

Anthropocentric or Ecocentric Environmentalism? Views of University Students

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Abstract

An Indian proverb says that “the man’s heart toughen as he drifts apart from nature”. Living in harmony with nature is only possible by abandoning of mankind from its idea of dominance on nature. Deep ecology refuses the superiority of human against nature with a radical attitude within ecological philosophy, and it wants the individuals and societies to respect the nature by specially valuing it. One of the main research subjects of the philosophy of science is the relation in between human and nature. The opinions regarding whether the human is a creature who is superior than nature, or whether it is an integral part of it are important in the formation of environmental values and attitudes. And in this study, the relation of individual and nature is being addressed, and it has been tried to examine whether the teacher candidates have an anthropocentric or ecocentric perspective. This study has been performed in order to determine whether teacher candidates adopt the anthropocentric paradigm or the ecocentric paradigm in their perspective against environmental problems. The research has been prepared by using quantitative research techniques by the participation of 426 teacher candidates. Five point likert type New Environmental Paradigm Scale consisting of 15 items has been used as data collection tool. The data obtained in the research has been analyzed by using the SPSS (Statistical Package for Social Sciences) for Windows 22.0 program. According to the data obtained in the research, it has been observed that the genders of the teacher candidates have no effect on their anthropocentric or ecocentric approach to environmental issues. Moreover, the averages of the students were higher in questions measuring the ecocentric approach within the New Environmental Paradigm Scale. The interest and protective style of the family has positive results on the teacher candidates in respect of anthropocentric approach. Nevertheless it has no effect when the ecocentric approach is in subject.

Keywords: deep ecology, new ecological paradigm, teacher candidates, environmental problems

1. Introduction

An Indian proverb says that “the man’s heart toughen as he drifts apart from nature”. Mollison (2014) had told that living in harmony with nature will only be possible by abandoning of mankind from its idea of dominance on nature. He had attracted attention to the point that the human is not superior than the other living beings, and that all the living beings are an expression of life. And Ozel (2004) is defending that the world would never make trouble by itself, and that all the problems, including the problems relevant to natural environment—are being caused by the people living on it. Deep ecology, which is an ideological trend that may be assessed on the basis of this comprehension, refuses the superiority of human against nature with a radical attitude within ecological philosophy, and it wants the individuals and societies to respect the nature by specially valuing it. The notion of deep ecology has been named by the article published by Norwegian philosopher Arne Naess in 1973. According to Naess (1973), the notions that may be gathered under the heading of “shallow environment philosophy” consist of prevention of pollution and destruction of natural sources in short term and legalizing the exploitation of nature by the citizens of the developed countries for a longer period.

Assertion by deep ecology that the nature carries a value both for itself and in itself contradicts with the sustainable development comprehension anticipated by capitalism. Deep ecology is approaching the incidents more realistically and naturally (Gokdayi, 1997). According to Masca (2009), the most significant criticism against the sustainable development concept is relying of it to an anthropocentric approach, and that it will not be possible to protect the nature by such an approach. And sustainable development, that has been mentioned for

the first time in the Brundtland Report in 1987, covers two different approaches; (i) the anthropocentric approach that places the man at the center and that focuses on meeting the fundamental requirements of man, especially the poor man, and (ii) the ecocentric approach in which the balance of environment is placed at the center, and by which it is intended not to hinder the natural abilities for the environment to meet the today's and future requirements as the result of the attempts that will meet the requirements of man.

Let it be discussed whether the environmental problems arise from anthropocentric approach or ecocentric approach, it had expanded its sphere of influence in 1970s (Catton & Dunlap, 1980). The ones that come to the forefront among these is the water and air pollution, loss of aesthetic values and preservation of sources (especially energy). Thus, the attempts for measuring the concern of public regarding quality of environment or the "environmental concern" have first been concentrated on such issues (i.e., Weigel & Weigel, 1978). However, the environmental problems have started to be distributed more in geographical aspect and to be observed more indirectly, and their source has started to be more ambiguous in the recent decades. Problems such as depletion of ozone layer, deforestation, depletion of bio-diversity and climate change have started to affect also the farther geographies (have generally started to reach to global scale). Moreover, the reasons of the problems in subject have started to become complex and effective, and their solutions have started to become complex and problematic (Stern, Young, & Druckman, 1992; Guney, 2002; Secgin et al., 2007; Erkal et al., 2012).

The environmental problems, that become subjects of basic policy as the natural result of gaining global dimension, are symbolizing the increasing awareness regarding the problematic relation in between the modern industrialized societies and the physical environment that these societies are dependent (Stern et al., 1992). There is a perception regarding that the activities of man change the ecosystems that enable our existence and the survival of all other living beings. The requirement for more successful sustainable development attempts that give credit to assumptions regarding that we are in the middle of a basic re-questioning underlying the world view directing the relation in between mankind and physical environmental is gradually being accepted more, and the dependency on the referred requirement is also gradually increasing. Especially, the assumptions regarding that a more ecologic world view is arising have gained more credibility in 1990s (Olsen, Lodwick, & Dunlap, 1992). In this context, it is not surprising to see that the measurement tools searching the measurement of issues of "ecologic consciousness" (Ellis & Thompson, 1997) and "anthropocentrism (Chandler & Dreger, 1993) and ecocentrism against anthropocentrism (Thompson & Barton, 1994)" starts to replace the traditional measurement tools measuring the subject of "environmental concern". The researchers, who deal with understanding how the society perceives the environmental problems on one hand, are being interested more in these "attitude issues"—that are newly arising—one the other hand (Stern, Dietz, Kalof, & Guagnano, 1995), and they are increasing—even if slowly—the number of studies regarding the perceptions of vast majority of public relevant to subjects such as global warming (Dunlap, 1998; O'Connor, Bord, & Fisher, 1999). The common view revealed by the studies is the strong requirement for environmental training (Alim, 2006; Aslan et al., 2008).

The researchers have drawn attention to the vital role of environmental training in the solution of environmental problems. For instance, Yaganak and Onkal (2005) had specified that environmental problems are standing against us as a ball of problems that can not be ignored, and had emphasized that these problems are directly related to where and how the man is living. And Ugurlu and Erkol (2013) has specified that being able to prevent the environmental problems, and being able to preserve, develop and improve the environment depends on questioning and changing the perspectives and standard of judgment of the individuals against the environment. Moreover, attention is being drawn to the point that the first and maybe the only way for announcing the environmental problems to all the people and for taking the relevant measures is an independent environmental training which will be able to provide environmental consciousness and sensitivity (Alti et al., 2002; Akbas, 2007). It is a reality that the most significant element of an effective environmental training process is the individuals to whom this training will be provided. The individuals having the required infrastructure and knowledge regarding the training are very important actors in respect of the quality of training (Turan, 2009). The function of the teacher candidates is very important for the environmental training to achieve its objective. The teachers, equipped regarding environmental training, will not just play an effective role in the solution of environmental problems, they will also have a profession which will cause the raising of environment warriors of the future.

Sahin et al. (2004) had specified that raising individual who are sensitive to environment has become an obligation for the future generations to live in a healthier and reliable environment. According to Altin et al. (2002) enabling that will be possible only by an effective environmental training. In other words, environmental

training along with general education is deemed as one of the most suitable means for enabling the people to comprehend their responsibilities and to contribute to the solution of environmental problems. Maybe, the environmental training that we start with the sentence of “son, don’t throw the garbage on the ground” without even recognizing is continuing in each field until the end of our lives. The role of university education is also extremely important for improving the environmental awareness—which is tried to be imposed by various lessons since primary school and for it to gain a scientific dimension (Isildar, 2008).

Based on the concept of “learning”, when we consider the importance of environmental training, knowledge is deemed to have been learned at the rate it causes change of behavior in the requested direction. In other words, transforming the knowledge into behavior or reflecting it to life is very important, and according to Baymur (2010), the knowledge that doesn’t become a behavioral is not being deemed to have been learned. For this reason, by the environmental training, it is being intended to provide basic information such as the rational use of natural sources in order to meet the basic needs and the functioning mechanisms of ecosystem, and to cause change of behavior in positive direction for the environment to preserve its ability to renew itself (Marn & Yildirim, 2004). As the individuals learn the functioning of ecosystem and the positive and negative effects of the activities of human regarding the continuity of these systems, they are exhibiting more responsible behaviors regarding the nature (Kiziroglu, 2001).

On the other hand, jamming of individuals in between the protection of environment and economic development, due to the measures to be taken for the protection of the environment should be prevented. But, in any case, it should be explained to the individuals that the welfare expectation of the society is limited with the capacity of nature (Akis, 2011; Tuna, 2006). Ignoring the economic issues includes significant effects due to its consequences, and advises the mankind to be very careful in teaching the preservation of environment and how the environmental problems will be solved.

In the solution of environmental problems, economy and education has an extremely important place, and it is required for the individuals, NGOs and public institution to act together for the solution of problems. Raising environmental awareness of individuals should not just occur with formal training at schools, on the contrary the reality of life is a school should be adopted. For this, the means and methods that will keep the notion of protection of environment alive should be followed (Kilic, 2013).

1.1 Purpose of the Study

The ways of thinking of the individuals regarding the outer world surrounding them are important in respect of legalizing their environmental values, attitudes and behaviors, and accounting for their roles within this general structure (Ponting, 2000). One of the main research subjects in all the societies is the relation in between human and outer world (nature). According to world-view arising from modern physics, the universe is not being designed as a machine in which many objects come together, instead it is being depicted as an indivisible dynamic whole whose parts are related in essence but can be understood as forms cosmic process (Downs, 2007; Kiray et al., 2015). The terms such as “organic” and “ecologic” have also arose in this process (Under, 1996; Capra, 2014).

On the other hand, the comprehension of putting the man against it had underwent change along with enlightenment in 17th century. The generation of knowledge, previously based on intelligence and belief, had started to be based on only scientific information along with enlightenment. The knowledge, intending to “explain the natural events” along the medieval, had started to have the aim of “dominating the nature” along with enlightenment. Two functions of this paradigm, which is also being expressed as “mechanical universe paradigm”, is to learn the functioning of nature and dominate the nature. According to Bacon, “dominating the nature” would improve the objective conditions of man’s life and thus it would decrease the conflicts in society. The basic assumption of the traditional current of thought—which started with Bacon and which continues today is that the scientific technological progress will cause a qualitative change in the structure of society (Erturk, 2013).

One of the main research subjects of the philosophy of science is the relation in between human and nature. The opinions regarding whether the human is a being which is superior than nature, or whether it is an integral part of it are important in the formation environmental values and attitudes. And in this study, the relation of individual and nature is being addressed, and it has been tried to examine whether the teacher candidates have an anthropocentric perspective or whether they have ecocentric perspective. In this context, when it is considered that the teacher candidates form the young population of the country along with their potentials of shaping the future of the society, and when it is considered that their attitudes against the environment are being affected by many variables and when the environmental problems are considered, forming learning environments providing

them experiences relevant to environment is extremely important. Because in the events performed for finding solution against environmental problems that arise as the result of excessive use of natural sources, that expand their circle each passing day and that increase their severity, the teacher candidates will both recognize the environmental problems more closely, and they will also witness at first hand how these problems are being solved. In order to realize this, it is first required to determine from which paradigm the teacher candidates consider the environmental problems. Because determining whether the teacher candidates adopt the anthropocentric paradigm or the ecocentric paradigm will function as mile stone in the plans to be made for the future on the basis of environmental training. And according to scientists, consumers and public, today's youth are responsible for the environment of the future. Within this scope, there are two responsibilities being imposed on the teacher candidates: (i) being individuals who will shape the future of this country, and (ii) raising the individuals who will construct the farther future of this country.

2. Method

2.1 Design of the Research

In this research, screening technique—from among quantitative research methods, has been used. The screening model is a research approach intending to describe a past state or current state as it is (Karasar, 2002, p. 77).

2.2 Data Collection Tools

In this study, a questionnaire form consisting of 2 sections had been developed as data collection method, and it was asked for the students to complete it. In the first section of the questionnaire, questions for obtaining demographic information of the students such as age, gender and income group are available. And in the second section, as it is intended to measure the perspectives of the students relevant to the environment, in other words as it is intended to measure their environmentalist approaches, similar studies performed previously in Turkey and abroad for measuring the environmentalist approaches had been examined. Along with the improvement of social dimension on issues relevant to the environment, environmental approach, environmental consciousness and relevant facts are being measured by using various scales since 1970s (Maloney & Ward, 1973; Dunlap & Van Liere, 1978; Weigel & Weigel, 1978; Arcury, 1990; Tarrant & Cordel, 1997; Dunlap et al., 2000).

But in many of these scales, it is being based on anthropocentric approaches. However, the purpose of this study is to determine whether the students are close to “ecocentric approaches” as being aware of the delicate balance in nature, or to “anthropocentric approach” that places the man to the center and that is based on the approach of “the environment should be protected for man”. Among the aforementioned scales, Modified New Environmental Paradigms Scale-NEP which doesn't just support the anthropocentric view and which allows to make distinction in between ecocentric approaches and anthropocentric approaches had been selected. The basis of this scale is that the man has no difference from the all other components forming the nature and the mankind is also subject to the laws of the nature. The validity and reliability study of this scale, which had been first developed by Dunlap and Van Liere (1978) and then improved by Dunlap et al. (2000), had been performed by Furman (1998). New Environmental Paradigms Scale is a 5 point Likert type scale consisting of 15 articles (Isildar, 2008).

This scale has then been used by many researchers as the political scientists being in the first place (Pierce et al., 1987; Pierce et al., 1992; Stern et al., 1995; Dalton et al., 1999). The researchers using the wide literature in 1970s and 1980s—which explain in detail the newly emerging environmental paradigm, had enabled NEP to be conceptualized in an extensive manner (Contgrove, 1982; Milbrath, 1984; Arcury et al., 1986; Pierce et al., 1987; Arcury, 1990; Olsen et al., 1992; Pierce et al., 1992; Stern et al., 1995; Eagly & Kulesa, 1997; Furman, 1998; Schultz & Zelezny, 1998; Hodgkinson & Innes, 2001; Gardner & Stern, 2003; Ji, 2004; Hawcroft & Milfont, 2010).

The researchers (Rokeach, 1968; Gray, 1985; Edgell & Nowell, 1989; Gooch, 1995; Stern et al., 1995a; Dalton et al., 1999) are defending that primitive beliefs affect a series of extensive beliefs and attitudes relevant more peculiar environmental issues. And other researchers, who are based on this point of view (Stern et al., 1995b; Pierce et al., 1999; Gardner & Stern, 2003), are believing that the ecology biased conformity—which is being reflected by a high score with the NEP scale, or that “viewing the world from ecologic aspect” requires the adoption of environment biased beliefs and attitudes on many issues.

Despite the NEP scale has addressed the measuring of environmental attitudes, beliefs, values and world-view in a different manner, it has been extensively used since 1980s for different samples at national and international scale: Isildar (2008), Kilic and Inal (2010), Sam et al. (2010), Kilic (2013), Yldirim and Uguz (2013) had used the NEP scale in the field of Economics and Administrative Sciences, Dervisoglu et al. (2009), Turan et al. had

used it in high schools, Isildar (2008), Demirel et al. (2009), Hosgor et al. (2015) had used it in the field of health sciences, Yildirim and Uguz (2013) had used in private sector, Ardahan and Mert (2014) had used in on individuals interested in nature sports (mountain climbing, rock climbing, biking and tracking), and Ardahan (2012) had used it while searching the differences of ones performing nature sports and the ones that are not performing the same in respect of their perception. Alniacik and Koc (2009) had studied the NEP scale with the university students, and had concluded that the ecocentric comprehension is more extensive among the students and that the students have environmental awareness at considerable level. Gunden and Miran (2008) had determined the environmental attitude of farmers by the NEP scale. And many researches in which this scale had been used had been performed by the teacher candidates, and they had been published (Erol & Gezer, 2006; Kahyaoglu et al., 2008; Ek et al., 2009; Isildar, 2009; Aydin, 2010; Sam et al., 2010; Sever & Yalcinkaya, 2012).

Albrecht et al. (1982) had used the NEP scale while measuring the attitudes of farmers for the environment; Pierce et al. (1987) had used it while comparing the environmental beliefs of Americans and Japans; Caron (1989) had used it while examining the perspective of black people in USA regarding the environmental problems; Edgell and Nowell (1989) had used it while reporting the effect of members of benefit group in Canada British Columbia on wild life; Noe and Sow (1990) had used it while searching the effect of culture on the environmental concerns of Spanish origin people living in USA; Pierce et al. (1992) had used it while examining the environmental organizations in America and Canada; Gooch (1995) had used it while trying to determine environmental attitudes and beliefs of people living in Sweden and Baltic countries; Furman (1998) had used it while searching the environmental concerns of Turks living in Istanbul; Schultz and Zelezny (1998) had used it in their research covering five countries and intending to measure the values and environmental behaviors; Widegren (1998) had used it while carrying out common research with the largest environmental organizations of Sweden and Switzerland; Bechtel et al. (1999) had used it while comparing the environmental belief system in USA, Brazil and Mexico; Cordell et al. (2002) had used it while searching the recreation and cultural dimensions of environment in American society; Bjerke et al. (2006) had used it while examining the outdoor recreation and environmental behavior in Norway; Brmer and Gray (2010) had used it while assessing the relation in between the ones interested in extreme sports and the nature; and Dyck et al. (2003) had used it while questioning the environmental awareness of the mountain climbers. In these researches, it had generally been reached to the same conclusion with the research of Dunlap and Ban Liere (1978) performed in Washington in 1976, and it had been revealed that NEP approves in a relatively strong manner the beliefs on various samples (Vining & Ebreo, 1992; Scott & Willits, 1994; Kempton et al., 1995; Stern et al., 1995; Schultz & Oskamp, 1996; Blake et al., 1997; Roberts & Bacon, 1997; Tarrant & Cordell, 1997; Ebreo et al., 1999; O'Connor et al., 1999; Dunlap et al., 2000).

2.3 Participants

Convenience sampling was used to select participants. This type of sampling is frequently preferred by the researchers, because participants can be easily reached and they are willing to participate in the study (Teddlie & Yu, 2007). The data derived from 426 participants. All participants were pre-service social studies teachers.

3. Results

The data obtained in the research has been analyzed by using the SPSS (Statistical Package for Social Sciences) for Windows 22.0 program. Figure, percentage, average, standard deviation had been used as depictor statistical methods in the assessment of the data.

The scores received by the dimensions of the scale are being assessed in between 1 and 5. This range has an extent of 4 points. This extent had been divided to five equal extents; and the findings had been interpreted as “very low” for 1.00-1.79, as “low” for 1.80-2.59, as “middle” for 2.60-3.39, as “high” for 3.40-4.19, and as “very high” for 4.20-5.00.

Mann-Whitney U test had been used in the comparison of quantitative continuous data in between two independent groups, and Kruskal Wallis-H test had been used in the comparison of quantitative continuous data among more than two independent groups. After the Kruskal Wallis-H test, Mann-Whitney-U test had been used as supplementary in order to determine the differences.

The obtained findings had been assessed at 95% confidence interval and at 5% significance level.

Table 1. Descriptive characteristics of teacher candidates

Tables	Groups	Frequency (n)	Percentage (%)
Gender	Female	202	47,4
	Male	224	52,6
	Total	426	100,0
Place of Birth	Village	121	28,4
	Town	20	4,7
	County	138	32,4
	Province	147	34,5
	Total	426	100,0
Place of growing up	Village	83	19,5
	Town	20	4,7
	County	133	31,2
	Province	190	44,6
	Total	426	100,0
Father's education level	Not literate	33	7,7
	Literate	46	10,8
	Primary school graduate	154	36,2
	Secondary school graduate	85	20,0
	High school graduate	78	18,3
	License degree and more	30	7,0
	Total	426	100,0
Father's profession	Teacher	9	2,1
	Farmer	79	18,5
	Worker	129	30,3
	Self-employed	143	33,6
	Civil servant	64	15,0
	Other	2	0,5
	Total	426	100,0
Mother's education level	Not literate	158	37,1
	Literate	64	15,0
	Primary school graduate	115	27,0
	Secondary school graduate	48	11,3
	High school graduate	33	7,7
	License degree and more	8	1,9
	Total	426	100,0
Mother's profession	Teacher	7	1,6
	Housewife	395	92,7
	Worker	10	2,3

	Farmer	3	0,7
	Civil servant	6	1,4
	Self-employed	5	1,2
	Total	426	100,0
General structure of the family	Authoritative	80	18,8
	Excessively interested	42	9,9
	Democratic	151	35,4
	Protective	148	34,7
	Uninterested	5	1,2
	Total	426	100,0
Socio-economic level	Low	45	10,6
	Middle	360	84,5
	High	21	4,9
	Total	426	100,0
Events that are subject of interest	Scientific	30	7,0
	Cultural	246	57,7
	Sportive	150	35,2
	Total	426	100,0

As it will also be understood from the Table 1, 52.6% of the participants are male, and 57.4% of them are female. 34.5% of the participants had born in the cities, and 44.6% of them had grown up in the cities. The counties follow the cities both as place of birth and growing up (32.4%, 31.2% respectively). When the teacher candidates' fathers' education level are considered, it is being observed that majority is primary school graduates, and secondary school graduates follow by 20%. The profession of the fathers of the participants is worker (33.6%) and farmer (30.3%) respectively. And regarding the mothers' education level, they are not literate with a rate of 37.1% and primary school graduate with a rate of 27%. And when the profession is considered, it is as follows: 92.7% housewife, and 2.3% worker.

The issue that attracts attention regarding the general family structure of the participants is that democratic family structure (35.4%) and protective family structure (34.7%) rank the first and second by close rates. It is not surprising that the socio-economic level of the students is mainly middle (84.5%) and low (10.6%). The events that the students like the most are scientific (57.7%) and sportive (35.2%) respectively.

Table 2. New ecologic paradigm levels

	N	Avg.	Sd.	Min.	Max.
Ecocentric approach	426	3,977	0,595	1,250	5,000
Anthropocentric approach	426	3,262	0,632	1,570	5,000

It is being observed that the participant students agree the "ecocentric approach" with high level ($3,977 \pm 0,595$), and the "anthropocentric approach" with mid level ($3,262 \pm 0,632$). According to this, it can be said that the teacher candidates adopt the ecocentric approach.

Table 3. Averages of new ecologic paradigm levels as per the general structure of the family

	Group	N	Avg.	Sd.	KW	p	Difference
Ecocentric approach	Authoritative	80	3,916	0,650	6,437	0,169	
	Excessively interested	42	3,833	0,573			
	Democratic	151	3,998	0,606			
	Protective	148	4,041	0,536			
	Uninterested	5	3,625	0,988			
Anthropocentric approach	Authoritative	80	3,330	0,641	10,422	0,034	
	Excessively interested	42	3,316	0,646			1 > 5
	Democratic	151	3,305	0,677			2 > 5
	Protective	148	3,193	0,559			3 > 5
	Uninterested	5	2,457	0,433			4 > 5

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of anthropocentric approach scores of the participants of the research differ significantly in respect of the general structure of the family variable, the difference among the averages of groups had been found significant (KW=10,422; $p=0,034<0.05$). Mann Whitney-U test had been applied in order to determine the source group of difference. According to this, the anthropocentric approach scores of ones whose general structure of family was authoritative ($3,330\pm0,641$) had been found higher than the anthropocentric approach scores of the ones whose general structure of family was uninterested ($2,457\pm0,433$). The anthropocentric approach scores of ones whose general structure of family was excessively interested ($3,316\pm0,646$) had been found higher than the anthropocentric approach scores of the ones whose general structure of family was uninterested ($2,457\pm0,433$). The anthropocentric approach scores of ones whose general structure of family was democratic ($3,305\pm0,677$) had been found higher than the anthropocentric approach scores of the ones whose general structure of family was uninterested ($2,457\pm0,433$). The anthropocentric approach scores of ones whose general structure of family was protective ($3,193\pm0,559$) had been found higher than the anthropocentric approach scores of the ones whose general structure of family was uninterested ($2,457\pm0,433$). According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach scores of the participants of the research differ significantly in respect of the general structure of the family variable, the difference among the averages of groups had not been found significant ($p>0.05$). According to the date, it can be said that the interest and protective style of the family has positive results on the children in respect of anthropocentric approach, but that it has no effect when the ecocentric approach is in subject.

Table 4. Averages of new ecologic paradigm levels as per the mother's education level

	Group	N	Avg.	Sd.	KW	P	Difference
Ecocentric approach	Not literate	158	4,013	0,602	5,993	0,307	
	Literate	64	4,076	0,492			
	Primary school graduate	115	3,928	0,621			
	Secondary school graduate	48	3,948	0,624			
	High school graduate	33	3,871	0,639			
	License degree and more	8	3,797	0,428			
	Not literate	158	3,342	0,600			
Anthropocentric approach	Literate	64	3,277	0,643	11,189	0,048	
	Primary school graduate	115	3,127	0,602			
	Secondary school graduate	48	3,393	0,708			1 > 3 4 > 3
	High school graduate	33	3,186	0,671			
	License degree and more	8	3,036	0,686			
	Not literate	158	3,342	0,600			
	Literate	64	3,277	0,643			

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of anthropocentric approach scores of the participants of the research differ significantly in respect of the mother's education level variable, the difference among the averages of groups had been found significant (KW=11,189; $p=0,048<0.05$). Mann Whitney-U test had been applied in order to determine the source group of difference. According to this, the anthropocentric approach scores of the participants whose mothers were not literate ($3,342\pm 0,600$) had been found higher than the scores of teacher candidates whose mothers were primary school graduates ($3,127\pm 0,602$). The anthropocentric approach scores of ones whose mothers were secondary school graduate ($3,393\pm 0,708$) had been found higher than the scores of the ones whose mothers were primary school graduates ($3,127\pm 0,602$). According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach scores of the participants of the research differ significantly in respect of the mother's education level variable, the difference among the averages of groups had not been found significant ($p>0.05$). The significant difference caused by the mother's education level (and this difference is not in conformity with the increase of education level) in respect of anthropocentric approach against no such difference in respect of ecocentric approach can be interpreted as that the mother's education level has no effect on the anthropocentric or ecocentric approach of the teacher candidates against the environmental problems.

Table 5. Averages of new ecologic paradigm levels as per the mother's profession

	Group	N	Avg.	Sd.	KW	P
Ecocentric approach	Teacher	7	3,875	0,451	8,316	0,140
	Housewife	395	3,989	0,598		
	Worker	10	4,088	0,413		
	Farmer	3	4,042	0,361		
	Civil servant	6	3,625	0,675		
	Self-employed	5	3,325	0,549		
Anthropocentric approach	Teacher	7	3,122	0,730	2,783	0,733
	Housewife	395	3,264	0,627		
	Worker	10	3,457	0,895		
	Farmer	3	3,238	0,412		
	Civil servant	6	3,191	0,743		
	Self-employed	5	2,971	0,370		

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach and anthropocentric approach scores of the participants of the research differ significantly in respect of the mother's profession variable, the difference among the averages of groups had not been found significant ($p>0.05$). Mother's profession has no effect on the anthropocentric or ecocentric approach to environmental problems.

Table 6. Averages of new ecologic paradigm levels as per the father's education level

	Group	N	Avg.	Sd.	KW	P
Ecocentric approach	Not literate	33	3,909	0,726	2,398	0,792
	Literate	46	3,978	0,518		
	Primary school graduate	154	4,016	0,576		
	Secondary school graduate	85	3,984	0,653		
	High school graduate	78	3,938	0,574		
	License degree and more	30	3,933	0,561		
Anthropocentric approach	Not literate	33	3,338	0,613	4,438	0,488
	Literate	46	3,376	0,573		
	Primary school graduate	154	3,203	0,618		
	Secondary school graduate	85	3,308	0,722		
	High school graduate	78	3,273	0,621		
	License degree and more	30	3,148	0,558		

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach and anthropocentric approach scores of the participants of the research differ significantly in respect of the father's education level variable, the difference among the averages of groups had not been found significant ($p>0.05$). Thus, father's profession has no effect on the anthropocentric or ecocentric approach to environmental problems.

Table 7. Averages of new ecologic paradigm levels as per the father's profession

	Group	N	Avg.	Sd.	KW	p
Ecocentric approach	Teacher	9	4,153	0,374	5,799	0,326
	Farmer	79	3,972	0,614		
	Worker	129	4,064	0,556		
	Self-employed	143	3,931	0,602		
	Civil servant	64	3,881	0,645		
	Other	2	4,188	0,796		
Anthropocentric approach	Teacher	9	3,048	0,718	2,858	0,722
	Farmer	79	3,282	0,680		
	Worker	129	3,268	0,650		
	Self-employed	143	3,261	0,579		
	Civil servant	64	3,237	0,642		
	Other	2	3,929	0,707		

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach and anthropocentric approach scores of the participants of the research differ significantly in respect of the father's profession variable, the difference among the averages of groups had not been found significant ($p > 0.05$). In this case, the father's profession has no effect on the anthropocentric or ecocentric approach of teacher candidates regarding environmental problems.

Table 8. Averages of new ecologic paradigm levels as per the place of growth

	Group	N	Avg.	Sd.	KW	P
Ecocentric approach	Village	83	3,929	0,620	2,013	0,570
	Town	20	4,044	0,546		
	County	133	3,963	0,562		
	Province	190	4,001	0,614		
Anthropocentric approach	Village	83	3,293	0,633	1,042	0,791
	Town	20	3,221	0,699		
	County	133	3,276	0,598		
	Province	190	3,243	0,651		

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach and anthropocentric approach scores of the participants of the research differ significantly in respect of the place of growth variable, the difference among the averages of groups had not been found significant ($p > 0.05$). It can be said that the place where the teacher candidates spend most of their lives have no effect on their adoption of anthropocentric or ecocentric approach regarding environmental problems.

Table 9. Averages of new ecologic paradigm levels as per the place of birth

	Group	N	Avg.	Sd.	KW	P
Ecocentric approach	Village	121	3,968	0,643	0,100	0,992
	Town	20	4,000	0,565		
	County	138	3,995	0,521		
	Province	147	3,965	0,629		
Anthropocentric approach	Village	121	3,230	0,641	0,377	0,945
	Town	20	3,314	0,690		
	County	138	3,257	0,615		
	Province	147	3,286	0,636		

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach and anthropocentric approach scores of the participants of the research differ significantly in respect of the place of birth variable, the difference among the averages of groups had not been found significant ($p>0.05$). The place of birth has no effect on the anthropocentric or ecocentric approach of teacher candidates regarding environmental problems.

Table 10. Averages of new ecologic paradigm levels as per the socio-economic level

	Group	N	Avg.	Sd.	KW	P
Ecocentric approach	Low	45	4,053	0,568	4,982	0,083
	Middle	360	3,955	0,599		
	High	21	4,202	0,554		
Anthropocentric approach	Low	45	3,194	0,743	1,579	0,454
	Middle	360	3,275	0,621		
	High	21	3,184	0,577		

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach and anthropocentric approach scores of the participants of the research differ significantly in respect of the socio-economic level variable, the difference among the averages of groups had not been found significant ($p>0.05$). The income level of family has no effect on the anthropocentric or ecocentric approach of teacher candidates regarding environmental problems.

Table 11. Averages of new ecologic paradigm levels as per the interested events

	Group	N	Avg.	Sd.	KW	P
Ecocentric approach	Scientific	30	3,958	0,666	0,017	0,992
	Cultural	246	3,983	0,566		
	Sportive	150	3,971	0,630		
Anthropocentric approach	Scientific	30	3,224	0,577	1,138	0,566
	Cultural	246	3,233	0,620		
	Sportive	150	3,316	0,662		

According to the result of Kruskal Wallis-H test performed in order to determine whether the averages of ecocentric approach and anthropocentric approach scores of the participants of the research differ significantly in respect of the interested events variable, the difference among the averages of groups had not been found significant ($p>0.05$). The scientific, cultural or sportive events that the teacher candidates attend have no effect on their anthropocentric or ecocentric approach regarding environmental problems.

Table 12. Averages of new ecologic paradigm levels as per the gender

	Group	N	Avg.	Sd.	MW	P
Ecocentric approach	Female	202	3,985	0,572	22 585,000	0,975
	Male	224	3,970	0,616		
Anthropocentric approach	Female	202	3,195	0,588	20 277,500	0,064
	Male	224	3,323	0,664		

As the result of the Mann Whitney-U test performed in order to determine whether the averages of ecocentric approach and anthropocentric approach scores of the students show a significant difference as per the gender variable, the difference among the averages of groups had not been found statistically significant ($p > 0,05$). In other words, the gender has no effect on the anthropocentric or ecocentric approach of teacher candidates regarding environmental problems.

4. Discussion

It is clear that the approach to nature of production system will have a great effect in the formation of environmental consciousness in social field. As it is known, each political system forms the institutions that will sustain itself, and forms the required conditions in order to encounter it. In this context, the current systems are also turning to an oppressive structure that will allow the generation of information conforming it and the communication of it to next generations. Within this structure, important role is falling on education and environmental training—within the scope of this research—for the communication of required information to future generations and for having the political, economic and cultural institutions adopted.

It is a reality that the social, economic and cultural structure in the country inevitably determines the limits of environmental training. Thus, environmental training is able to take place in curriculum at the extent it is in conformity with this structure. However, it can be easily said that an environmental training which is adapted to the current system and which has been limited with the frame drawn by the political and economic structure will not be able to sufficiently contribute to the protection of nature. Because environmental awareness considers the integrity of nature beyond preserving the continuity of current political system, not the singleness but the unity, and not the local but universal. Naturally, this reality makes the reconciliation of political system and environmentalist notion difficult and even impossible.

Environmental problems are actually problems that have intertwined with social, economic, cultural and political policies. Often, it will not be meaningful to define them by themselves. Because the globalization of environmental problems and their level that is threatening the life on the planet have directed the people to review their relations with the nature, their attitudes and behaviors against the environment and their duties and responsibilities undertaken for the nature, and to redefine the ecologic culture and environmental awareness (Ponting, 2000). Thus, unless we address the problem with an holistic approach, our chance of finding a solution is decreasing.

In this research, it has been searched which one of the two paradigms the teacher candidates adopt regarding environmental problems as a part of the requirement of holistic view. Even if significant level of environmental sensitivity and awareness among university students is an expected and requested condition in developing countries such as Turkey, the data had revealed that the average of New Ecologic Paradigm Scale had not changed as per gender. In other words, the gender has no effect on the anthropocentric or ecocentric approach of teacher candidates regarding environmental problems. While Vikan et al. (2007) had found statistically significant difference as per gender in the sample of Brazil, they had not found a significant difference in the sample of Norway. Denis and Genc (2007), Isildar (2008), Demirel et al., (2009), Aydin (2010), Sam et al. (2010), Sever and Yalcinkaya (2012) had also reported that there is no significant difference in between the opinions regarding environmental problems and the gender. There are also studies that obtain a result against this finding, and that conclude that there is a statistically significant difference in favor of females in between the attitude regarding environment and gender (McMillan et al., 1997; Zelezny et al., 2002; Erol & Gezer, 2006; Kahyaoglu et al., 2008; Meydan & Dogu, 2008; Ek et al., 2009; Fransson & Garling, 2009; Hosgor et al., 2015). And Sam et al. (2010) specify that there is no significant difference in between anthropocentric approach dimension and gender, and that there is a significant difference in favor of females in the ecocentric dimension.

It is being observed that the averages of students in questions measuring the ecocentric approach within New Environmental Paradigm Scale are higher. The highness of average can be assessed as there is a change towards ecocentric approach from anthropocentric approach depending on the increase in the environmental awareness of students. This finding is also being supported by the other researchers (Isildar, 2008; Alniacik & Koc, 2009; Kilic & Inal, 2010; Sam et al., 2010; Aytac & Ongen, 2012; Sever & Yalcinkaya, 2012; Kilic, 2013). On the other hand, Ardahan and Mert (2014), who had questioned the effect of intrinsic satisfaction, ecologic perception and emotional intelligence on participation of individuals in recreational nature sports, had wrote that the level of supporting the dominance of man on natural life by the ones interested in nature sports is lower compared to the ones not interested in nature sports. They had also added that ones interested in nature sports believe at a higher degree that ecologic crisis will occur and occurring (Ardahan & Mert, 2014). Gencay and Karakucuk (2000), who search the approach of sportsmen to environmental problems, had reached a result supporting this finding, and had reported that being interested in nature sports makes the individual more sensitive regarding environmental problems.

It can be said that the interest and protective style of the family has positive results on the teacher candidates in respect of anthropocentric approach, but that it has no effect when the ecocentric approach is in subject.

The significant difference caused by the mother's education level (and this difference is not in conformity with the increase of education level) in respect of anthropocentric approach against no such difference in respect of ecocentric approach can be interpreted as that the mother's education level has no effect on the anthropocentric or ecocentric approach of the teacher candidates against the environmental problems.

Mother's and father's profession has no effect on the anthropocentric or ecocentric approach to environmental problems. On the other hand, Ardahan and Mert (2014) had reported that the employment of individuals in private sector and self-employment status of them has positive and significant effect on the chance of being interested in nature sports, and thus by this way that the individuals start to consider the environmental problems more in ecocentric manner.

Father's profession has no effect on the anthropocentric or ecocentric approach to environmental problems. Ardahan and Mert (2014) had concluded that the probability of the individuals to be interested in nature sports increases as they get old, and that this increase reinforces the habit of considering the environmental problems in ecocentric manner.

It can be said that the place where the teacher candidates get born and/or spend most of their lives have no effect on their adoption of anthropocentric or ecocentric approach regarding environmental problems. This finding is coinciding with the findings of other researches (Demirel et al., 2007).

The scientific, cultural or sportive events that the teacher candidates attend have no effect on their anthropocentric or ecocentric approach regarding environmental problems (Demirel et al., 2007). And Ardahan and Mert (2014) had specified that there is an inverse relationship in between the level of supporting the dominance of man on natural life and level of interest in nature sports. Thus, they had defended that when the individuals are interested in nature sports that their perspective regarding environmental problems also change, and that they start to adopt the ecocentric perspective putting the natural life to the center by leaving the perspective which deems the man as superior.

The data had revealed that there is no statistical significant difference in between some variables. For instance, the income level of families of teacher candidates has no effect on their anthropocentric or ecocentric approach regarding environmental problems.

5. Suggestions

We can no longer be able to solve the environmental problems only by technology or laws. We have to change our habits or individual behaviors. First of all, environmental awareness should be raised in individuals as from early ages and responsibilities should be imposed on them. And this can be ensured by an effective and efficient education, and especially by environmental training.

Environmental training is a process which first starts in the family, and then continuing with pre-school training and along the life. Certainly, the most important construct in environmental training is being realized during the period of primary education. Environmental training, along with being a training covering all the parts of the society, the young generation is the most important target audience of it. Because the young generation—along with not being the ones responsible for today's environmental problems—is the part who will be affected the most from these environmental problems, and they are the ones to whom the most knowledge, consciousness and sensitivity on this subject should be provided. Raising teachers, with high environmental sensitivity, with

sufficient ecologic knowledge and who will be able to successfully carry out the theoretical and practical environmental operations, is very important in respect of improvement of environmental training and reaching its objectives. The training programs should be structured for this purpose.

In the solution of environmental problems education has an extremely important place, and it is required for the individuals, NGOs and public institution to act together for the solution of problems. Raising environmental awareness of individuals should not just occur with formal training at schools, on the contrary the reality of life is a school should be adopted. For this, the means and methods that will keep the notion of protection of environment alive should be followed.

In protecting the environment and in environmental training, first the training of the instructors should be supported, and especially it should be ensured to raise the awareness of the teacher candidates during their university education. Thus, by providing environmental training to all the teacher candidates, it should be ensured for them to have specific knowledge and skills on the subject.

However, it represents only one aspect of the solution of environmental problems. On the other hand, factors such as the current economic order itself, economic problems of the citizens and consumption culture are negatively affecting the approach of citizens regarding the environment, and they are decreasing the effect of the steps taken on this subject. For instance, it is being known that the individuals living in areas with intense economic problems approach more deliberately to the decision to be made regarding the protection of environment. Jamming of individuals in between the protection of environment and economic development—due to the measures to be taken for the protection of the environment—should be prevented. But, in any case, it should be explained to the individuals that the welfare expectation of the society is limited with the capacity of nature.

References

- Akbaş, T. (2007). Fen Bilgisi Öğretmen Adaylarında Çevre Olgusunun Araştırılması. In *Yayınlanmamış Yüksek Lisans Tezi*. Atatürk Üniversitesi Fen Bilimleri Enstitüsü, Erzurum.
- Akış, S. (2011). Kuzey Kıbrıs'ta Çevre Bilinci. *Doğuş Üniversitesi Dergisi*, 1(1), 7-17.
- Albrecht, D., Bultena, G., Hoiberg, E., & Nowak, P. (1982). Measuring Environmental Concern: The New Environmental Paradigm Scale. *Journal of Environmental Education*, 13(3), 39-43. <http://dx.doi.org/10.1080/00958964.1982.9942647>
- Alım, M. (2006). Avrupa birliği üyelik sürecinde Türkiye'de çevre ve ilköğretimde çevre eğitimi. *Kastamonu Eğitim Fakültesi Dergisi*, 14(2), 599-616.
- Almaçık, Ü., & Koç, F. (2009). Yeni çevresel paradigma ölçeği ile üniversite öğrencilerinin çevreye yönelik tutumlarının değerlendirilmesi. In *Balıkesir Üniversitesi Burhaniye Meslek Yüksek Okulu Bölgesel Kalkınma Kongresi* (pp. 14-16). Kasım, Balıkesir.
- Almaçık, Ü. (2010). Çevreci yönelim, çevre dostu yaklaşım ve demografik özellikler: Üniversite öğrencileri üzerinde bir araştırma. *Selçuk Üniversitesi Sosyal ve Ekonomik Araştırmalar Dergisi*, 3(2), 509-532.
- Altın, M., Bacanlı, H., & Yıldız, K. (2002). Biyoloji öğretmeni adaylarının çevreye yönelik yaklaşımları. In *V. Ulusal Fen Bilimleri ve Matematik Kongresinde sunulmuş bildiri*. ODTÜ, Ankara.
- Arcury, T. A. (1990). Environmental attitude and environmental knowledge. *Human Organization*, 49(4), 300-304. <http://dx.doi.org/10.17730/humo.49.4.y6135676n433r880>
- Ardahan, F. (2012). Comparison of the New Ecological Paradigm (NEP) scale's level of participants and non participant of outdoor sports with respect to some demographic variables: Turkey case. *The Online Journal of Recreation and Sport*, 1(3), 8-18.
- Ardahan, F., & Mert, M. (2014). Yaşam Doyumu, Ekolojik Algı ve Duygusal Zekânın Bireylerin Rekreasyonel Doğa Sporlarına Katılmasına Etkisinin Sorgulanması: Türkiye İçin Logit Analizi. *Iğdır Üniversitesi Sosyal Bilimler Dergisi*, 6, 145-181.
- Aslan, O., Uluçınar, S. Ş., & Cansaran, A. (2008). Çevre tutum ölçeği uyarlanması ve ilköğretim öğrencilerinin çevre tutumlarının belirlenmesi. *Selçuk Üniversitesi Ahmet Keleşoğlu Eğitim Fakültesi Dergisi*, 25, 283-295.
- 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.

- Aytaç, M., & Öngen, B. (2012). Doğrulayıcı faktör analizi ile yeni çevresel paradigma ölçeğinin yapı geçerliliğinin incelenmesi. *İstatistikçiler Dergisi*, 5(1), 14-22.
- Baymur, B. F. (2010). *Genel Psikoloji*. İstanbul: İnkılap Kitabevi.
- Bechtel, R. B., Verdugo, V. C., & Pinheiro, J. Q. (1999). Environmental belief systems: United States, Brazil, and Mexico. *Journal of Cross-Cultural Psychology*, 30(1), 122-128. <http://dx.doi.org/10.1177/0022022199030001008>
- Bjerke, T., & Kleiven, J. (2006). Outdoor recreation interests and environmental attitudes in Norway. *Managing Leisure*, 11(2), 116-128. <http://dx.doi.org/10.1080/13606710500520197>
- Blake, D. E., Guppy, N., & Urmetzer, P. (1997). Canadian public opinion and environmental action: Evidence from British Columbia. *Canadian Journal of Political Science*, 30(3), 451-472. <http://dx.doi.org/10.1017/S0008423900015973>
- Brymer, E., & Gray, T. (2010). Developing an intimate “relationship” with nature through extreme sports participation. *Leisure/Loisir*, 34(4), 361-374. <http://dx.doi.org/10.1080/14927713.2010.542888>
- Capra, F. (2014). *Batı Düşüncesinde Dönüm Noktası* (Çev: Mustafa Armağan). İstanbul: İnsan Yayınları.
- Caron, J. A. (1989). Environmental perspectives of Blacks: Acceptance of the “new environmental paradigm”. *Journal of Environmental Education*, 20(3), 21-26. <http://dx.doi.org/10.1080/00958964.1989.9942785>
- Catton, W., & Dunlap, R. (1980). A new ecological paradigm for post exuberant sociology. *American Behavioral Scientist*, 24(1), 15-47. <http://dx.doi.org/10.1177/000276428002400103>
- Chandler, E. W., & Dreger, R. M. (1993). Anthropocentrism: Construct validity and measurement. *Journal of Social Behavior and Personality*, 8(2), 169-188.
- Cordell, H. K., Green, G. T., & Betz, C. J. (2002). Recreation and the environment as cultural dimensions in contemporary American society. *Leisure Sciences*, 24(1), 13-41. <http://dx.doi.org/10.1080/01490400252772818>
- Dalton, R. J., Gontmacher, Y., Lovrich, N. P., & Pierce, J. C. (1999). Environmental attitudes and the new environmental paradigm. In R. J. Dalton, P. Garb, N. P. Lovrich, J. C. Pierce, & J. M. Whitely (Eds.), *Critical masses: Citizens, nuclear weapons production, and environmental destruction in the United States and Russia* (pp. 195-230). Cambridge, MA: MIT Press.
- Demirel, M., Gürbüz, B., & Karaküçük, S. (2009). Rekreasyonel Aktivitelere Katılımın Çevreye Yönelik Tutum Üzerindeki Etkisi ve Yeni Ekolojik Paradigma Ölçeği'nin Geçerliliği ve Güvenirliği. *Spormetre Beden Eğitimi ve Spor Bilimleri Dergisi*, 7(2), 47-50. http://dx.doi.org/10.1501/Sporm_0000000155
- Deniş, H., & Genç, H. (2007). Çevre Bilimi Dersi Alan ve Almayan Sınıf Öğretmenliği Öğrencilerinin Çevreye İlişkin Tutumları ve Çevre Bilimi Dersindeki Başarılarının Karşılaştırılması. *Mehmet Akif Ersoy Üniversitesi, Eğitim Fakültesi Dergisi*, 8(13), 20-26.
- Dervişoğlu, S., Menzel, S., Soran, H., & Bögeholz, S. (2009). Değerler, inançlar ve problem algısının biyolojik çeşitliliği korumaya yönelik kişisel normlara etkisi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 37(37), 50-59.
- Dunlap, R. E. (1998). Lay perceptions of global risk: Public views of global warming in cross-national context. *International Sociology*, 13(4), 473-498. <http://dx.doi.org/10.1177/026858098013004004>
- Dunlap, R. E., & Van Liere, K. D. (1978). The “new environmental paradigm”: A proposed measuring instrument and preliminary results. *Journal of Environmental Education*, 9(4), 10-19. <http://dx.doi.org/10.1080/00958964.1978.10801875>
- Dunlap, R. E., & Van Liere, K. D. (1984). Commitment to the dominant social paradigm and concern for environmental quality. *Social Science Quarterly*, 65(4), 1013-1028.
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). Measuring endorsement of the New Ecological Paradigm: A revised NEP scale. *Journal of Social Issues*, 56(3), 425-442. <http://dx.doi.org/10.1111/0022-4537.00176>
- Dyck, C., Schneider, I., Thompson, M., & Virden, R. (2003). Specialization among mountaineers and its relationship to environmental attitudes. *Journal of Park and Recreation Administration*, 21(2), 44-62.

- Eagly, A. H., & Kulesa, P. (1997). Attitudes, attitude structure, and resistance to change. In M. H. Bazerman, D. M. Messick, A. E. Tenbrunsel, & K. A. Wade (Eds.), *Environmental ethics and behavior* (pp. 122-153). San Francisco: New Lexington.
- Ebreo, A., Hershey, J., & Vining, J. (1999). Reducing solid waste. Linking recycling to environmentally responsible consumerism. *Environment and Behavior*, 31(1), 107-135. <http://dx.doi.org/10.1177/00139169921972029>
- Edgell, M. C. R., & Nowell, D. E. (1989). The new environmental paradigm scale: Wildlife and environmental beliefs in British Columbia. *Society and Natural Resources: An International Journal*, 2(1), 285-296. <http://dx.doi.org/10.1080/08941928909380692>
- Ek, H. N., Kılıç, N., Ögdüm, P., Düzgün, G., & Şeker, S. (2009). Adnan Menderes Üniversitesinin Farklı Akademik Alanlarında Öğrenim Gören İlk ve Son Sınıf Öğrencilerinin Çevre Sorunlarına Yönelik Tutumları ve Duyarlılıkları. *Kastamonu Eğitim Dergisi*, 17(1), 125-136.
- Ellis, R. J., & Thompson, F. (1997). Culture and the environment in the Pacific Northwest. *American Political Science Review*, 91(4), 885-897. <http://dx.doi.org/10.2307/2952171>
- Erdoğan, N. (2009). Testing The New Ecological Paradigm Scale: Turkish Case. *African Journal of Agricultural Research*, 4(10), 1023-1031.
- Erkal, S., Kılıç, İ., & Şahin, H. (2012). Comparison of environmental attitudes of university students determined via the new environmental paradigm scale according to the students' personal characteristics. *Eğitim Araştırmaları-Eurasian Journal of Educational Research*, 49, 21-40.
- Erol, G. H., & Gezer, K. (2006). Sınıf öğretmenliği öğretmen adaylarının çevreye ve çevre sorunlarına yönelik tutumları. *International Journal of Environmental and Science Education*, 1(1), 65-77.
- Ertürk, H. (2013). *Çevre Bilimleri*. Bursa: Ekin Basım Yayın.
- Fransson, N., & Garling, T. (1999). Environmental Concern: Conceptual Definitions, Measurement Methods and Research Findings. *Journal of Environmental Psychology*, 19(4), 369-382. <http://dx.doi.org/10.1006/jevps.1999.0141>
- Furman, A. (1998). A note on environmental concern in a developing country. Results from an Istanbul survey. *Environment & Behavior*, 30(4), 520-534. <http://dx.doi.org/10.1177/001391659803000406>
- Gardner, G. T., & Stern, P. C. (2003). Environmental problems and human behavior. In *Pearson Learning Solutions*.
- Gençay, S., & Karaküçük, S. (2000). Sporcuların Çevre Sorunlarına Yaklaşımları. In İ. Yıldırım, & I. Gazi (Eds.), *Beden Eğitimi ve Spor Bilimleri Kongresi Bildiriler. Sporda Psiko-Sosyal Alanlar/Spor Yönetim Bilimleri* (26-27). Bildirinin tam metni yayınlanmıştır.
- Gooch, G. D. (1995). Environmental beliefs and attitudes in Sweden and the Baltic states. *Environment and Behavior*, 27(4), 513-539. <http://dx.doi.org/10.1177/0013916595274004>
- Gökdayı, İ. (1997). *Çevrenin Geleceği Yaklaşımlar ve Politikalar*. Ankara: Türkiye Çevre Vakfı.
- Gray, D. B. (1985). *Ecological beliefs and behaviors: Assessment and change*. Westport, CT: Greenwood Press.
- Günden, C., & Miran, B. (2008). Yeni Çevresel Paradigma Ölçeğiyle Çiftçilerin Çevre Tutumunun Belirlenmesi: İzmir İli Torbalı İlçesi Örneği. *Ekoloji*, 18(69), 41-50. <http://dx.doi.org/10.5053/ekoloji.2008.696>
- Hawcroft, L. J., & Milfont, T. L. (2010). The use (and abuse) of the New Environmental Paradigm Scale over the last 30 years: A meta-analysis. *Journal of Environmental Psychology*, 30(2), 143-158. <http://dx.doi.org/10.1016/j.jenvp.2009.10.003>
- Hodgkinson, S. P., & Innes, J. M. (2001). The Attitudinal Influence of Career Orientation in 1st-Year University Students: Environmental Attitudes as a Function of Degree Choice. *The Journal of Environmental Education*, 32(3), 37-40. <http://dx.doi.org/10.1080/00958960109599144>
- Hoşgör, H., Hoşgör, D. G., & Tosun, N. K. (2015). Sağlık Bilimleri Fakültesi Öğrencilerinin Yeni Ekolojik Paradigma Ölçeğine Göre Çevreye Yönelik Tutumlarının Belirlenmesi: Kıyaslamalı Bir Analiz. *Sağlık Bilimleri ve Meslekleri Dergisi*, 2(2), 198-208. <http://dx.doi.org/10.17681/hsp.02704>
- Işıldar, G. (2008). Meslek Yüksek Okulları Boyutunda Çevre Eğitimi'nin Çevreci Yaklaşımlar ve Davranışlar Üzerindeki Etkilerinin Değerlendirilmesi. *Türk Eğitim Bilimleri Dergisi*, 6(4), 759-778.

- Ji, C. H. C. (2004). Factor Structure of the New Environmental Paradigm Scale: Evidence from an Urban Sample in Southern California 1. *Psychological Reports*, 94(1), 125-130. <http://dx.doi.org/10.2466/pr0.94.1.125-130>
- Kahyaoğlu, M., Daban, Ş., & Yangın, S. (2008). İlköğretim öğretmen adaylarının çevreye yönelik tutumları. *D.Ü.Ziya Gökalp Eğitim Fakültesi Dergisi*, 11, 42-52.
- Karasar, N. (2002). *Bilimsel Araştırma Yöntemi: Kavramlar, İlkeler, Teknikler*. Ankara: 3A Araştırma Eğitim Danışmanlık Ltd.
- Kempton, W., Boster, J. S., & Hartley, J. A. (1995). *Environmental values in American culture*. Cambridge, MA: MIT Press.
- Kılıç, S., & İnal, M. E. (2010). Yükseköğretimde çevre eğitimi alan ve almayan öğrencilerde çevre bilinci: Niğde Üniversitesi örneği. *Niğde Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 3(2), 70-83.
- Kılıç, S. (2013). Yükseköğretimde çevre eğitiminin çevre bilinci oluşumuna etkisi: Niğde Üniversitesi İİBF Kamu Yönetimi Örneği. *Niğde Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 6(1), 63-80.
- Kiray, S. A., Gok, B., & Bozkir, A. S. (2015). Identifying the factors affecting science and mathematics achievement using data mining methods. *Journal of Education in Science, Environment and Health (JESSEH)*, 1(1), 28-48. <http://dx.doi.org/10.21891/jesch.41216>
- Kızıroğlu, İ. (2001). *Ekolojik Potpuri*. Ankara: TEKAV Matbaacılık A.Ş.
- Maloney, M. P., & Ward, M. P. (1973). Ecology: Let's hear from the people. An objective scale for the measurement of ecological attitudes and knowledge. *American Psychologist*, 28(7), 583-586. <http://dx.doi.org/10.1037/h0034936>
- Marın, M., & Yıldırım, U. (Eds.) (2004). *Çevre sorunlarına çağdaş yaklaşımlar*. İstanbul: Beta Yayınları.
- Masca, M. (2009). Sürdürülebilir Kalkınma: Kalkınma ve Doğa Arasında Denge Arayışları. *Davraz Kongresi, Isparta*, 24-27.
- McMillan, M., Hoban, T. J., Clifford, W. B., & Brant, M. R. (1997). Social and Demographic Influences of Environmental Attitude. *Southern Rural Sociology*, 13(1), 89-107.
- Meydan, A., & Doğu, S. (2008). İlköğretim İkinci Kademe Öğrencilerinin Çevre Sorunları Hakkındaki Görüşlerinin Bazı Değişkenlere Göre Değerlendirilmesi. *Selçuk Üniversitesi Ahmet Keleşoğlu Eğitim Fakültesi Dergisi*, 26, 267-277.
- Mollison, B. (2014). *Permakültüre Giriş*. Çev. Egemen Özkan, Sineksekiz Yayınevi.
- Næss, A. (1973). The shallow and the deep, long-range ecology movement. *Inquiry*, 16, 95-199. <http://dx.doi.org/10.1080/00201747308601682>
- Noe, F. P., & Snow, R. (1990). Hispanic cultural influence on environmental concern. *Journal of Environmental Education*, 21(2), 27-34. <http://dx.doi.org/10.1080/00958964.1990.9941928>
- O'Connor, R. E., Bord, R. J., & Fisher, A. (1999). Risk perceptions, general environmental beliefs, and willingness to address climate change. *Risk Analysis*, 19(3), 461-471. <http://dx.doi.org/10.1111/j.1539-6924.1999.tb00421.x>
- Olsen, M. E., Lodwick, D. G., & Dunlap, R. E. (1992). *Viewing the world ecologically*. Boulder, CO: Westview Press.
- Özdemir, O., Yıldız, A., Ocaktan, E., & Sarışen, Ö. (2004). Tıp Fakültesi Öğrencilerinin Çevre Sorunları Konusundaki Farkındalık ve Duyarlılıkları. *A.Ü. Tıp Fakültesi Mecmuası*, 57(3), 117-127.
- Özey, R. (2004). *Günümüz Dünya Sorunları*. İstanbul: Aktif Yayınevi.
- Pierce, J. C., Lovrich, Jr. N. P., Tsurutani, T., & Takematsu, A. (1987). Environmental belief systems among Japanese and American elites and publics. *Political Behavior*, 9(2), 139-159. <http://dx.doi.org/10.1007/BF00987303>
- Pierce, J. C., Steger, M. E., Steel, B. S., & Lovrich, N. P. (1992). *Citizens, political communication and interest groups: Environmental organizations in Canada and the United States*. Westport, CT: Praeger.
- Pirages, D. C., & Ehrlich, P. R. (1974). *Ark II: Social response to environmental imperatives*. San Francisco: W. H. Freeman.
- Ponting, C. (2000). *Dünyanın yeşil tarihi: çevre ve uygarlıkların çöküşü*. Sabancı Üniversitesi Yayınevi,

İstanbul.

- Roberts, J. A., & Bacon, D. R. (1997). Exploring the subtle relationships between environmental concern and ecologically conscious consumer behavior. *Journal of Business Research*, 40(1), 79-89. [http://dx.doi.org/10.1016/S0148-2963\(96\)00280-9](http://dx.doi.org/10.1016/S0148-2963(96)00280-9)
- Rokeach, M. (1968). *Beliefs, attitudes, and values: A Theory of Organization and Change (Jossey-Bass Behavioral Science Series)*. San Francisco: Jossey-Bass.
- Sam, N., Sam, R., & Öngen, K. C. (2010). Üniversite öğrencilerinin çevresel tutumlarının yeni çevresel paradigma ve benlik saygısı ölçeği ile incelenmesi. *Akademik Bakış Dergisi*, 21, 1-16.
- Schultz, P. W., & Oskamp, S. (1996). Effort as a moderator of the attitude-behavior relationship: General environmental concern and recycling. *Social Psychology Quarterly*, 59(4), 375-383. <http://dx.doi.org/10.2307/2787078>
- Schultz, P. W., & Zelezny, L. C. (1998). Values and proenvironmental behavior: A five-country survey. *Journal of Cross-Cultural Psychology*, 29(4), 540-558. <http://dx.doi.org/10.1177/0022022198294003>
- Scott, D., & Willits, F. K. (1994). Environmental attitudes and behavior: A Pennsylvania survey. *Environment and Behavior*, 26(2), 239-260. <http://dx.doi.org/10.1177/001391659402600206>
- Sever, R., & Samancı, O. (2002). İlköğretimde çevre eğitimi. *Doğu Coğrafya Dergisi*, 7, 153-165.
- Sever, R., & Yalçınkaya, E. (2012). Sınıf öğretmeni adaylarının çevresel tutumlarının incelenmesi. *Marmara Coğrafya Dergisi*, 26, 1-15.
- Stern, P. C., Dietz, T., & Guagnano, G. A. (1995a). The new ecological paradigm in social-psychological context. *Environment and Behavior*, 27(6), 723-743. <http://dx.doi.org/10.1177/0013916595276001>
- Stern, P. C., Dietz, T., Kalof, L., & Guagnano, G. A. (1995b). Values, beliefs, and proenvironmental attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology*, 25(18), 1611-1636. <http://dx.doi.org/10.1111/j.1559-1816.1995.tb02636.x>
- Stern, P. C., Young, O. R., & Druckman, D. (1992). *Global environmental change: Understanding the human dimensions*. Washington, DC: National Academy Press.
- Şahin, N. F., Cerrah, L., Saka, A., & Şahin, B. (2004). Yükseköğretimde öğrenci merkezli çevre eğitimi dersine yönelik bir uygulama. *G.Ü. Gazi Eğitim Fakültesi Dergisi*, 24(3), 113-128.
- Tarrant, M. A., & Cordell, H. K. (1997). The effect of respondent characteristics on general environmental attitude-behavior correspondence. *Environment and Behavior*, 29(5), 618-637. <http://dx.doi.org/10.1177/0013916597295002>
- Teddlie, C., & Yu, F. (2007). Mixed methods sampling: A typology with examples. *Journal of Mixed Methods Research*, 1(77), 77-100. <http://dx.doi.org/10.1177/2345678906292430>
- Thompson, S. C. G., & Barton, M. A. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology*, 14(2), 149-158. [http://dx.doi.org/10.1016/S0272-4944\(05\)80168-9](http://dx.doi.org/10.1016/S0272-4944(05)80168-9)
- Tuna, M. (2006). *Türkiye’de Çevrecilik-Türkiye’de Çevreye İlişkin Toplumsal Eğilimler*. Ankara: Nobel Yayın Dağıtım.
- Turan, S. (2009). *Eleştirel düşünme becerilerini temel alan biyoloji dersinin ortaöğretim öğrencilerinin ekolojik etik yaklaşımlarına etkisi*. Doktora Tezi, İzmir: Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitüsü.
- Turan, S., Aydın, H., & Uğulu, İ. (2013). Eleştirel Düşünme Becerilerini Temel Alan Biyoloji Eğitiminin Ortaöğretim Öğrencilerinin Ekolojik Etik Yaklaşımlarına ve Eleştirel Düşünme Eğilimlerine Etkisi. *E-Journal of New World Sciences Academy*, 8(2), 232-244. <http://dx.doi.org/10.12739/NWSA.2013.8.2.1C0584>
- Uğulu, İ., & ve Erkol, S. (2013). Biyoloji Öğretmen Adaylarının Çevreye Yönelik Tutumları ve Çeşitli Değişkenler Açısından İncelenmesi. *NWSA: Education Sciences*, 8(1), 79-89.
- Vikan, A., Camino, C., Biaggio, A., & Nordvik, H. (2007). Endorsement of the New Ecological Paradigm: A Comparison of Two Brazilian Samples and One Norwegian Sample. *Environment and Behavior*, 39(2), 217-228. <http://dx.doi.org/10.1177/0013916506286946>

- Vining, J., & Ebreo, A. (1992). Predicting behavior from global and specific environmental attitudes and changes in recycling opportunities. *Journal of Applied Social Psychology*, 22(20), 1580-1607. <http://dx.doi.org/10.1111/j.1559-1816.1992.tb01758.x>
- Weigel, R. H., & Weigel, J. (1978). Environmental concern: The development of a measure. *Environment and Behavior*, 10(1), 3-15. <http://dx.doi.org/10.1177/0013916578101001>
- Widegren, Ö. (1998). The new environmental paradigm and personal norms. *Environment and Behavior*, 30(1), 75-100. <http://dx.doi.org/10.1177/0013916598301004>
- Yağanak, E., & Önkal, G. (2005). Çevre Etiği. In A. Cevizci (Ed.), *Felsefe Ansiklopedisi* (pp. 589-595). Ankara: Babil Yayınları.
- Yıldırım, M. H., & Uğuz, Ş. (2013). Sürdürülebilir Kalkınma Sürecinde Kurumsal Sosyal Sorumluluğun Önemi: Aksaray İlinde Bir Araştırma. *Sosyal ve Beşeri Bilimler Dergisi*, 5(2), 202-212.
- Zelezny, L. C., Chua, P., & Aldrich, C. (2002). New Ways of Thinking about Environmentalism: Elaborating on Gender Differences in Environmentalism. *Journal of Social Issues*, 56(3), 443-457. <http://dx.doi.org/10.1111/0022-4537.00177>

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