be found and learned, Walking Villa where they can see a glimpse of love for trees and Yalova Thermal National Park where many wonders of natural life get together. Eschenhagen, Kattmann and Rodi (1998) state that such nature tours play an important role in giving environment related knowledge and experiences to children and turning such knowledge into behaviors that become permanent (Erten, 2005).

Within the last week of Enriched Environmental Education for Children course, the course was reviewed in general and Environment Sensitivity Scale for University students was simultaneously applied to experimental and control groups as posttest. Moreover, Environmental Behavior Scale and Scale of Affective Tendencies toward Environment were also used within the last week of course to better understand if there is any difference between behaviors and emotions of experimental and control groups.

Data Analysis

SPSS 20 package software was used in statistical analysis of acquired data. Kolmogorov- Smirnov test was applied to determine if acquired data showed normal distribution or not. In cases where number of observations is above 29, Kolmogorov- Smirnov test results should be paid attention (Karaaltı, 2006). Result of Kolmogorov- Smirnov test, which was applied to the data, show normal distribution (p=.70; p>.05). Moreover, Levene's statistics test was used to determine if data showed homogeneous distribution or not and it was determined that variances were homogeneous (p=.092; p>.05). For this reason, parametric tests were preferred in the study. Independent samples t-test was used before the application in order to determine if there is any difference between teacher candidates' average points in pretest. It was intended to determine if there is any difference between teacher candidates' posttest averages, which was corrected with teacher candidates' pretest control variance, with the help of Covariance analysis (ANCOVA). Covariance analysis is the most suitable statistical process in pretest - posttest control group design where researchers focus on the effectiveness of experimental process (Pallant, 2003; Büyüköztürk et al., 2012). Independent samples t-test was used to determine if there is a difference between teacher candidates' points of Environmental Behavior Scale and Scale of Affective Tendencies towards Environment.

Findings

Table 2. Findings related to pretest points of experimental and control groups in environmental sensitivity scale for university students

	n	$\overline{X}$	ss	t	p
Experimental	39	209	15.8	1.78	.79
Control	38	214.5	10.9		

*p>.05

As seen in Table 2, there is 5.5 point of difference in favor of control group between average points acquired by teacher candidates in experimental and control group in pretest. A t-test was applied to see if this difference is significant and it was determined that there is no significant difference between groups in respect of average points (t=1.78; p>.05). According to this finding, there are no differences in pretest results of teacher candidates in experimental and control group.

Table 3. Descriptive statistics related to points of environmental sensitivity scale for university students pretest-posttest and corrected posttest of teacher candidates in experimental and control group

		Pre-test		Post-test		Corrected Test
Groups	n	$\overline{X}$	SS	$\overline{X}$	SS	$\overline{X}$
Experimental	39	209	15.8	222.70	13.78	224.62
Control	38	214.5	10.9	215.90	11.80	213.97

Environmental awareness points of teacher candidates who take Enriched Environmental Education course and which do not, have increased. However, as seen in Table 2, a sharper somewhat increase in points of experimental group teacher candidates who take Enriched Environmental Education can be seen. In addition, it is seen that the corrected point average ($\overline{X}$ =224.62) of experimental group is higher than point average ($\overline{X}$ =213.97) of control group.

Table 4. ANCOVA results of corrected posttest points of environmental sensitivity scale for university students by groups

Source of Variances	Sum of Square	df	Mean Square	F	p**
Pretest	7768.200	2	3884.100	52.470	.000
Experimental Group	6892.590	1	6892.600	93.120	.000
Error	5477.600	74	74.022		
Total	313245.820	76			

**p>.01

According to results of covariance analysis, which was applied on corrected posttest point averages of experimental and control groups, it was determined that there is a statistically significant difference F (1, 74=93,120; p<.01). Upon the analysis of corrected averages ($\overline{X}_{experiment}$= 224.62; $\overline{X}_{control}$= 213.97), it is seen that this significant difference is in favor of experimental group. It is safe to assume that Enriched Environmental Education for Children course influences environmental awareness of teacher candidates on a significant level.

Table 5. Findings related to experimental and control groups' points in scale of affective tendencies toward environment

	n	$\overline{X}$	ss	t	p**
Experimental	39	105.44	12.40	6.120	.000
Control	38	91.34	7.00		

**p>.01

As seen in Table 5, it was discovered that there is a significant difference between experimental and control group teacher candidates' point averages in Scale of Affective Tendencies toward Environment (t=6.120; p<.01). When point averages are analyzed, it is seen that point average ($\overline{X}$ = 105.44) of experimental group is significantly higher than the point average ($\overline{X}$)1.34) of control group.

Table 6. Findings related to experimental and control groups' points in environmental behavior scale

	n	$\overline{X}$	ss	t	p*
Experimental	39	64.95	13.95	2.627	.010
Control	38	57.74	9.70		

*p<.05

When Table 6 is analyzed, it is seen that, as a result of Enriched Environmental Education for Children course, point average of teacher candidates in experimental group became $\overline{X}$ =64.95 and point average of teacher candidates in control group became $\overline{X}$ =57.74. Between point average of experimental and control group teacher candidates, there is a significant difference in favor of experimental group teacher candidates (t=2.627; p<.05). As a result, it is seen that experimental group teacher candidates' responsible environmental behaviors are higher than those of control group teacher candidates.

Discussion, Conclusion and Suggestions

Environmental education is planned in order to make the individual better understand the natural environment and influence his behaviors in a positive manner. Environmental education is of capital importance in developing environmental responsibility awareness and only by giving proper environmental education in childhood, can one hope to raise individuals with environmental awareness and a sense of

responsibility. What is more, such education should be given somewhere away from indoors, preferably within the heart of nature. That is because children regard their living space as the environment and any kind of environmental education given indoors might give them wrong messages about nature (Taşkın and Şahin, 2008). Therefore, current education methods offered to children should be corrected and enriched in order for individuals with proper environmental responsibility awareness to be raised (Basal, 2005; Taşkın and Şahin, 2008). However, recent studies show that teachers lack the adequate knowledge about environmental awareness, as well as environmentalist behaviors and protective behaviors for environment (Buhan, 2006; Erol and Gezer, 2006; Erten et al., 2003).

What is more, Kahyaoğlu and Kaya (2012) determined that teachers are not informed well enough about non-governmental organizations related to environment. According to the study by Goldman, Yavetz & Pe'er (2006) teacher candidates have low levels of environmental behaviors and environmental literacy. On the other hand, while Karatekin and Aksoy (2012) state that only Social Sciences teacher candidates have average level of environmental literacy, Kahyaoğlu and Özgen (2012) claim that many teacher candidates from different fields have average environmental literacy levels. However, in his study with Geography teacher candidates Aydın (2010) claims that Geography teacher candidates have a high awareness about environmental problems and environmental education. Such a result proves that Geography teacher candidates are given adequate education about environment.

In addition, it was discovered that in a study aiming to determine college students' environmental awareness, majority of students had stated that they did not receive proper education about air, water, soil pollutions and ecological balance (Çabuk and Karacaoğlu, 2003). Kaya, Akıllı and Sezek (2009) also stated in their study with high school students that students are unable to turn their environmental awareness into behaviors. In his study to compare environmental awareness of Turkish and Azerbaijani students, Erten (2012) determined that students do not put their environmental awareness and knowledge into action and emphasizes the importance of environmental education in childhood to raise their environmental awareness. However, according to Özdemir (2007) environmental education should not be limited to environmental protection in traditional environmental educations. On the contrary, a new perspective should be adapted to establish a culture of sustainable life and developing necessary talents and skills should be focused on.

The role of well-educated and environmentalist teachers is very important in raising individuals with developed environmental responsibility and awareness. That is why environmental education with rich contents in college will help develop teacher candidates' environmental awareness and consciousness. Unfortunately, environmental education is offered as an elective course in universities of our country. Therefore in this study, the contents of Enriched Environmental Education course, which is an elective course, were enriched and observations were made on the effects of the course on teacher candidates' environmental attitude, behavior and conscience.

In accordance with the general purpose of the study, Environmental Sensitivity Scale for University students was applied to teacher candidates as pretest and posttest, and it was determined that environmental awareness of teacher candidates, who take Enriched Environmental Education for Children course, were significantly more influenced than environmental awareness of teacher candidates that did not take Enriched Environmental Education for Children course.

Scale of Affective Tendencies toward Environment was also applied to teacher candidates that take Enriched Environmental Education and teacher candidates that do not. It was determined that points of affective tendencies toward environment of teacher candidates who took Enriched Environmental Education for Children course are higher than those of teacher candidates who did not take the course.

That said, according to Environmental Behavior Scale applied on every teacher candidate, it was determined that responsible environmental behaviors of teacher candidates taking Enriched Environmental Education for Children course are better than responsible environmental behaviors of teachers that did not take the course.

Studies show that teacher candidates taking environmental education course have a higher level of environmental behavior, awareness, consciousness and knowledge (Çimen and Yılmaz, 2014; Uzun, Keleş

and Uzun, 2013; Efe-Aslan et al., 2012; Yalmancı and Gözüm, 2011; Tal, 2010; Durmuş, 2009; Şahin et al., 2004)

Cappellero and others (2011) discovered that when they give water awareness education to adults, their behaviors and attitudes toward water consumption were influenced in a positive manner and their environmental consciousness was developed significantly. In a study to determine the changes in opinions toward nature and environmental education of 24 teachers participating in 12-day ecology-based environment education, Güler (2009) discovered that teachers were informed about environmental education, their levels of competence increased and their opinions about protection of the environment changed positively. Environmental education programs applied with children show that environmental education contributes to child's a behavior toward environment (Evans et al., 2007; Cevher-Kalburan, 2009; Legaut, 1999; Chapman and Sharma, 2001). Leeming and Porter (1997) state that environmental education program, which they conducted with primary school children, did not adequately increase children's information about nature, but their environmental attitudes were increased significantly. Vaughan and others (2003), on the other hand, state that children transfer their environmental protection principles that have been learned in school environment to their parents and as a result, children become influential on environmental knowledge levels of their parents. In addition, studies conducted with primary school and high school students show that environmental education increases students' awareness toward environmental values and their purity as well as responsible behavior tendencies toward environment, and contribute to their knowledge and behaviors related to environment (Kudryavtsev et al., 2012; Ozdemir, 2010; Drissner, Haase and Hille, 2010; Bradley, Waliczek and Zajicek, 1999).

Habits and values gained in early years of an individual form the basis of personality. That is why all types of education given in preschool education period will give shape to one's behaviors and attitudes. With the help of environmental education in preschool education, it is intended to help children develop environmental behaviors. In order for environmental education to be given effectively in preschool education institutions, teachers should have a certain amount of environmental consciousness. Since environmental education begins in preschool period, preschool teacher candidates should be conscious and sensitive about environmental education, so that they would be effective on children. Therefore, courses related to environmental education should be created especially in departments of colleges that raise teachers and such courses should be applied courses.

What is more, environmental consciousness levels of working teachers and other personnel should also be increased with the help of in service trainings and seminars. This study, which was conducted as an applied study, is expected to contribute to other studies to be done in the field of environmental education.

References

Aksoy, B. & Karatekin, K. (2011). Farklı programlardaki lisans öğrencilerinin çevreye yönelik duyuşsal eğilimleri. *TSA*, 15(3), 23-36.

Alvarez, P., Fuente, E., Perales, F,J.& Garcia, J. (2002). Analysis of quasi-experimental design based on environmental problem solving for the initial training of future teachers of environmental education. *The Journal of Environmental Education,* 33(2), 19-21. doi: 10.1080/00958960209600804

Arı, M. (2005). Türkiye'de erken çocukluk eğitimi ve kalitenin önemi M. Sevinç (Ed.). *Gelişim ve eğitimde yeni yaklaşımlar 1* (ss. 31-35). İstanbul: Morpa Kültür Yayınları.

Atasoy, E. & Ertürk, H. (2008). İlköğretim öğrencilerinin çevresel tutum ve çevre bilgisi üzerine bir alan araştırması. *Erzincan Eğitim Fakültesi Dergisi*, 10(1), 105-122.

Aydın, F. (2010). Coğrafya öğretmen adaylarının çevre sorunları ve çevre eğitimi hakkındaki görüşleri (Gazi Üniversitesi Örneği). *International Online Journal of Educational Sciences*, 2(3), 818-839.

Ayvacı, H. S. & Şenel-Çoruhlu, T. (2009). Öğrencilerin küresel çevre sorunlarına bakışları ve kavram yanılgılarının belirlenmesine yönelik gelişimsel bir araştırma. *Hasan Ali Yücel Eğitim Fakültesi Dergisi*, 12(2), 11-25.

Başal, H. A. (2005). *Çocuklar için uygulamalı çevre eğitimi*. İstanbul: Morpa Kültür Yayınları.

Başal, H. A., Doğan, Y. & Atasoy, E. (2007). Developing environmental sensivity for children scale: Realibility and validity studies. *J. Biol. Environ. SCI*, 1(2), 99-104.

Başal, H. A., Bağçeli-Kahraman, P. & Özen, R. (2015). Üniversite öğrencileri için çevre duyarlılığı ölçeği uyarlama çalışması, *The Journal of Academic Social Sciences Studies*, 35, 13-23. doi:10.9761/JASSS2749

Bozkurt, O. (2006). Çevre eğitimi. M. Aydogdu ve K. Gezer (Ed.). *Çevre Bilimi* (ss. 210). Ankara: Anı Yayıncılık.

Bradley, J.C., Walizcek, T.M. & Zajicek, J.M. (1999). Relationship between environmental knowledge and environmental attitude of high school students. *The Journal of Environmental Education*, 30(3), 17-21. doi: 10.1080/00958969909601873

Buhan, B. (2006). *Okul öncesinde görev yapan öğretmenlerin çevre bilinci ve bu okullardaki çevre eğitiminin araştırılması.* Yayımlanmamış yüksek lisans tezi, İstanbul: Marmara Üniversitesi Eğitim Bilimleri Enstitüsü.

Büyüköztürk, Ş. (2001). *Deneysel desenler öntest-sontest kontrol grubu desen ve veri analizi*. Ankara: Pegem Yayıncılık.

Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, S. & Demirel, F. (2012). *Bilimsel araştırma yöntemleri.* Ankara: Pegem Akademi.

Chapman, D. & Sharma, K. (2001). Environmental attitudes and behavior of primary and secondary students in Asian cities: am preview strategy for implementing an eco-schools programme. *The Environmentalist*, 21, 265-272.

Cappellaro, E., Çoban, G.U., Akpinar, E., Yildiz, E., Ergin, O. (2011). Yetişkinler için yapılan uygulamalı çevre eğitimine bir örnek: Su farkındalığı eğitimi. *Türk Fen Eğitimi Dergisi*, 8 (2), 157-173.

Cevher-Kalburan, F.N. (2009). "*Çocuklar için çevresel tutum ölçeği" ile "yeni ekolojik paradigma ölçeği"nin geçerlik güvenirlik çalışması ve çevre eğitim programının etkisinin incelenmesi*. Yayımlanmamış doktora tezi, Ankara: Gazi Üniversitesi Eğitim Bilimleri Enstitüsü.

Çabuk, B. & Karacaoğlu, C. (2003). Üniversite öğrencilerinin çevre duyarlıklarının incelenmesi. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 36(1-2), 190-198.

Çimen, O. & Yılmaz, M. (2014). Dönüşümsel öğrenme kuramına dayalı çevre ğitiminin biyoloji öğretmen adaylarının çevre sorunlarına yönelik algılarına etkisi. *Bartın Üniversitesi Eğitim Fakültesi Dergisi*, 3(1), 339 – 359. doi: 10.14686/BUEFAD.201416221

Drissner, J. Haase, H. & Hille, K. (2010). Short-term environmental education - does it work? An evaluation of the 'green classroom'. *Journal of Biological Education*, 44(4), 149-155. doi: 10.1080/00219266.2010.9656215

Doğan, M. (2007). Orta öğretimde çevre eğitimi. *Çevre eğitimi* (ss. 59-68). Ankara: Türkiye Çevre Vakfı Yayını

Dunlap, R. E., Gallup, G. H. & Gallup, A. M. (1993). Of global concern: Results of the health and planet survey. *Environment and Behavior*, 35(9), 33–40. doi: 10.1080/00139157.1993.9929122

Durmuş, N. (2009). *Görsel sanatlar eğitiminin ilköğretim 1. kademedeki öğrencilerde çevre bilinci düzeylerinin gelişmesine katkısı*. Yayımlanmamış yüksek lisans tezi, Ankara: Gazi Üniversitesi Eğitim Bilimleri Enstitüsü

Efe-Aslan, H., Yücel, S., Baran, M. & Öner-Sunkur, M. (2012). Influence of animation-supported project-based ınstruction method on environmental literacy and self-efficacy in environmental education. *Asia-Pacific Forum on Science Learning and Teaching*, 13(2), Retrieved on 02.07.2014 from https://www.ied.edu.hk/apfslt/download/v13_issue2_files/aslanefe.pdf

Erol, G.H. & Gezer, K. (2006). Prospective of elementary school teachers' attitudes toward environment and environmental problems. *International Journal of Environmental and Science Education*, 1(1), 65 – 77.

Erten, S. (2005). Okulöncesi öğretmen adaylarında çevre dostu davranışların araştırılması. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 28, 91-100.

Erten, S. (2012). Türk ve Azeri öğretmen adaylarında çevre bilinci. *Eğitim ve Bilim*, 37(166), 88-100.

Erten, S., Özdemir, P.& Güler, T. (2003). Okul öncesi eğitim kurumlarındaki öğretmenlerin çevre bilinci düzeylerinin ve bu okullardaki çevre eğitimi durumunun belirlenmesi. *OMEP Dünya Konsey Toplantısı*, 2 (334-350). Kuşadası.

Evans, G., Brauchle, G., Haq, A., Stecker, R., Wong, K. & Shapiro, E. (2007). Young children's environmental attitudes and behaviors. *Environment and Behavior*, 39(5), 635-659. doi: 10.1177/0013916506294252

Goldman, D., Yavetz, B. & Pe'er, S. (2006). Environmental literacy in teacher training in Israel: environmental behavior of new students. *The Journal of Environmental Education*, 38(1), 3-22. doi: 10.3200/JOEE.38.1.3-22

Gülay, H. ve Ekici, G. (2010). MEB okul öncesi eğitim programının çevre eğitimi açısından analizi. *Türk Fen Eğitimi Dergisi*, 7(1), 74-84.

Güler, T. (2009). Ekoloji temelli bir çevre eğitiminin öğretmenlerin çevre eğitimine karşı görüşlerine etkileri. *Eğitim ve Bilim*, 34 (151), 30-43.

Ham, S. H., & Sewing, D. R. (1988). Barriers to environmental education. *Journal of Environmental Education*, 19(2), 17–24. doi: 10.1080/00958964.1988.9942751

International Strategy for Action in the Field of Environmental Education and Training for the 1990s. (1988). *UNESCO-UNEP Congress: Environmental Education and Training.* Retrieved on 10.07.2014 from http://unesdoc.unesco.org/images/0007/000750/075072Eo.pdf

Kahyaoğlu, M. & Kaya, M.F. (2012). Öğretmen adaylarının çevre kirliliğine ve çevreyle ilgili sivil toplum örgütlerine yönelik görüşleri. *Eğitim Bilimleri Araştırmaları Dergisi*, 2(1), 91-107.

Kahyaoğlu, M. & Özgen, N. (2012). Öğretmen adaylarının çevre sorunlarına yönelik tutumlarının çeşitli değişkenler açısından incelenmesi. *Kuramsal Eğitimbilim Dergisi*, 5(2), 171-185.

Karaaltı, M. (2006). Verilerin düzenlenmesi ve gösterimi. S. Kalaycı (Ed.), *SPSS uygulamalı çok değişkenli istatistik teknikleri* (ss.3-47). Ankara: Asil Yayın Dağıtım.

Karatekin, K (2011). *Sosyal bilgiler öğretmen adaylarının çevre okuryazarlık düzeylerinin belirlenmesi.* Yayımlanmamış doktora tezi, Ankara: Gazi Üniversitesi Eğitim Bilimleri Enstitüsü.

Karatekin, K. & Aksoy, B. (2012). Sosyal bilgiler öğretmen adaylarının çevre okuryazarlık düzeylerinin çeşitli değişkenler açısından incelenmesi. *Turkish Studies,* 7(1), 1423-1438. doi: 10.7827/TurkishStudies.2858

Kaya, E., Akıllı, M. & Sezek, F. (2009). Lise öğrencilerinin çevreye karşı tutumlarının cinsiyet açısından incelenmesi. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*, 9(18), 43-54.

Kudryavtsev, A., Krasny, M. & Sterdman, M. (2012). The impact of environmental education on sense of place among urban youth. *Ecosphere*, 3(4), 1-15, Retrieved on 02.07.2014 from www.esajournals.org

Legault, L. (1999). *The impact of an environmental education program on children's and parent's knowledge, attitudes, motivation and behaviors*. Unpublished doctoral dissertation, University of Ottawa, Kanada.

Leeming, F. C. & Porter, B. E. (1997). Effects of participation in class activities on children's environmental attitudes and knowledge. *Journal of Environmental Education*, 28(2), 33-43. doi: 10.1080/00958964. 1997.9942821

Moseley, C., Huss, J., Utley, J. (2010). Assessing k–12 teachers' personal environmental education teaching efficacy and outcome expectancy. *Applied Environmental Education and Communication*, 9, 5–17. doi: 10.1080/15330150903566398

Oktay, A. (Ed.). (2010). *İlköğretime hazırlık ve ilköğretim programları*. Ankara: Pegem Akademi

Özdemir, O. (2007). Yeni bir çevre eğitimi perspektifi: "Sürdürülebilir gelişme amaçlı eğitim". *Eğitim ve Bilim,* 32(145), 23-39.

Özdemir, O. (2010). Doğa deneyimine dayalı çevre eğitiminin ilköğretim öğrencilerinin çevrelerine yönelik algı ve davranışlarına etkisi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 27, 125-138.

Özsevgec, T. & Artun, H. (2012). *İlköğretim öğrencilerinin çevreye yönelik tutumlarına etki eden faktörlerin değerlendirilmesi.* X. Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi, 27-30 Haziran 2012, Niğde: Niğde Üniversitesi Eğitim Fakültesi. Retrieved on 04.07.2014 from http://kongre.nigde.edu.tr/xufbmek/dosyalar/tam_metin/pdf/2432-30_05_2012-18_57_24.pdf

Pallant, J. (2003). *SPSS survival manual: a step by step guide to data analysis using spss for windows (Versions 10 and 11).* Maidenhead: Open University Press.

Şahin, N. F., Cerrah, L., Saka, A., Şahin, B. (2004). Yüksek öğretimde öğrenci merkezli çevre eğitimi dersine yönelik bir uygulama. *Gazi Eğitim Fakültesi Dergisi*, 24(3), 113-128.

Şengül, M. (2001). Bir çevre yönetimi aracı olarak "çevre için eğitim". *Amme İdaresi Dergisi*, 34(4), 137-155.

Tal, T. (2010). Pre-service teachers' reflections on awareness and knowledge following active learning in environmental education. *International Research in Geographical and Environmental Education*, 19(4), 263–276. doi: 10.1080/10382046.2010.519146

Taşkın, O. & Şahin, B. (2008). "Çevre" kavramı ve altı yaş okul öncesi çocuklar. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi,* 23(1), 1-12.

Tor, H. (2009). Increasing women's environmental awareness through education. *Procedia-Social and Behavioural Sciences,* 1, 939-942. doi: 10.1016/j.sbspro.2009.01.166

UNESCO-UNEP (1988). *International strategy for action in the field of environmental education and training for the 1990s.* Paris: United Nations Educational, Scientific and Cultural Organization. Retrieved on 02.07.2014 from http://unesdoc.unesco.org/images/0008/000805/080583eo.pdf

Uzun, N., Keleş, O., Uzun, F.V. (2013). The effects of nature education project on the environmental sensitivity. *TOJSAT: The Online Journal of Science and Technology*, 2013, 3(1), 160-165. doi: 10.1016/j.sbspro.2012.05.588

Uzun, N. & Sağlam, N. (2006). Ortaöğretim öğrencileri için çevresel tutum ölçeği geliştirme ve geçerliliği. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 30, 240-250.

Uzunoğlu,S. (1996). Çevre eğitiminin amaçları, uğraşı alanları ve sorunları. *Ekoloji,* 21, 7-12.

Ünal, S. (1998). İlk ve ortaöğretim ders kitaplarında yakıtlar ve çevresel etkileri. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi,* 14, 62-72.

Vaughan, C., Gack, J., Solorazano, H. & Ray, R. (2003). The effect of environmental education on school children, their parents, and community members: a study of intergenerational and intercommunity learning. *The Journal of Environmental Education*, 34(3), 12-21. doi: 10.1080/00958960309603489

Yalmancı, S. G. & Gözüm, A. İ. C. (2011). Kafkas üniversitesi öğretmen adaylarının çevre sorunlarına ilişkin tutumlarının bazı değişkenlere göre incelenmesi. *International Online Journal of Educational Sciences*, 3(3), 1109-1132.

Yılmaz, A., Morgil, İ., Aktuğ, P. & Göbekli, İ. (2002). Ortaöğretim ve üniversite öğrencilerinin çevre, çevre kavramları ve sorunları konusundaki bilgileri ve öneriler. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 22, 156-162.

Yurt, O., Cevher-Kalburan, N.& Kandır, A. (2010). Investigation of the environmental attitudes of the early childhood teacher candidates. *Procedia-Social and Behavioural Sciences*, 2(2), 4977-4984. doi: 10.1016/j.sbspro.2010.03.806

Yücel, A. S. & Morgil, İ. (1998). Yüksek öğretimde çevre olgusunun araştırılması. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi,* 14, 84-91.