

Analysis of Pre-School Teachers' Views on the Importance of Education for Sustainable Development by Means of Location and Household Type in Childhood

Deniz Kahrman Öztürk^a, Refika Olgan^a

^aMiddle East Technical University, Ankara, TURKEY

ABSTRACT

This article explores views of pre-school teachers in Turkey regarding the importance of Education for Sustainable Development (ESD). It also explores how pre-school teachers' views on the importance of Education for Sustainable Development can be explained by their experiences with nature in childhood. The study sample consisted of 838 pre-school teachers currently teaching in the Ankara, Eskisehir, Istanbul, and Antalya provinces across Turkey. A scale developed in 2015 by Park, Kim and Yu called "Pre-School Teachers' Views on the Importance of ESD" was utilized to collect data. In addition, demographic data were also collected. The study results revealed that the vast majority of teachers emphasized that ESD is necessary for the pre-school period and reported that the purposes of pre-school ESD were: raising awareness about SD and ESD, acquiring creative and holistic thinking skills in problem solving and decision making stages, and acquiring a sustainable lifestyle for SD. The teachers emphasized the inclusion of ESD into teacher training programs and preschool education curriculum as pillars of crucial importance for the launching of ESD practices in the pre-school period. The results also indicated that preschool teachers' views on the importance of ESD varied according to their relationship with the environment in terms of childhood location and household type. In the light of the results, it is recommended that this study be the pioneer for future studies on the importance of ESD in both Turkey and the world, particularly with reference to experiences with nature.

KEYWORDS

Sustainable Development, Education for Sustainable Development, Preschool Teachers' Views, Natural Experiences in Childhood

ARTICLE HISTORY

Received 02 April 2016
Revised 07 July 2016
Accepted 17 August 2016

CORRESPONDENCE Deniz Kahrman Öztürk ✉ denizkahrman@gmail.com

© 2016 Kahrman Öztürk & Olgan. Open Access terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>) apply. The license permits unrestricted use, distribution, and reproduction in any medium, on the condition that users give exact credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if they made any changes.

Introduction

What is sustainable development?

The term "Sustainable Development" has been used in many fields ranging from education to economy for more than three decades (UNESCO, 1992). The globalizing world due to the developments in technology and industry has brought wildlife face to face with many problems such as climate change, unplanned urbanization and reduction of biodiversity and energy resources (UNESCO, 1997). In order to reduce the harm of development on the environment and to improve the viability of future generations, the World Environment and Development Commission defined Sustainable Development (SD) as *"development that meets the needs of the present without compromising the ability of future generations to meet to their needs"* in the Brundtland Report (WCED, 1987, p. 43). At the World Summit in Rio de Janeiro in 1992 it was emphasized that these problems are not merely environmental; rather, socio-cultural, economic and environmental problems interact with each other. Over the years, the term SD has been adopted as an initiative created by environmental, socio-cultural and economic elements (UNESCO, 2005). The environmental aspect of sustainable development is more related to ensuring the sustainability of biodiversity and natural resources. It is underlined that humans' environmental actions are related to economic and social development. In a social and cultural context sustainable development is based on social justice, equality, human rights and cultural diversity. The importance of social institutions in change and development is also stressed. On the other hand, the economic aspect of SD refers to pursuit of balance between production and consumption in the economic system by considering equality between the rich and the poor and ecological processes (UNESCO, 2006).

Education for Sustainable Development addresses environmental, economic and social-cultural issues as a whole (Teksöz, 2015; UNESCO, 2005, 2006). In their study, Summers and Childs (2007) and Warburton (2003) stated that addressing the dimensions of SD separately would create confusion in people on this matter. In addition to this, Berglunda and Gerickea (2015) emphasize the importance of understanding the interrelationship between the various aspects of sustainable development. They reported that holistic comprehension of the term sustainable development supports individuals' interdisciplinary holistic thinking skills. Besides this; in many national and international reports published in the related literature (Teksöz, 2015; UNESCO, 2005; UNESCO, 2006; UNESCO, 2008) the term SD is discussed as a holistic approach that emphasizes the dynamic relationship among environmental, economic and social and cultural elements.

What is education for sustainable development?

The ongoing conceptual chaos in the relevant literature about "Sustainable Development" is also found in "Education for Sustainable Development" (ESD). In this term, "Education" and "Sustainable Development" are intertwined. Pedagogues and environmental educators are seen in many different ways, mostly with an environment-oriented emphasis (Tilbury, 1995; Yang, Lam, & Wong, 2010). However, UNESCO replaced "The International Environmental Education Program" implemented between the years 1975-1995 with "The Program of Education for Sustainable Future" and emphasized that ESD is a concept that works with the social, cultural and economic dimensions in addition to the environmental one (UNESCO, 1997). According to UNESCO, Education for

Sustainable Development (ESD) is a dynamic and developing phenomenon arising from the needs of the world. It calls for people of all ages to assume responsibility in the community where they live and create a sustainable future (Bonnett, 1999; UNESCO, 2002). ESD today is one of the most important elements of the education system in many developed and developing countries (UNESCO, 2005).

The importance of ESD-associated pedagogical practices and the role of teachers in early childhood education

United Nations Environment and Development Conference Agenda 21 emphasized the importance of ESD and proposed integrating ESD into educational curricula starting from early childhood (UNESCO, 1992). It is highlighted that individuals' views and attitudes towards anything begin to take shape in early childhood, and that the pre-school period plays an important role in the acquisition of a sustainable way of life in the coming years (Didonet, 2008, UNESCO, 2008). The role played by sustainable development in early childhood education stands as one of the most recent debate topics in the literature about this field. One of the studies in this field was conducted by Hedefalk, Almqvist and Östman (2014). The researchers carried out a review on the studies on ESD and Early Childhood Education conducted from 1996 to 2013. One of the key outcomes of the analysis of the scientific publications included in this study is that ESD in early childhood is not so much about teaching children environmental, social-economic or cultural phenomena. On the contrary, ESD in the pre-school period encourages children to be well-educated individuals who are trying to change the world and who can make the right decisions for themselves and the world (McNaughton, 2012). In this context, ESD-associated pedagogical practices during early childhood build bridges between today and a sustainable future.

There are only few studies investigating pre-school teachers' comprehension of ESD. In one study Hedefalk, Almqvist and Östman (2014) reported that pre-school teachers perceive ESD only as the teaching of facts related to the environment, and they often conduct science and nature activities with the children. In addition, teachers' ignorance of the socio-cultural and economic dimensions of ESD was explained as the teachers having limited knowledge about ESD. Similarly, according to Flogaitis and Agelidou (2003), some teachers do not actively support children playing an active role in environmental issues because they do not have enough knowledge about the environment. Only a very small proportion of pre-school teachers defined ESD as changing children's behavior for the benefit of a sustainable future (Årlemalm-Hagsér & Sandberg 2011). Similarly, in a study by Dymont et al in 2014, pre-school teachers reported the purpose of ESD as giving critical thinking skills to children.

Besides this, as findings from the limited number of studies in relevant literature are evaluated in relation to teachers' views, existing studies seem to remain inadequate particularly when discussing the variables shaping teachers' views about ESD. To the best of our knowledge, there are a few studies that reveal pre-school teachers' views on the importance of ESD. However, the literature indicates that their views on ESD could indeed play an active role in shaping children's views, attitudes and behavior towards sustainable development (Boutte, 2008; Shallcross & Robinson, 2007, UNESCO 2006). Therefore, when teachers present information on cases regarding SD to pre-school children and support children's views and attitudes appropriately, such children will be more likely to take initiative for a sustainable future in the future (UNESCO 2005, Didonet, 2008). Hence, it becomes important to find out the views of pre-school

teachers as role models for young students in all matters relating to the importance of ESD. Additionally, environmental education research provides a baseline for Education for Sustainable Development research highlighting the autobiographical variables associated with teachers' views on the importance of ESD.

Review of the literature on environmental education reveals that teachers' views regarding environmental education vary depending on many autobiographical factors. Those variables are called "Significant Life Experiences". Tanner (1980) defined Significant Life Experiences (SLE) as a term associating individuals' environment-friendly behaviors with various autobiographic variables from childhood to adulthood. SLE research was originally based on the life experiences of environmental activists and the in-depth investigation of the factors that affected these experiences. In his survey conducted with environmentalists taking an active part in nature conservation associations, Tanner (1980) emphasized that childhood experiences and the time spent in nature are very important for nurturing respect and love for nature. Tanners' study laid the basis for research on SLE. Later studies conducted on different groups with different research techniques revealed the demographic variables depending on which environment-friendly behavior might vary from childhood to adulthood (Palmer & Suggate 1996; Chawla 1998a, 1998b, 1999; Sward, 1999). The variables include the location and type of housing lived in during childhood, educational status, parents' level of education, membership in any non-governmental organizations (NGO) concerned with the environment, whether or not anyone from the immediate environment is a member of such NGOs (mother, father, siblings, relatives, close friends, etc.), supportive training, fear or lack of fear of environmental catastrophe, and following or not following printed, visual and social media concerning the environment (Tanner, 1980; Chawla 1998b, 1999; Hsu 2009). In the present study, environment experiences in terms of location and household type in early childhood were selected as the variables that may reason in difference in the preschool teachers' views on the importance of ESD.

Significance of the Study

The number of studies that emphasize ESD-associated pedagogical practices especially at the level of pre-school education is growing rapidly in the international literature. The number of studies conducted between the years 2007-2012 is almost double that conducted between 1996 and 2007 (Hedefalk, Almqvist & Östman, 2014). Most of the studies examine ESD from a theoretical point of view, and more studies conducted with teachers and children are needed in order to develop scientific-based applications in pre-school education (UNESCO, 2012). Despite the absence of any informative studies on the subject in the related literature, based on similar studies in the field of environmental education, it is predicted that teachers' views on the importance of Education for Sustainable Development could shape ESD-associated pedagogical practices in pre-school education. In this regard, the main objective of the present study is to identify the pre-school teachers' views on the importance of Education for Sustainable Development and the association between their views and childhood environment experiences in terms of neighborhood and household type in childhood.

To the best of our knowledge, in the literature review only a few studies were found investigating pre-school teachers' views on the importance of ESD. However, no studies were found that compared living in house in a rural

environment to living in an apartment in an urban one during childhood. From this point of view in particular, it is highlighted in the literature on Environmental Education that many autobiographical variables from childhood to adulthood, called Significant Life Experiences, can make a difference on teachers' views (Tanner, 1980; Arnold, Cohen, & Warner 2009; Chawla 1998b, 1999; Hsu 2009). Hsu (2009) points out that these variables, which are carried from childhood and considered to support environmentally friendly behavior, should be tested separately and/or with completely different methods and techniques using participants from different research groups for the dissemination of scientific research in this field. On the other hand, to the best of our knowledge, the literature on both ESD and environment experiences carried from childhood includes almost no studies in the field of national and international research. Also, in our country, the lack of any study conducted with pre-school teachers about ESD is another starting point for this study. In this regard, it is a big question whether or not teachers are even aware of the importance of ESD. A bigger question still is whether or not their experiences carried from childhood have shaped their views.

In summation, the present study aims to determine the views of pre-school teachers on the importance of ESD in Turkey. In addition, it attempts to shed light on the extent to which pre-school teachers' views of the importance of ESD in Turkey are shaped by environment experiences in their childhood. To this end, answers are sought for each of the following research questions:

1. What are the preschool teachers' thoughts about the necessity of ESD in preschool education?
2. According to the teachers, what is the purpose of ESD in pre-school education?
3. According to the teachers, what regulations are required for the launching of ESD during the pre-school period?
4. At what level do pre-school teachers attach importance to Education for Sustainable Development? Are there significant differences in teachers' views on the importance of ESD given their environment experiences in childhood in terms of household type and place of residence?

Method

This study is a quantitative study conducted with a number of statistical analysis methods in order to examine the relationship between variables. In this context, the goal was to find out pre-school teachers' views about the necessity of ESD, the purposes of ESD, and the regulations required for launching of ESD during the pre-school period. Another goal was to investigate whether or not teachers' environment experiences carried from childhood have shaped their views about the importance of Education for Sustainable Development. In this study, a descriptive survey model was used to describe the existing situation.

Sample/Study Group

The population is made up of pre-school teachers who work in Turkey's metropolitan cities. In this context; 111 kindergartens were randomly selected in Istanbul, Ankara, Antalya, and Eskisehir. When this study was carried out pre-school teachers teaching children aged 48 to 60 months old were met one by one and asked to contribute to the research. In the end 838 pre-school teachers agreed to participate in the study. Furthermore, 73,4 percent of the teachers had up to

10 years of teaching experience while 21,2 percent of the participants had 11 to 20 years of experience. Women teachers make up 98,3 percent of the study sample, while male teachers make up the rest. Detailed information about the participants is given in Table 1.

Table 1. Some descriptive data about the teachers and their schools

		Number of Teachers (N)	Percentage (%)
Gender	Female	808	98,3
	Male	14	1,7
Experience	0-10 years	504	73,4
	11-20 years	146	21,2
	Above 20 years	37	5,4

Data Collection

The scale used to collect data in this study is "Preschool Teachers' Perceptions and Attitudes about Education for Sustainable Development" developed by Park, Kim and Yu (2015). In our study, this tool was utilized only partially: The sub-scale titled "Pre-School Teachers' Views on the Importance of ESD". The abovementioned scale is designed to ask pre-school teachers for their views on the significance of SD issues. The Likert-type scale consisted of seven options (1 = unimportant, 7 = Important) requesting opinion for a total of 23 items. The scale was adapted to Turkish by the researchers and given to 141 pre-school teachers as a pilot study. The item analysis was carried out with ITEMAN 3.6 and presented no problem with item loads. Also in the pilot study the reliability coefficient of the scale was calculated as 0,99.

Also, during the main study (N=838) a reliability test plus explanatory and confirmative factor analyses were performed on the scale. The reliability coefficient was found to be 0,99. The explanatory factor analysis indicated a single factor structure, and the factor structure was confirmed through confirmatory factor analysis. The test yielded NFI (Normative Fit Index) = 0,98, CFI (Comparative Fit Index) = 0,98, RMR (Root Mean Square Residual) = 0,03, Standardized RMR = 0,03.

Procedure

In this study, the scale and the demographic information form were given to preschool teachers during the second semester of the 2014-2015 academic year. Participation was completely voluntary, and the participants were informed about the purpose of the study before implementation. In addition, the necessary permits were obtained both from the Turkish Ministry of Education and the school administration before the implementation of the study.

Data Analysis

In this study, the data collected from 838 teachers were analyzed and interpreted using descriptive statistical analysis and independent sample t test analysis methods. For these analyses relevant assumptions were tested and no problematic situation was reported.

Findings

Descriptive Analysis Results

Descriptive analysis was done with SPSS 20.0 (Statistical Packages for the Social Sciences). The analysis results revealed that 92,9% of the teachers participating in the study believe that ESD is necessary during pre-school period. As for the purpose of ESD in preschool education; 6,9% of the teachers mentioned the acquisition of concepts and knowledge about SD and ESD; 38,6% mentioned increasing awareness about SD and ESD issues; 26,9% referred to the gaining of creative and holistic thinking skills at the problem solving and decision-making stages. Lastly, 26,2% mentioned obtaining a sustainable lifestyle for SD (Table 2).

Table 2. Pre-school teachers' views about necessity of ESD, purposes of ESD, and regulations required for launching of ESD during pre-school period

Teachers' answers		N	%
Needs for ESD in ECE	Yes	763	92,9
	No	58	7,1
Purpose of ESD in ECE	Acquiring concepts and knowledge about SD and ESD	56	6,9
	Increasing awareness about SD and ESD issues	312	38,6
	Gaining creative and holistic thinking skills at the problem-solving and decision-making stages	210	26,9
	Obtaining a sustainable lifestyle for SD	209	26,2
Elements required for launching ESD practices during the pre-school period	Incorporation of ESD into teacher training programs	271	33,0
	Developing educational materials	86	10,5
	Incorporation of ESD into pre-school education programs	310	37,3
	Drawing schools' attention to the issue	34	4,1
	Cooperation between the family and the local environment	110	13,3

As regards the elements required for launching ESD practices during pre-school period; 33,0% of participants reported the incorporation of ESD into teacher training program, 10,5% reported the development of educational materials; 37,3% mentioned including ESD into pre-school education programs; 4,1% reported drawing schools' attention to the issue; and 13,3% reported cooperation between the family and the local environment (Table 2).

In the scale regarding the importance of ESD, the mean average of the teacher responses about the importance of ESD was found to be 5,59 (SD=1,25). According to the mean score obtained from scale, it can be concluded that the teachers in the current study think ESD is important. More specifically, the second item (peace and security) stands out as one of the items with the highest average in the scale and shows how seriously the pre-school teachers take the "peace and security" issue. On the other hand, the lowest mean score belongs to the fifth item (Social Justice). This may indicate that the teachers give less importance to these issues when compared to others (Table 3).

Table 3. Items with lowest and highest mean scores

	Min	Max	Mean	SD
<i>Items with lowest mean</i>				
Item 5. Social Justice: Narrowing the gap between the rich and the poor in an environment based on "intra-generational" and "intergenerational" justice	1	7	4,79	1,99
Item 23. Mitigating poverty: Reduction of the gap between the rich and the poor taking into account social equality	1	7	4,81	2,30
<i>Items with highest mean</i>				
Item 2. Peace and Security: Providing a safe and peaceful living environment for people	1	7	6,03	1,38
Item 18. Disaster risk reduction: Giving training to the community about disaster risk reduction and self-help strategies, by taking a focus on security precautions and life-saving issues	1	7	6,01	1,34
Scale total	1	7	5,59	1,25

Furthermore, independent sample t-tests were conducted to find out the relationship between preschool teachers' views on the importance of ESD and their environment experiences in terms of neighborhood (urban-rural) and household type (house-apartment) in childhood. Accordingly, preschool teachers who lived in rural areas in childhood ($M=5,82$, $SD=1,13$) had higher scores than those who lived in urban areas in childhood ($M=5,55$, $SD=1,27$) with respect to their views about the importance of ESD [$t(836)=2,190$, $p<0,05$, $d=0,22$]. Similarly, preschool teachers who lived in a house in childhood ($M=5,77$, $SD=1,14$) had higher scores than those who lived in an apartment in childhood ($M=5,47$, $SD=1,31$) with respect to their views about the importance of ESD [$t(836)=3,460$, $p<0,05$, $d=0,25$]. On examining the effect sizes, Cohen's d scores indicated little effect for both tests. Table 4 presents the independent sample t-tests results.

Table 4. Independent Sample t-test results comparing pre-school teachers' views about the importance of ESD and their childhood household type and place of residence

Relationship with nature	%	M	SD	df	t-test score	p	Cohen's d
<i>lived in urban area</i>	84,4	5,55	1,27	836	2,190	0,029*	0,22
<i>lived in rural area</i>	15,6	5,82	1,13				
<i>lived in an apartment</i>	59,1	5,47	1,31	836	3,460	0,001**	0,25
<i>lived in a house</i>	40,9	5,77	2,25				

* $p<.05$, ** $p<.01$, *** $p<.001$

Discussion, Conclusion, and Recommendations

The findings of the current study reflect the overall opinions on ESD held by preschool teachers serving in the metropolitan Turkish provinces. The results also give an idea regarding the relationship between preschool teacher's views on the importance of ESD and their experiences with the environment in terms of the area and tenement they grew up in. According to the findings, the preschool teachers in this study believe that ESD is very important. The participants also indicate "increasing awareness about SD and ESD issues" as one of the most important goals of ESD in pre-school education. In addition, "the gaining of

creative and holistic thinking skills at the problem-solving and decision-making stages” and “obtaining a sustainable lifestyle for SD” were reported as other considerable goals of ESD in pre-school education. Another supportive finding is that the vast majority (almost 93%) of the pre-school teachers hold positive beliefs that ESD is necessary during pre-school period.

Similarly, in a study by Årlemalm-Hagsér and Sandberg (2011), teachers emphasized the importance of ESD in pre-school years when moral values and attitudes begin taking shape. Furthermore, Green (2013) stands out for his work carried out on preschool teachers relating to their ESD practices. In Green's research, the teachers involved in ESD activities referred to the importance of ESD for a sustainable world and they mentioned that ESD contributes positively to the development of children. In their study, Årlemalm-Hagsér and Sandberg (2011) found out that the teachers also reported the purpose of ESD as the acquisition by children of behavior for a sustainable life. Dymont and et. al. (2014) can be mentioned as another study in support of our findings. It was found out in the abovementioned study that pre-school teachers regard ESD as a means of teaching critical thinking skills to children.

In addition, the teachers think that it is necessary to include ESD in teacher training programs as well as in pre-school education in order to launch ESD practices in early childhood. According to the descriptive findings from the current study, teachers considered SD an important aspect in ECE. The relevant literature, however, shows that preschool teachers have limited knowledge about SD and ESD (Hedefalk, Almqvist & Östman, 2014; Flogaitis and Agelidou, 2003). In this context, the study by Tuncer (2008) demonstrates the effectiveness of the inclusion of ESD into teacher training programs. The study was carried out with pre-service teachers and reported high levels of comprehension of ESD among students who had taken a course on ESD. Similar to Tuncer's study results, in their most recent study Inoue, Gorman and Davis (2016) noted that the provision of courses, lessons, seminars, and so on related with ESD for teachers both before and during the service period would positively affect teachers' views about ESD. They added that ESD can become more widespread at a more scientific level in pre-school education institutions. Accordingly, the pre-school teachers who participated in this study recognized the importance and necessity of ESD in early years. As the current study did not aim to explore the teachers' knowledge about SD and ESD their knowledge levels are outside of the scope of the current study, but as suggested by the abovementioned studies if such courses are offered to pre-service teachers effectively, ESD related activities can be implemented in a more conscious and relevant way. Also, it is thought that in-service ESD training for pre-school teachers might support the ESD practices of teachers in a similar way.

Another finding of this research is that pre-school teachers' views on the importance of ESD in Turkey are varied based on their environment experiences in childhood. In other words, the teachers who grew up in rural areas and a house hold more positive beliefs that ESD is important during pre-school period. In this regard, it may be concluded that too much experience with nature in childhood plays a significant role on pre-school teachers' views on the importance of ESD in Turkey. Accordingly, most studies in the field of environmental education reporting similar findings could be taken into account. In the relevant literature it is stated that individuals who led active natural lives in childhood such as life in the countryside, enjoyment of outdoor activities in natural settings etc. (Hsu, 2009) demonstrate environmentally friendly behavior (Tanner, 1980; Arnold, Cohen, & Warner 2009; Chawla, 1998b, 1999; Hsu 2009). In other words, the present study reported a correlation between having spent time in nature and

giving importance to ESD. Tanner (1980) also stated that childhood experiences in nature allow individuals to demonstrate environmentally friendly behavior when they get older. Similar conclusions were made by Palmer et. al. (1999), Chawla (1999), and Hsu (2009). In this aspect, for a sustainable future, preschool teachers should consider that preschool children need to spend much more time outdoors (UNESCO, 2006; UNESCO, 2012).

As there are very few studies related to ECE and ESD, a strong link could not be drawn with the relevant literature. Therefore, there is a need for further scientific study. Further research can be planned in a way that involves not only teachers but also school administrators. Observation and one-on-one qualitative studies could help to follow up teachers' implementations as well as evaluate the conditions of schools in general by seeking the opinions of school administrators. In addition to this, it is recommended that longitudinal research studies be designed that investigate the effects of ESD on children and engage both children and their families.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- Årlemalm-Hagsér, E., & Sandberg, A. (2011). Sustainable development in early childhood education: in-service students' comprehension of the concept. *Environmental Education Research, 17*(2), 187-200.
- Arnold, H. E., Cohen, F. G., & Warner, A. (2009). Youth and environmental action: Perspectives of young environmental leaders on their formative influences. *The Journal of Environmental Education, 40*(3), 27-36.
- Berglund, T., & Gericke, N. (2015). Separated and integrated perspectives on environmental, economic, and social dimensions—an investigation of student views on sustainable development. *Environmental Education Research, 1*-24.
- Bonnett, M. (1999). Education for sustainable development: a coherent philosophy for environmental education?. *Cambridge Journal of Education, 29*(3), 313-324.
- Boutte, G. (2008). Beyond the illusion of diversity: How can early childhood teachers can promote social justice. *The Social Studies, 99*(4), 165-173.
- Chawla, L. (1998). Significant life experiences revisited: A review of research on sources of environmental sensitivity. *The Journal of Environmental Education, 29*(3), 11-21.
- Chawla, L. (1998a). Research methods to investigate significant life experiences: Review and recommendations. *Environmental Education Research, 4*(4), 383-97.
- Chawla, L. (1998b). Significant life experiences revisited: A review of research on sources of environmental sensitivity. *The Journal of Environmental Education, 29*(3), 11-21.
- Chawla, L. (1999). Life paths into effective environmental action. *The Journal of Environmental Education, 31*(1), 15-26.
- Didonet, V. (2008). Early childhood education for a sustainable society. *The contribution of early childhood education to a sustainable society, 25*-31.
- Dyment, J. E., Davis, J. M., Nailon, D., Emery, S., Getenet, S., McCrea, N., & Hill, A. (2014). The impact of professional development on early childhood educators' confidence, understanding and knowledge of education for sustainability. *Environmental Education Research, 20*(5), 660-679.
- Flogaitis, E., & Agelidou, E. (2003). Kindergarten teachers' conceptions about nature and the environment. *Environmental Education Research, 9*(4), 461-478.
- Green, S. S. (2013). *Preschool Teachers' Early Perceptions of Education for Sustainable Development In Early Childhood Education*. (Master Thesis. Southern Illinois University Carbondale)
- Hedefalk, M., Almqvist, J., & Östman, L. (2015). Education for sustainable development in early childhood education: a review of the research literature. *Environmental Education Research, 21*(7), 975-990.
- Hsu, S. J. (2009). Significant life experiences affect environmental action: A confirmation study in eastern Taiwan. *Environmental Education Research, 15*(4), 497-517.

- Inoue, M., O'Gorman, L., & Davis, J. (2016). Investigating Early Childhood Teachers' Understandings of and Practices in Education for Sustainability in Queensland: A Japan-Australia Research Collaboration. *Australian Journal of Environmental Education*, 1-18.
- McNaughton, M. J. (2012). Implementing Education for Sustainable Development in schools: learning from teachers' reflections. *Environmental education research*, 18(6), 765-782.
- Palmer, J. A., & Suggate, J. (1996). Influences and experiences affecting the pro-environmental behaviour of educators. *Environmental Education Research*, 2(1), 109-121.
- Park, E., Kim, H., & Yu, S. (2015). The perception and attitude of in-service teachers in early childhood education toward Education for Sustainable Development (ESD) in Korea. Early childhood pathways to sustainability. 67th OMEP World Assembly and International Conference, July 27-August 1, Washington DC, U.S.A.
- Shallcross, T., & Robinson, J. (2007). Is a decade of teacher education for sustainable development essential for survival?. *Journal of Education for Teaching*, 33(2), 137-147.
- Summers, M., & Childs, A. (2007). Student science teachers' conceptions of sustainable development: an empirical study of three postgraduate training cohorts. *Research in Science & Technological Education*, 25(3), 307-327.
- Sward, L.L. (1999). Significant life experiences affecting the environmental sensitivity of El Salvadoran environmental professionals. *Environmental Education Research* 5(2), 201-06.
- Tanner, T. (1980). Significant life experiences: A new research area in environmental education. *The Journal of Environmental Education*, 11(4), 20-24.
- Teksöz, G. (2015). Geçmişten ders almak: Sürdürülebilir kalkınma için eğitim. *Boğaziçi Üniversitesi Eğitim Dergisi*, 31(2), 73-97.
- Tilbury, D. (1995). Environmental education for sustainability: Defining the new focus of environmental education in the 1990s. *Environmental education research*, 1(2), 195-212.
- Tuncer, G. (2008). University students' perception on sustainable development: A case study from Turkey. *International Research in Geographical and Environmental Education* (17)3, 212-226.
- UNESCO. (1992). *Agenda 21 – Report of the United Nations Conference on Environment and Development. Chapter 36. Promoting education, public awareness and training*
- UNESCO. (1997). *Educating for a sustainable future: A trans-disciplinary vision for concerted action*. Retrieved October 5, 2010 from <http://unesdoc.unesco.org/images/0011/0011106/110686eo.pdf>
- UNESCO. (2002). *Education for sustainability—From Rio to Johannesburg: Lessons learnt from a decade of commitment*. Paris: Author.
- UNESCO. (2005). *United Nations Decade of Education for Sustainable Development (2005-2014)* Retrieved October 5, 2010 from <http://portal.unesco.org/education/admin/ev.php>
- UNESCO. (2006). *Framework for the UNDESD International Implementation Scheme*. Paris: UNESCO.
- UNESCO. (2008). *The Gothenburg Recommendations on Education for Sustainable Development*. Retrieved 30/01/09 from http://omep.vrserver2.cl/cgi-bin/procesa.pl?plantilla=/archivo.html&bri=omep&tab=a_6&campo=c_file&id=270
- UNESCO. (2012). *United Nations Decade of Education for Sustainable Development. Rio+20. (2005-2014)* Retrieved November 11, 2012 from <http://www.uncsd2012.org/content/documents/492UNESCO%20Input%20to%20Rio0%20Compilation%20Document.pdf>
- Warburton, K. (2003). Deep learning and education for sustainability. *International Journal of Sustainability in Higher Education*, 4(1), 44-56.
- World Commission on Environment and Development (WCED). (1987) *Our Common Future (the 'Brundtland Report')*, Oxford University Press, Oxford.
- Yang, G. & Lam, C.C. & Wong, N. Y. (2010). Developing an Instrument for Identifying Secondary Teachers' Beliefs about Education for Sustainable Development in China. *The Journal of Environmental Education*, 41(4), 195-207.