

COMPARISON OF EARLY CHILDHOOD EDUCATION
EDUCATORS' EDUCATION FOR SUSTAINABLE DEVELOPMENT
PRACTICES ACROSS ECO VERSUS ORDINARY PRESCHOOLS

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

COMPARISON OF EARLY CHILDHOOD EDUCATION EDUCATORS' EDUCATION FOR SUSTAINABLE DEVELOPMENT PRACTICES ACROSS ECO VERSUS ORDINARY PRESCHOOLS

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This study aimed to compare early childhood education educators' (ECEEs) thoughts and practices across eco versus ordinary early childhood education settings. To investigate the predictors of ESD practices, ECEEs' knowledges about SD and attitude towards SD were also examined. For the current study, 838 ECEEs from 111 ECESs in Ankara, Istanbul, Antalya, and Eskisehir were participated to the study. The data from the participants' self-reported knowledge, attitude, and practices about SD

and ESD was gathered and analyzed by conducting various descriptive analyses and two-level Hierarchical Linear Modeling (HLM).

According to the results, most of ECEEs at both ordinary and ECO-ECESs thought that ESD should be the key part of early childhood education. The most important purpose of ESD was increasing awareness of SD/ESD issues. The results also indicated the teacher's lack of formal training in ESD and lack of teaching and learning materials for ESD as the most difficult aspects of implementing ESD program/activities. ECEEs' opinions about activating ESD program or activities showed two significant aspects; expanding ECEEs training and applying ESD to the curriculum.

The results of HLM indicated that if ECEEs that were serving at ECO and ordinary ECESs has high level of attitudes towards SD, they tended to practice ESD issues more. In addition, if ECEEs at ordinary ECESs had previous experiences on implementing ESD activities, they tended to implement more ESD related activities in their class. Also, If ECEEs at ECO-ECESs had membership to a NGO, they tended to implement ESD activities in their class.

Keywords: Sustainable Development, Education for Sustainable Development, Early Childhood Educators, Early Childhood Education Settings, Environmental Education

ÖZ

EKO VE EKO OLMAYAN EĞİTİM KURUMLARI ARASINDA ERKEN ÇOCUKLUK EĞİTİMCİLERİNİN SÜRDÜRÜLEBİLİR KALKINMA EĞİTİMİ UYGULAMALARININ KARŞILAŞTIRILMASI

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Bu çalışmanın amacı eko ve eko olmayan eğitim kurumlarında görev yapan erken çocukluk dönemi eğitimcilerinin sürdürülebilir kalkınma eğitimi uygulamalarına yönelik düşüncelerini ve uygulamalarını incelemektir. Buna ek olarak bu çalışmada eko sertifikalı eğitim kurumlarında ve eko olmayan eğitim kurumlarında görev yapan bu eğitimcilerin, SK eğitimi uygulamalarını yordayan değişkenler tahmin edilip karşılaştırılmıştır.

Bu amaçla İstanbul, Ankara, Antalya ve Eskişehir illerinden eğitim-öğretim faaliyeti gösteren 111 okulöncesi eğitim kurumunda çalışan 838 erken çocukluk dönemi eğitimcilerinin katılımıyla, bir dizi ölçek uygulanarak yapılmıştır. Toplanan veriler, hem tanımlayıcı hem de çok düzeyli analiz yöntemi (HLM) kullanılarak analiz edilmiştir.

Bulgular, gerek eko sertifikalı olan gerekse olmayan eğitim kurumlarında çalışan öğretmenlerin erken çocukluk eğitiminde SKE'nin önemine inandıklarını göstermektedir. Her iki tür erken çocukluk eğitimi kurumunda çalışan eğitimcilerin, okulöncesi dönemde SKE'nin amacına yönelik görüşlerinin aynı olduğunu görülmüştür. Eğitimcilerin daha önceden yapmış oldukları SKE deneyimleri karşılaştırıldığında, eko olan kurumlarda çalışan eğitimcilerin, diğer öğretmenlere göre oldukça fazla deneyime sahip oldukları görülmüştür. SKE etkinliği uygulamanın zorlukları sorulduğunda ise yine her iki tipte eğitim kurumlarında çalışan eğitimciler genelde aynı seçenekleri öne sürmüşler ve eğitim-öğretim materyallerinin eksikliği ile eğitimcilerin SKE'ne dönük formal eğitim eksiklikleri en önemli zorluklar olarak rapor etmişlerdir.

HLM analizleri incelendiğinde eko olan ve olmayan erken çocukluk eğitimi kurumlarında çalışan eğitimcilerinin SK'ya karşı tutumları yüksekse daha fazla SKE pratiği yaptığını göstermektedir. Öte yandan, eko sertifikalı eğitim kurumlarında çalışan öğretmenin SKE pratikleri ise onların çevre veya SK ile ilgili bir STK'ya üye olup olmamaları tarafından tahmin edilmiştir. Eko olmayan eğitim kurumlarında görev yapan eğitimcilerde ise eğer daha önce SKE deneyimine sahiplerse şu anki uygulamalarının daha yüksek olduğu görülmüştür.

Anahtar Kelimeler: Sürdürülebilir Kalkınma, Sürdürülebilir Kalkınma için Eğitim, Erken Çocukluk Dönemi Eğitimcileri, Erken Çocukluk Dönemi Eğitim Kurumları, Çevre Eğitimi

To My Miracles, PERA and ADA

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LIST OF ABBREVIATIONS

EE: Environmental Education

SD: Sustainable Development

ESD: Education for Sustainable Development

ECE: Early Childhood Education

ECEE: Early Childhood Education Educator

ECES: Early Childhood Education Setting

ECEfSD: Early Childhood Education for Sustainable Development

NGO: Non-Governmental Organization

HLM: Hierarchical Linear Modeling

CHAPTER I

INTRODUCTION

Environmental issues have been increasingly associated with education since the UNESCO Biosphere Conference in Paris (1968) with the declaration about waking communities up to Environmental Education (EE) (UNESCO, 1968). EE is a process of developing perception, positive attitudes and the necessary behavior to understand and appreciate how mankind, culture and biophysical surroundings are interrelated (Tilbury, 1995). Later on, the report “The Limits of Growth” (1972) informed societies about the consequences of rapid economic development and proposed that if global economic development were to continue, non-renewable resources would run out of before the year 2072 (Meadows, Meadows, Randers, & Behrens, 1972). The Belgrade Charter, a global framework for EE and the Tbilisi Declaration all stated their aims as educating people to be aware of, concerned with environmental problems and to act preventing new ones (UNEP, 1977; UNESCO, 1976). It was envisaged that EE would be critical in fostering awareness of the social and political factors of the problem. In this latter respect, the World Commission on Environment and Development’s (WCED, 1987, p. 43) Bruntland Report (1987) advocated a balance between the needs of the environment and humankind suggesting Sustainable Development (SD) discourse throughout the world. SD is “development that meets the needs of the present without compromising the ability of future generations to meet their needs” and refers to;

- a) the need for reconciliation between economic development and environmental conservation;
 - b) the need to place any understanding of environmental concerns within a socio economic and political context;
 - c) the need to combine environmental and development concerns.
- (p.5) (Tilbury, 1995)

The Earth Summit (1992) in Rio de Janeiro published Agenda 21 in an effort to push for sustainable development goals. In a similar way, sustainable development was defined by the World Conservation Union (IUCN) not only to improve the quality of human life but also to protect the Earth's capacity for future generations (Clark, Crutzen & Schellnhuber, 2005). Besides these two definitions that focus on the relationship between the natural environment and people, at the Johannesburg Summit (2002) two more dimensions - economic and socio-cultural - were added into the definition of sustainable development to emphasize social justice and the fight against poverty (Chiesura & De Groot, 2003). By the means of this definition sustainable development includes three integrated dimensions: socio-cultural, economic and environmental. These three dimensions act together in addition to any practices or policies without taking into consideration that these three dimensions may be weak or even fail (UNESCO, 2005).

From the beginning of 21st century global economic development, industrialization and new technologies have brought many challenges such as climate change, rapid urbanization, diminishing fresh-water supplies, deforestation, loss of biodiversity and decreasing energy resources (Davis, 2010; UNESCO, 1992; UNESCO, 1997). Very recently, the United Nations Conference on Sustainable Development was held in Rio de Janeiro in June 2012 and the stakeholders emphasized that the problems of the 21st century should not only be considered as environmental in that they also affect the world's social and economic states (UNESCO, 2012) and SD is an emerging concept that seeks solutions for those problems. Accordingly, the long term benefits of sustainable development can be ensured by balancing three inter-related areas of

development (UNESCO, 2012). In other words, SD encompasses human interactions with environmental, socio-cultural and economic issues. Hence sustainable development includes three integrated pillars despite their interdependent structure (Kates, Parris & Leiserowitz, 2005).

When the concept of Sustainable Development first arose, Education for Sustainable Development (ESD) was discussed for the first time since education was regarded as a key in achieving the aims of the three interrelated domains of sustainable development (UNESCO, 1992; UNESCO, 1997). ESD, including the concepts of living within ecological limits, acting for social change and consuming in a sustainable way, will solve the social, economic, cultural and environmental problems that we face in the 21st century (UNESCO, 2005).

The holistic perspective of ESD highlights different viewpoints concerning SD problems in terms of their environmental, socio-cultural and economic aspects and their solutions. Emphasizing a holistic approach in ESD inspires individuals to consider the environmental, social and economic consequences of their actions. (Rudsberg & Öhman 2010). In addition, it has been revealed that individuals are more eager to learn SD issues when the ESD dimensions are integrated, since integrating ESD dimensions prevents barriers from being formed during the learning process (Gough, 2002; Herremans & Reid 2002; Jickling & Wals, 2008; Rauch, 2002; Sund, 2015; Warburton, 2003). ESD guides people to develop perceptions, attitudes and practices and to participate in decisions about how to improve the quality of life without damaging the planet for the future (CEE, 1998). ESD should lead to sustainable practices (Orr, 1994). Furthermore, in the Rio Summit's report it was emphasized many times that ESD should be integrated into formal schooling process beginning from early childhood and that it should underpin ideas, attitudes, beliefs and behavior in order to promote sustainable ways of thinking and living (UNESCO, 2012).

Though primary and secondary education have a long-lasting history of engagement with ESD (Gough, 2006; Tilbury, Coleman & Garlick, 2005), Early Childhood Education (ECE) has been much slower to introduce the processes and practices of ESD (Elliott & Davis, 2009). ESD in ECE is regarded as a “natural starting point” for lifespan learning (The Gothenburg Recommendations on Education for Sustainable Development, 2009). The universal provision of ECE has also been promoted as a result of globalization, urbanization, changing economic circumstances, migration and poverty. The needs of societies have empowered education systems to emphasize perceptions, attitudes and basic skills that lead to critical thinking and decision-making processes (OECD, 2006). ECE has the potential to change and enhance the communities in a sustainable way. Looking into the basic principles of ESD in terms of having appropriate perceptions, attitudes and practices in order to preserve the environment, strengthen interdependence and consume sustainably it is concluded that ECE is well-placed to adopt these base principles (Didonet, 2008; UNESCO, 2007). Since its early years human development has possessed foundations of long lasting perceptions, attitudes and practices. As emphasized in the light of Orr’s (1994) beliefs, ECE is more about enlarging values rather than theories. Hence, the newly globalized ECE has created the contemporary image of children being component contributors to society possessing appropriate perceptions, attitudes and practices.

Outdated images regarded young children as innocent, vulnerable and immature and also underestimated their ability to deal with the challenges of global society. Even young children are not considered as members of the world in which they live (Elliott & Davis, 2009). Adults see them as apart from the environment and its related problems. This kind of approach may lead to children developing anthropocentric attitudes towards the environment they live in and its problems (Ozturk, Olgan, Tuncer, 2012). On the other hand, the image of contemporary children can convince us why we have to deal with sustainability at an early age. Contemporary children are aware of the problems of the world and possess the skills to think about these environmental, social and economic problems critically and to participate in the

decision-making process for a sustainable world (UNESCO, 2008). ESD in ECE is an empowering process. Thus, developmentally appropriate approaches emphasizing a socio-cognitive context can reveal the existing potential of young children to take effective role in society (Davis, 2010; Duhn, 2011). Therefore, the integration of early childhood and sustainability can be seen as an antidote to attitudes that underestimate the power of young children in contributing to the process of living sustainably (Davis, 2010; Elliott & Davis, 2009; UNESCO, 2007). Modern pedagogical thinking bound with a socio-cognitive perspective regards preschool children as capable and competent learners (Berk & Winsler, 1995). Vygotskian philosophy proposes that learning leads to development and that with the appropriate scaffolding young children can improve their learning (Hatch, 2010). Furthermore, longitudinal studies and neuroscience research have revealed that babies are born with the enormous capacity to learn and that early childhood experiences provide the bases for life-long learning (Begley, 1996; Mustard, 2000; Mareschal & Tan, 2007; Rushton & Larkin, 2001; Rutter, 2002). Therefore, there is no reason to regard SD as a difficult task to handle in ECE.

Since the new perspectives on universal ECE consist of intellectual, psychological, emotional, social and physical bases for SD; and the early years of human life possess an enormous potential for fostering the values, attitudes, skills and beliefs that are required for a sustainable life, the sustainability issues are not beyond the grasp of young children and ECE content. Hence, it is not wrong to talk about the integration of ESD in ECE. In this regard, the term Early Childhood Education for Sustainable Development (ECEfSD) emerges as a dynamic field of interest to be investigated (Elliott, 2010; UNESCO, 2006b). ECEfSD is a transformative education process that empowers children to be problem seekers and problem solvers and it values their contributions for change in their own environments (UNESCO, 2006c; UNESCO, 2008). In other words, ECEfSD is all about empowering children to think and act in a way that values ways of living sustainably in order to safeguard the future (Siraj-Blatchford, Smith, & Samuelsson, 2010).

As one looks at the development of ESD in ECESs all over the world, it can be seen that many developed countries that have taken the lead in ESD practices from Sweden to Australia do not implement a different early childhood curriculum than the existing one in the settings (Sterling, 2001; Gadotti, 2010). Rather, they exhibit an integrated approach as UNESCO (2005) proposed by incorporating into their program the contents related to ESD. In Sweden, for example, most of the years-long ESD practices in early childhood education including democracy, global warming, cultural diversity and environmental-friendly production have been integrated into national education curriculum. The Swedish national early childhood education curriculum still does not contain the objective of teaching SD as a concept (Sweden Environmental Protection Agency, 2000; Breiting & Wickenberg, 2010). In the context of Turkey, ordinary early childhood education settings framed on the national early childhood education program (2013) placing emphasis on an integrated approach which supports children' cognitive, language, social-emotional and motor development, also it underlines that the attitudes and behaviors acquired during this period will continue to impact throughout the entire life of the individual, thus children should grow as multi-task individuals. The program was developed with a holistic approach based on the developmental characteristics of children 36-72 months old, and outcomes and indicators to be acquired by children were determined for each developmental domain (Olgan, 2015). When the program is analyzed in relation with ESD, it is seen that many implicit objectives and indicators are appropriate for the ESD content. In other words, the national early childhood education program places emphasis on ESD content in an implicit manner. For example, most objectives and indicators in cognitive and language development areas support children's skills such as establishing cause-effect relations, problem solving and self-expression, as suggested by ESD. Similarly, examination of the social-emotional areas suggests that outcomes such as recognizing the social and cultural characteristics, being aware of and owning their roles in social life, as well as getting to know and respecting different cultures with a universal point of view also support the ESD content. At the same time, the special days and weeks and concepts to be taught in that program seem to support exactly the content of ESD (Kahriman-Ozturk

& Karaaslan, 2010). As a result, it is understood that the objectives and indicators in the national early childhood education program as well as the contents in the program may also be appropriate for preschool teachers' ESD practices. Studies also prove that preschool teachers' ESD practices can be performed by using the current objectives and indicators. For instance, in her study, Cengizoğlu (2013) reported that preschool teachers' ESD practices can be realized with existing outcomes and indicators despite unavailability of a supplementary ESD program. Likewise, Alici (2013) found out in her study that preschool teachers' ESD practices can be performed by using the existing national early childhood education program objectives.

Eco early childhood education settings and ESD practices

On the other hand, the Eco-school program is now the main vehicle referring to SD at all levels of education both in the world and in Turkey (Eco-schools, 2015). United Nations Environment Program (UNEP) regarded eco-schools as a model for promoting ESD. In fact, the roots of the Eco Schools Program exist in Agenda 21. Chapter 25 of Agenda 21 explicitly refers to make children and youth active agents of environmental protection and social-economical promotion (UNESCO, 2003; UNCED, 1992). As an ultimate goal, the Eco-schools program advocates improving knowledge, perceptions, attitudes, beliefs and the behavior of the whole school community in terms of students, teachers and other staff with respect to SD (FEE, 2015) in a professional way. Eco-school program providing both indoor and outdoor education opportunities related to daily life for students and teachers achieves ESD in member schools from early childhood to upper grades (Bajd & Leščanec, 2011). The program is being implemented in 56 countries around the world, involving 32.156 schools, 9.125.460 students, 628.005 teachers, and 5013 local authorities (FEE, 2016). With the aim of supporting SD and enhancing ESD, Turkey enrolled in Eco-School Project which is supported by Foundation for Environmental Education in Europe (FEE). Eco-preschools are now the main vehicle referring ECEEs' ESD practices in Turkey (FEE, 2016). Therefore, integration of ESD into ECE is also worthwhile when this process refers all dimensions of school community; for example, curriculum, school culture, teaching practices, use of energy and water,

transport and travel, food, organization, administration, physical environment, relations with the wider community and other bodies' school environment, buildings and yard (Huckle, 2010). ESD shall be assisted by eco schools through engagement in whole-school approaches as proposed by Foundation for Environmental Education (FEE, 2016).

According to Henderson and Tilbury (2004), the most important role here falls undoubtedly onto ECEEs. ECEEs in this regard are responsible for not only being the people who explore and try to learn with children and support them in this process rather than giving them didactic training, but also creating a democratic learning environment where children can exchange ideas about a sustainable life (Didonet, 2008). In this regard, Eco-schools program can be an encouraging way to advance also educators' thoughts about needs and implementation of ESD, and ESD practices.

Many reports highlighted the need for a sustainable life. However, related literature has failed to answer how ECEEs can contribute to ESD (Didonet, 2008; UNESCO, 2012; Wals, 2011). ECEEs are primarily responsible for providing children with the opportunities to encounter sustainable development. If ECEEs are willing to integrate sustainability into ECE and if they act as facilitators, then children can be part of the ECE for the SD process (Arthur, Beecher, Death, Dockett, & Farmer, 2008; Edwards, Gandini, & Foreman, 1998; Pratt, 2010).

In this regard ECEEs should be responsible for promoting ESD practices in the school setting, raising children's awareness of the three interrelated dimensions of sustainability, adopting and practicing integrated approaches combining different concepts and activities such as language, science, arts/craft and physical education and improving family practices and community collaboration (Hopkins & McKeown, 2002). When ESD research examined, it is seen that relevant literature partially highlighted the ECEEs' thoughts of sustainable development (Borg, Gericke, Höglund, & Bergman, 2012; Öhman, 2004; Jonsson, 2008; McNaughton, 2012). However, information is still lacking about their ESD practices. ESD practices of

preschool teachers may help children gain awareness and appropriate behavior regarding environmental, economic and social and cultural issues for a sustainable future (Cincera, Kroufek, Simonova, Broukalova, Broukal & Skalík, 2015). ESD practices of ECEEs can include issues about collecting paper for recycling, use of natural materials in events, and cooperating with schools in underdeveloped countries, reflecting social-cultural differences, etc. (Engdahl & Årlemalm-Hagsér, 2008; Engdahl, 2008).

Considering these aspects emphasized above, in the current study, ESD practices of ECEEs' serving at eco versus ordinary schools were compared. At that point, this present study was carried out in both eco and ordinary preschools and has provided an opportunity for a comparative study of ECEEs' ESD practices. This comparative study was believed to in gaining a wider global perspective, helping in understanding the realities, visions and actualities for positioning ESD globally. Both schools are the members of ministry of national education and utilize the same national early childhood education curriculum. On the other hand, the eco-schools program is deemed to be demonstrating 'good' practice' (UNESCO, 2009). In this regard, what may shape ECEEs' ESD practices should be investigated comparing eco versus ordinary settings?

In this aspect, attitude and knowledge were discussed in environmental education studies to be a predictor of practice (Hines, Hungerford & Tomera, 1986). Environmental attitude is a key element affecting educators' readiness to participate in environmental education and in transferring new skills, knowledge, and attitudes into future classroom practice (Esa, 2010). It is fairly well accepted that the behavioral change is motivated by a change in attitude and knowledge (Hungerford & Volk, 1990). Accordingly, in the current study, attitudes towards sustainable development and sustainable development knowledge were investigated to be the most important factors relating with ECEEs' ESD practices.

When it comes to discussing the relationship between the demographic variables and ECEEs' ESD practices, in the field of Environmental Education, influences and experiences that happened throughout life was reported as contributing to one's acts about environmental issues. In this regard we can look to see if there is a historical causation of the explanation and if it is possible that developmental antecedents relate with a teacher's current practices. From this perspective, researchers sought for understanding the underlying motives brought from childhood and explained why some educators are interested in environmental issues and created a broad debate in environmental education research. In this regard, natural experiences in childhood was reported as the most frequently mentioned influential factor in the analysis of autobiographical memories of environmentalists (Cooper & Palmer, 1998). In their studies Tanner (1980), Palmer et al. (1999) and Chawla (1999) determined natural experiences (childhood)' as an important factor having higher effect size on determining environmentally friendly acts. The results showed that spontaneous, unsophisticated, outdoor, almost daily activities were prominent in 'natural experiences (childhood)'. At that point, growing up rural and house rather than urban and apartment may provide full of nature resources that creeks, seashores, countryside, mountains and woods, etc. Based on these outcomes, Hsu (2009) concluded that growing up nature related places seem to be perfectly suitable for environmental practices of individuals rather than having a trip to national parks to experience nature; instead. Considering the points discussed above, the current study regarded childhood location (urban- rural) and household type (apartment- house) in childhood as demographic variables can be related with childhood natural experiences and hypothesized that raising in rural and/or house in childhood may be related with education for sustainable development practices of early childhood education educators serving at both types of early childhood education settings.

Furthermore, membership to a Non- Governmental Organization is also determined as a demographic variable that may predict ESD practices of ECEEs. The Economic and Social Council of the United Nations (ECOSOC) (2011) declared that Non-Governmental Organizations can help achieving increased the overall quantity and

quality of education throughout the world. The stakeholders revealed a diverse group of NGOs from different areas of the world that shall contributed to the field of education. In the current study, in particular, the association among being a member of a NGO and ESD practices was deliberated. In fact, it was assumed that the participation of the NGO may be a predictor of ESD practices of the ECEEs serving at both types of ECESs.

Finally, in this study it was proposed that previous ESD teaching experiences may also be regarded as possible predictors of educators' future teaching practices. Scruggs and Mastropieri (1993) indicated that previous teaching experiences seem to have a positive effect on later teaching experiences. When the environmental psychology research is examined, Ajzen (1991) also stressed that past experience of a practice contributes to the formation of later experiences. In addition, it was argued by a variety of researchers that self-reported previous experiences may be useful addition to the research area and further studies (Conner, Warren, Close, & Sparks, 1999; Hagger, Chatzisarantis, & Biddle, 2002; Norman & Conner, 2006). In this regard, ECEEs' previous ESD teaching experiences are defined as the last predictor of ESD practices whom ECEEs have, serving at both eco and ordinary ECESs.

1.1 Significance of the Study

Developing young children's awareness of SD issues has never been an important goal of ECE until now. Only after comprehending the factors related with children's ESD learning, will we be able to propose a way of teaching that could have a chance of improving young children's familiarity with the environmental, social and economic problems of the world. ESD that includes the concepts of living within ecological limits, acting for social change and consuming in a sustainable way will solve the social, economic, cultural and environmental problems that we face in the 21st century (UNESCO, 2005). In the Rio Summit's report it was emphasized many times that ESD should be integrated into the formal schooling process beginning with the preschool years because young children are capable of understanding the

problems of the world and have the skills to think about these environmental, social and economic problems critically and to participate in the decision-making process for a sustainable world (UNESCO, 2008). In this regard, the role of ESD practices in ECE and ECEEs needs great consideration. As highlighted in the Brundtland Report, the educators' role is to achieve the goals of SD (WCED, 1987). Hence, all educators from all grades within ECEEs have the responsibility to enlarge ESD issues in their teaching fields (Sağdıç, 2013). The current study has the potential to illustrate ECEEs' ESD practices with the aim of contributing scholarly literature concerning ESD in ECE since ESD is a fairly recent research area in ECE literature. Some studies have already attempted to highlight ECEEs' perspectives (Green, 2013). However, ESD practices in ECE are still an under-researched area both at national and international levels.

When considering the predictors of ECEEs' ESD practices relationships between educator's knowledge and practices as well as attitudes and practices are also worth investigating since their knowledge vis-a-vis SD can be regarded as one of the most important precursors of their practices. In addition, their attitudes towards SD could be significant indicators for their teaching practice in ECESs (Davis, 2010). Moreover, ECEEs' attitudes have important an role in children's learning as examined in many studies revealing the role of educator's attitudes in teaching and the learning process. In this regard, SD attitudes of ECEEs' should be considered as an important predictor of their SD practices. However, the relevant literature provides limited evidence about ECEEs' SD knowledge, attitudes and their relationship between ESD practices (Sağdıç, 2013). Therefore, the current study aims to make a contribution to the field of ECESD study by also describing this important relationship.

When it comes to ECES's, comparing Eco-ECESs' and ordinary ECESs will firstly reveal the current status of ECESs' ESD practices in Turkey. In the relevant literature there is only one study that aimed to investigate a small group of Eco ECESs in terms of SD (Korkmaz, 2014). Korkmaz (2014) compared only public and private eco

settings without any emphasize to the SD features of ordinary ECESs. Secondly, comparing the predictors of ECEEs' ESD practices in both eco and ordinary eco settings will make a great contribution to understanding the underlying motives of ECEEs' ESD practices. As it is, this research is the first to draw upon the literature providing a global understanding of ESD in ECE by exploring the predictors of ECEEs' ESD practices. It is worth investigating the issue since the limited number of ESD studies in the literature were mostly conducted with pre-service educators and refer only to the environmental dimension of ESD.

In summary, the results of the present study are expected to reveal the predictors of ECEEs ESD practices in both eco and ordinary ECESs as well as comparing ECEEs' understandings about needs and implementation of ESD, SD knowledge, attitudes, ESD practices across eco versus ordinary ECESs. This could serve to curriculum planners and the Ministry of National Education in designing a new education system and curriculum in terms of sustainable development. At this point, the role of the eco school program should be considered. The current study contributes to the incomplete research literature, comparing ESD practices of ECESs and its predictors.

Moreover, the current study has the potential to contribute to the limited scholarly literature about ESD in ECE by providing insight into a large group of Turkish ECEEs' knowledge, attitude towards SD and ESD practices. Additionally, since ESD in ECE is an emerging research area, this current study with the Turkish population could contribute to the national and international understanding of ESD.

One of the aims of ESD is to enlarge perceptions about sustainable development within society. The participants in the current study were encouraged to think about environmental, social and economic issues. Additionally, this process could have an impact on participant ECEEs' opinions vis-à-vis ESD. If this study is able to spread SD awareness among participants, its significance is worthwhile. Therefore, the findings and implications of the current study will support the future endeavors of ECEEs and ECE researchers.

In this regard the current study links educators to the community in creating an ECEfSD practice area. In other words, this study provided the opportunity for comparing how educators' practices are shaped with respect to their personal factors. It is expected that an examination of the research questions stated below will be able to illuminate future research into how ECEEs' ESD practices differ across versus eco and ordinary ECESs.

1.2 Aim and Research Questions

The main aim of the current study is to compare early childhood education educators' thoughts and practices across eco versus ordinary early childhood education settings. In addition the predictors of ECEEs' ESD practices was investigated and compared in the current study.

Accordingly, research problems motivating the current study are reported as:

1. What are the thoughts of ECEEs' serving at eco versus ordinary ECESs about ESD practices in the early years?
 1. a. What are the thoughts of ECEEs' serving at eco versus ordinary ECESs about the needs for ESD in Early Childhood Education?
 1. b. What are the thoughts of ECEEs' serving at eco versus ordinary ECESs about the purpose of ESD in early childhood?
 1. c. What types of teaching methods do ECEEs serving at eco versus ordinary ECESs use for their ESD program/activities?
 1. d. What are ECEEs serving at eco versus ordinary ECESs considering about the most difficult aspect in implementing ESD program/activities?

1. e. What are the thoughts of ECEEs' serving at eco versus ordinary ECEEs about the most necessary aspect in activating ESD program/activities?
2. What are the demographic characteristics of ECEEs' serving at eco and ordinary ECEEs?
3. What are the levels of ECEEs' SD knowledge, SD attitude and ESD practices serving at eco versus ordinary ECEEs?
4. To what extent do ECEEs related variables (knowledge about SD, attitudes towards SD, childhood location, household type at childhood, membership to a NGO, and previous experiences of ESD practices) explain the differences in ECEEs' ESD practices across ordinary ECEEs?
5. To what extent do ECEEs related variables (knowledge about SD, attitudes towards SD, childhood location, household type at childhood, membership to a NGO, and previous experiences of ESD practices) explain the differences in ECEEs' ESD practices across eco ECEEs?

1.3 Definition of the important terms

For the sake of clarity and consistency a definition of the terms is given below to provide an overview of how the terms were used by the researcher within the context of the study.

Early Childhood Education: Early Childhood Education (ECE) is a term that includes the appropriate programs that serve 0-8 year old children; a study field that trains the students about how to work with young children effectively (Essa, 2012).

Eco Early Childhood Education Settings: Eco Early Childhood Education Settings aim to encourage children to take an active role in school environment to through practical steps which are crucial to reduce the environmental impact of the school (Chapman & Sharma, 2001).

Sustainable Development: Sustainable development (SD): It is defined as “development that meets the need of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission Report, Our Common Future, 1987, p.43).

Education for Sustainable Development (ESD): “Education for sustainable development enables people to develop the knowledge, values and skills to participate in decisions about the way we do things individually and collectively, both globally and locally, that will improve the quality of life now and without damaging the planet for the future” (Sustainable Development Education Panel, 1998, p. 30)

Early Childhood Education for Sustainable Development (ECEfS): It aims to nurture socio-environmental resilience based on interdependence and critical thinking, setting foundations for lives characterized by self-respect, respect for others and respect for the environment the quality of their engagement with young children and the early childhood community (ESD Recommendations, 2008).

Sustainable Development Knowledge: The theoretical understanding of sustainable development issues that is acquired through either education or everyday experiences.

Sustainable Development Attitude: A psychological state that is conveyed through evaluating an entity with some degree of favor or disfavor and then expressing that evaluation (Eagly & Chaiken, 2007).

CHAPTER II

LITERATURE

This chapter suggests a summary of the research literature related to the aim of this study for thorough understanding of the early childhood education educators' sustainable development practices. First, the landmarks of Education for Sustainable Development (ESD) are mentioned in global sense with the help of conferences, declarations and seminars. Afterwards, conceptual framework of ESD is mentioned by giving the evolution of the definitions, aims, objectives of ESD from past to present. Then, the role of Early Childhood Education Educators' (ECEEs) in ESD is discussed. Subsequently, upon examining the international and national studies related to education for sustainable development, environmental education and their associated variables are summarized.

2.1 From Environmental Education (EE) to Education for Sustainable Development (ESD): Transition from EE to ESD and Link towards Early Childhood Education

The common understanding "Environmental Education" (EE) has been framed and improved with the challenging environmental deterioration since the 1960s. Starting with the UNESCO Biosphere Conference in Paris (1968), environmental issues have been increasingly linked to theory and practice of education and developing a worldwide awareness of EE has been declared. EE was then defined as:

the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision making and self-formulation of a code of behavior about issues concerning environmental quality (Palmer, 1998, p.5).

In other words, EE is the course of developing appropriate perceptions, attitudes and practices necessary to promote the harmony between human being and the environment (IUCN, 1970). Afterward, The Belgrade Charter (UNESCO, 1976) and The Tbilisi Declaration (1978) set the objectives for EE in terms of fostering awareness of environmental problems, resolution of these problems and preventing new ones. Furthermore, in these global meetings, providing opportunities people to acquire appropriate perceptions, attitudes and practices needed to protect and improve environment was issued (UNESCO, 1976; UNESCO, 1977). Indeed, Tbilisi Report characterized EE as a life-long process, an interdisciplinary and holistic perspective that aims to promote interrelatedness among human being, culture and nature in educational system rather than subject about environmental issues (UNESCO, 1977). In the prospects, Chiappo (1978) debated that simply fostering community's awareness about environmental issues is not enough to solve environmental problems and proposed that finding out social cultural and economic factors of these environmental problems should be critical in keeping the harmony between nature and human being. In other words, the researcher suggested to create a balance between needs of the environment and humankind (Chiappo, 1978).

When it comes to 1980s, the World Conservation Strategy was launched and stressed the importance of sustainable resources consumption with the idea of conservation and development are communally interdependent and contained a message that benefits of long term environmental education should be promote appropriate perceptions, attitudes and practices (IUCN, 1980). Palmer (1998) stated the year

“1987” as milestone since two international initiative; one is “Tbilisi Plus Ten Conference” organized by UNESCO and UNEP to highlight tenth anniversary of the first Tbilisi Conference and the other is “Brundlant Report” known as the “Our Common Future” presented by World Commission on Environment and Development (WCED). These reports highlighted the importance of integrating environment with the development, thus reinforcing the core message of “Sustainable Development” (SD).

UNESCO declared that (2005) sustainable development includes three integrated dimensions: social-cultural, economic, and environmental and these three dimension acts together. In other words, any practices or policies without taking into consideration these entire three dimensions may be weak or even fail. Environmental pillar of SD is about harmony between human and nature as well as natural resources (Pressoir, 2008). Drawbacks of reducing natural resources, enlarged greenhouse gas emissions, abundant landfills, increasing sea levels, and contaminated waterways are the issues of environmental SD. (Siraj-Blatchford, Smith, & Samuelson, 2010). Economical pillar of SD concerns with reducing the load of producing goods and services, and increasing energy and water consumption, public transport and other demand-side measures (Siraj-Blatchford et al., 2010). Social-cultural pillar of SD concerned with social, cultural, and political issues regarding participation, emancipation, freedom, security and solidarity; therefore, it requires ethos of democracy, respect for diversity, and equality that affect the quality and continuity of people’s lives, between individuals and groups within and beyond national borders and between generations (UNESCO, 2006). To give an example for the integrated SD approach, we can think about egg production which has social, economic, and environmental dimensions. Rearing conditions of hens can be dealt with as an environmental issue since they live in unhealthy and unnatural settings. Hens cannot move freely in small cages as well as they do not have a sitting place of their own. This way of rearing the hens results in cheaper eggs that make a positive impact on the economy; however, a negative impact on the people who eats unhealthy eggs that leads a variety kinds of diseases and corrupts health of society in long term.

However, as sustainable development is a compound concept; therefore, audiences cannot grasp the relationships among the issues and challenges of sustainable development. In this regard, as World Summit of Sustainable Development (2002) highlighted, education from early childhood to adult can move the SD towards practice.

Subsequently, Agenda 21, the major action program published by UNESCO in Rio de Janeiro (1992) clearly indicated the introduction of SD discourse as well as ESD into school curriculum throughout the world. United Nations Decade for Education for Sustainable Development (2005–2014) issued action themes, as overcoming poverty, gender equality, health promotion, environment, rural development, cultural diversity, peace and human security and sustainable urbanization (UNESCO, 2005).

In its early manifestations, education sustainable development proposed to development of environmental considerations in economic development and mostly referred environmental education issues. Furthermore, the differences between EE and ESD were emphasized by United Nations by 2005–2014 the Decade for Education for Sustainable Development (2012). Environmental Education is described as “a well-established discipline, which focuses on humankind’s relationship with the natural environment and on ways to conserve and preserve it and properly steward its resources.” (p. 18) on the other hand; Education for Sustainable Development is described “to encompass environmental education but sets it in the broader context of socio-cultural factors and the socio-political issues of equity, poverty, democracy and quality of life.” (p. 18).

All three pillars of sustainable development – environmental, social-cultural and economic- are equally included in ESD with a whole approach. ESD aims to enable all individuals to gain the knowledge and attitudes required for ESD practices (Venkataraman, 2009). UNESCO (2002) proposes the vision of ESD as to provide opportunity to everyone starting from early childhood to contribute for a sustainable

future. The UN Agenda 21 identified four major motivations to begin the work of ESD in terms of improving basic education, reorienting existing education to address sustainable development, developing public understanding and awareness, and providing training for all sectors of society. In this regard, obviously, the most critical role belongs to educators. UNESCO proposed a guideline for educators to describe the basic prerequisites:

- Acknowledge their key role as ‘cornerstones’ of effective ESD programmes (co-developers of the curricula);
- Understand the cross-cutting and multi-disciplinary nature of ESD;
- Avoid overloading the curriculum and to solely link ESD to one or two disciplines;
- Be open to diverse learning strategies to effectively implement ESD principles and contents at the school and classroom levels;
- Appreciate the importance of multi-stakeholder partnerships working together to overcome shared problems (p. 26).

In conclusion, ESD is addressed as a core movement for 21st century developing inter-relatedness among environmental, social-cultural, and economic issues for the present and the future (Spearman & Echhoff, 2012). The Earth Summit (1992) declared that sustainable development can be achieved if all people from all ages contribute for a sustainable society. ESD is not simply an instructional process, rather than, education is a process that orientates future planning and creation of a sustainable life. Furthermore, education is one of the key components of enhancement in sustainable development as pointed out in the World Summit (2002) which was held in Johannesburg. In this meeting, stakeholders mainly concentrated on ESD and declared the Decade on Education for Sustainable Development 2005-2014. The most important outcome of International Implementation Scheme for the Decade of Education for Sustainable Development is that ESD should be embedded in the whole curriculum, not be perceived as a separate subject. (UNESCO, 2005). The goals of the United Nations Decade of Education for Sustainable Development 2005-2014 have

indicated that principles, values, and practices of sustainable development into all aspects and levels of education and learning. Visions of ESD prescribe a balance between human and economic well-being with cultural traditions and respect for the environment. Feine (2012) suggested that ESD have to take account of and ensure the balance between three integrated dimensions of SD. According to Feine (2012) the early childhood years are not only critical for the integration of ESD into ECE, but also, ECE is the main process to facilitate integration of complex SD issues into children's life.

When the progress of education for sustainable development in early childhood education is reviewed, it was found that as a starting point environmental education has been well- developed in ECE; on the other hand, ESD awareness among countries was extremely limited with the expectation of accelerating this process. In fact, there has been a growing awareness of the importance of ESD in ECE with contribution of research and development around the world. UNESCO supported this process not only through the publishing a variety of research and discussion papers but also establishing the Early Years Chair in ESD. These efforts have been exceedingly noticeable; however, as the key stakeholders and UN Agencies pointed out a great deal of work to be done generating ESD practice among world. It was reported that ESD in ECE is obviously an emerging interest of the world. Furthermore, in Australasia and partially in Scandinavia, ESD in ECE has been considered as a hard work in progress.

As mentioned above, there has been a global movement to bring ESD into ECE. According to Bently and Reppucci (2013), young children need to encounter challenged issues of SD into their lives. Engdahl (2011) reported an international study and revealed children's capability to grasp ESD issues. In this report, named as "Children's Voices about the State of the Earth", 9000 preschool-aged children from 28 countries declared their thoughts, comments, and understanding about the earth and its needs by interview sessions. In these interviews, participant children are presented a picture in which children are washing the earth with watering cans,

sponges, and buckets surrounded the earth. Interviewers then continued with conversations about what might be happening in the picture and why children might be doing these things. Children's answers indicated that young children are aware of their actions on earth, causes and consequences of a bad environment, actions that protect the earth, aesthetic sense of and human values about the earth, caring for the earth as common task and complexity of sustainable development. What Engdahl's study inspected that young children are quite capable of engaging in discussions about SD and can generate many ideas about why we should care for the earth. In this sense, it can be concluded that young children have eagerness to learn about issues of SD, the only they need as Boutte (2008) highlighted, assistance in processing them in developmentally appropriate ways to form values, beliefs and attitudes about SD.

2.2 The Role of Early Childhood Educators' in ESD

ESD should mutually refer the three integrated dimensions of SD in terms of environmental- social- cultural and economic dimensions. In this regard, challenge of early childhood educators is to develop educational systems, curriculum and pedagogic practices that are sustainable in terms of each of these pillars. What is expected from the ECEEs is to integrate issues of SD into their ongoing curriculum; however, ECEEs may know little or nothing about SD and / or how to integrate it. The implementation of ESD may be lacking if teachers do not have a thorough understanding of sustainability.

When ESD research is examined, it is seen that relevant literature partially highlighted the teachers' thoughts of sustainable development (Björneloo, 2007; Borg et al., 2012; Öhman, 2004 Jonsson, 2008; McNaughton, 2012). There are only few studies investigating pre-school teachers' comprehension of ESD.

In their study, Hedefalk, Almqvist and Östman, (2014) aimed to describe and evaluate research articles about education for sustainable development and early childhood education published during the years 1996–2013. The researchers reported their main

objective as to answer these questions: (1) How is ESD defined by researchers in ECE? (2) What are the major research inquiries and results? (3) What does the research say about young children acting for change in relation to sustainability? They highlighted two different definitions of ESD: first, as a threefold approach to education based on questions concerning education about, in and for the environment; and, second, as an approach to education that includes three interrelated dimensions: economic, social and environmental. Secondly, they tried to identify how teachers understand ESD and how ESD can be implemented in educational practice. Finally the researchers explained that participants teachers evolves ESD as teaching children facts about the environment and sustainability issues to educating children to act for change.

Similarly, Flogaitis and Agelidou (2003) reported a research study to refer Environmental Education practice in the kindergarten schools of the Athens area. They established an overall picture on whether and how kindergarten teachers are involved in the application of EE. According to the researchers (2003), some teachers do not take an active role in supporting children for playing an active role in environmental issues because they do not have enough knowledge about the environment. Only a very small part of the pre-school teachers defined ESD as changing children's behavior for a sustainable future. Their results indicated that emphasis should be placed on the regular in-service training of teachers about theory and practical applications. They also suggested that in-service training should take advantage of self-learning practices and be promoted through distance-learning education structures.

On the other hand, other research on ESD has explored teachers' perceived barriers to ESD (Bursjö, 2011). The study focused on different ways teachers and teacher candidates reflect upon their approach to ESD and their problems they confront in their ESD teaching. For the purposes of their study, they designed a qualitative approach with interviews (open-ended questionnaires) combined with focus-group as well as individual interviews. Student teachers' described their perceived barrier to ESD teaching as colleagues, time and the curriculum. They also reported that they

utilize the teaching methods in ESD as collaborative and interdisciplinary. The teacher candidates also reported that they have not received any professional development concerning education for sustainable development. Researchers also reported that their participants reflected an explanation of how they teach for sustainable development. All of the teachers and teacher candidates describe education for sustainable development as difficult to teach since it involves conflicts and contradictions. The participants also reflected their comfort in content and teaching methods. This report also presented that some teachers in the study avoided education for sustainable development practice because of its political connotations.

Moreover, in a study by Dymont and et al in 2014, pre-school teachers reported the purpose of ESD as giving critical thinking skills to children. In their study undertaken in Australia, qualitative and quantitative questions revealed that early childhood educators do not have strong thoughts and practices in education for sustainability (Efs). Instead, the participants of their study mostly practice environmental education activities. Researchers concluded that educators' thoughts of ESD seem to influence their educational practices. They also believed that even though Australian national curriculum frameworks and guidelines point to the importance of education for sustainable development in the early childhood education to strengthen early childhood teachers' understandings of sustainability and how to implement ESD practice. They suggested that it would be useful for educators serving both eco and ordinary, to join in professional development that contributes to the holistic understandings of sustainable development and education for sustainable development.

On the other hand, Pramling Samuelsson (2011) discussed readiness of the young children for ESD and highlighted that children are mature enough to communicate about ESD issues since they can experience and recognize what is going on around the world they live (p. 107). Mckeown (2013) pointed out that children are individuals who need to learn knowledge, skills, attitudes, and beliefs about developing a sustainable world. In this sense, ESD in ECE should be responsive to children's meaning-making; therefore, educators can be active agents in that process (Engdahl,

2011). Without the development of appropriate SD knowledge and positive attitudes towards SD, educators may have deficiency in practicing ESD issues in ECE settings (Boutte, 2008). Understanding children's perspectives can lead early childhood educators to introduce ESD in a way that responds to children's needs and ideas about sustainable development in a developmentally appropriate way. In this regard, Orr (1992) argued that educators' should improve students' competences to think critically and schools should help their students reach that level of thinking and promote their awareness regarding environmental, social- cultural and economic issues. McKeown (2002) suggested that every discipline and every teacher can contribute to ESD. ESD has already existed in the formal education curriculum; however, in order to benefit from concept of SD effectively, teachers should contribute.

The first requirement of teacher contribution to ESD is to assure that teachers understand the concept of SD. Understanding the ESD concept is important, however; considering not only about what we are teaching to young children, but also how we are teaching is significant. In this regard, Green (2013) described six key practices that support sustainable development through early childhood education. These are interdependent, developmentally appropriate, and participatory and problem based nature of sustainable development. In addition, relevancy of SD with children' life and engagement with the community was attempted to meet the needs of the context.

According to Samuelsson (2011) ECEs are responsible to improve their ESD practice based on the integrated three pillars. The framework of 7R (respect, reflect, reduce, reuse, repair, recycle, and responsibility) developed by Samuelson and reviewed by Kahrman-Ozturk, Olgan and Guler (2012) can be a reflected as ECE practices into ECE settings. In addition, Spearman and Eckhoff (2012) interpreted the goals of ESD through 6Es of Sustainability in terms of ecology & environment, economy & employment, and equity & equality. Both 7R and 6E can help educators what to integrate in ECE curriculum.

As with all practice in ECE, ESD practices should be developmentally appropriate and consider how children develop and understand the world. As Copple and Bredekamp (2009) declared, optimal learning and development of children can be provided through developmentally appropriate practices.

2.3 The Role of ECO-Early Childhood Education Settings in Education for Sustainable Development: Eco versus ordinary

With the growing importance and numbers of women in working life, young children stay an increasing part of their lives at ECE settings. ECESs are the perfect places to reach a whole generation in a protected area. In this regard, young children can test and develop their main life skills and their own lifestyle. Thus, ECESs can be seen as a role model for the improvement of sustainable development.

Actually, traditional early childhood curriculums among the world have provisions to embed principles of education for sustainable development into early childhood education (McKeown, 2002; UNESCO, 2009). In this respect, early childhood education for sustainable development can be accomplished by diverse teaching methods and strategies such as field trip, play, drama, etc. In addition, excessive amount of material regarding issues of sustainable development can be provided for young children utilizing emerging early childhood education curriculums. For example, Davis (2005) through Sustainable Planet Project revealed that how curriculum and pedagogical activities are integrated into already designed curriculum in Australia. One of the other endeavors to integrate ESD into ongoing ECE program was carried out in Thailand. Primary and secondary students were participated in education for sustainable development program over 3-4 days (Finch, Freitas, Hall & Roach, 2006) and ESD activities were experienced. Additionally, the study conducted by Nash (2015) revealed that ESD could be embedded to early childhood Montessori classroom. In this respect, educators from Spain integrated the general objectives of Spain national early childhood education curriculum into ESD framework (Martinez Agut, Ull, & Aznar Minguet, 2013). Correspondingly, Prince (2010) developed the

New Zealand's national early childhood curriculum TeWhariki and presented that TeWhariki is an appropriate curriculum program that could be reoriented to provide unique opportunities for ECE for SD. To summary, ECE for SD do not require a new strategy to immerse children into sustainability. On the other hand, through restructuring existing curriculum, ESD can be encompassed in to early childhood. When examining the initiatives in Turkey about reorientation of ECE curriculum towards ESD, the project called Minik Tema from Turkey guided preschool children to investigate natural environment, interrelationship among the cycles and explore the environment through experiences in Turkish context (TEMA, 2013). In addition, Gülay-Ogelman, (2012) attempted to establish environmental awareness among 5-6 year-old preschool children through soil education project. Related to reorienting curriculum, Cengizoğlu (2013) implemented a sustainable development program for young children regarding goals and the indicators of Turkish National Early Childhood Curriculum.

Beside these enterprises to reorient education towards sustainable development, in the 2012, UNESCO published a report named 'Shaping the Education of tomorrow' and discussed school models in terms of facilitating ESD. Hence, eco-schools are regarded as an example to enrich ESD in educational settings. The report emphasized that Eco-Schools are the examples of successful ESD implementations which can be effective in behavioral change of school community from children to teachers. Hence, Eco-Schools program is not just related with the content of curriculum but also setting and culture.

Eco-school program is now the main vehicle referring SD in all levels of education both in the World and in Turkey (Eco-schools, 2015). The Eco-Schools International Program was develop as response to needs of the earth that emphasized at the 1992 UN Conference on Environment and Development. Eco-Schools Program aims to encourage school participants from students to administer to take an active role in how their school can be run for the benefit of a sustainable world (Eco-Schools, 2013). One of the most important objective of eco schools to develop best practice in

education for sustainable development with a holistic perspective. In this regard, eco-school program promotes the learners' SD knowledge, attitudes and practices. Considering teachers, eco-school program guides teachers to design school environmental, to conduct projects and to motivate students to advance in knowledge, attitudes and practices about the issues environment. Finally, eco-schools aim to promote using resources more efficiently improving quality of the local environment.

As an ultimate goal, the Eco-schools program advocates to improve knowledge, perceptions, attitudes, beliefs, and behaviors of whole school community in terms of students, teachers and other staff about SD (Eco-Schools, 2013a) in a professional way. In contrast to one off workshops or materials, eco school program can be a good example of long term PD since it follows a circle of change process including 7 steps. These are (1) forming an eco-school committee; (2) carrying out environmental review; (3) preparing an action plan; (4) monitoring and evaluating the process; (5) doing curriculum work; (6) informing and involving everyone, and (7) producing an eco-code.

The Program started in 1994 in four countries: Denmark, Germany, Greece, and the UK. United Nations Environment Program (UNEP) regarded eco-schools as a model for ESD. Eco-school program providing both indoor and outdoor education opportunities related to daily life for students and teachers achieves ESD in member schools from early childhood to upper grades (Bajd & Lescanec, 2011). Fifty six countries around the world, including 32,156 schools, 9,125,460 students, 628,005 teachers, and 5013 local authorities implements the eco school program. With the aim of supporting SD and enhancing ESD, Turkey enrolled in Eco-School Project which is supported by Foundation for Environmental Education in Europe (FEE). Since Turkey enrolled in Eco-School project, many schools from preschool level to high school and private to public has been integrated ESD into their curriculum (Kolukısa & Uğurlu, 2010). Several studies have been developed in order to assess the contribution of Eco-Schools Program on the development of student's environmental literacy. Krnel and Naglič (2009) compared environmental literacy between Eco-

Schools and ordinary schools of Slovenia and concluded that knowledge was the only component that showed a statistical significant improvement. In Iceland, a comparison of environmental knowledge, attitude, and actions between students from Green-Flag schools and traditional schools showed that Eco-School students were more aware of environmental issues but did not have more environmental knowledge or attitude. However, this study showed that, although eco schools program have little effect on students' environmental knowledge and attitude, it could encourage, through situational factors, the proenvironmental actions directly linked to the facilities available in the school, namely recycling containers (Hallfreðsdóttir, 2011). In addition, Pauw and Van Petegem (2011; 2013) found that Eco-Schools Program mainly influenced their students' environmental knowledge, but had no positive effect on environmental attitude and behavior, but Ozsoy et al. (2012), conducting research on private schools of Turkey, found a significant increase in students from eco-schools, not just in knowledge but also in environmental attitude.

A qualitative research paper was published by Mogensen and Mayer (2005) aiming to describe characteristics of eco-schools in 13 countries. Researchers examined school programs and concluded that there are differences between eco-school programs implementations among schools. Furthermore, researchers pointed out that eco-schools programs should not be considered as only physical facilities like using recycle bin, having outdoor area to play, etc. Additionally, perception of its educational effects should be grasped. Researchers added that eco-school implementation promoted the environmental performance of schools with regard to water, waste, energy and greening-related aspects but what to extent eco-schools achieve educational gains in terms of an increase in knowledge, attitudes, practices of school community from students to teachers remain as a point that has not received the necessary attention. In this regard the current study intends to fulfill this gap to examining the mediator effect of eco-school program on teacher ESD practices.

2.4 International and National Studies on ECEEs' Understanding about Need for and Implementation of ESD

When literature reviewed, the research conducted by Arlemalm-Hagser and Sandberg (2011) explicitly conferred ECEE' perceptions about ESD. In this qualitative research, thirty two ECEEs stated definitions of sustainable development and presented the documentations about the process. Teachers' definitions of sustainable development and documentation of samples were analyzed. The four major themes identified firstly as fundamental values like equality, and diversity; secondly nature, was referred; third theme appearing was learning, and finally the physical needs of children was considered. Arlemalm-Hagser and Sandberg (2011) suggested to perform studies investigating teacher's perspectives and understandings of ESD.

The other research conducted by Inoue, O'Gorman and Davis adopt a mixed method and asked participants both qualitative and quantitative questions. Aim of this study was to grasp ECEEs' understandings and practices about ESD and comparing their approach with their Japanese counterparts. A hundred and nine ECEE's participated in the study and presented that teachers mostly practice traditional environmental education activities. In addition, the importance of sustainability within early childhood curriculum appears to be inadequate in strengthening early childhood teachers' ideas of sustainability and how to practice it effectively. Researchers suggested professional development opportunities can be beneficial for ECEEs both in preservice and in-service, to build deeper understandings of sustainability and its implementation in their settings.

Hill et al. (2014) declared that ECEEs participated in their study had narrow perception of SD. Their perception is reported as limited with environmental dimension. Not only economic issues but also social- cultural issues were referred by ECEEs. Hill et al. also reported low levels of actual ESD practice.

The scarcity of relevant literature made this study extend the beyond of early childhood education. Therefore, the studies related to ESD conducted with educators of higher grades, and preservice teachers were reported and discussed.

Björneloos' research (2007) focused what Sustainable Development means for teachers in the accounts of their teaching. This study utilized qualitative approach with a hermeneutic methodology to investigate and understand teachers' Sustainable Development perceptions. Seventeen teachers participated in the study and their statements was collected, analyzed and interpreted. Björneloo (2007) categorized teacher statements thematically and comprised five different levels of sustainable development theme about what teachers want their students to shape a sustainable future. The first theme is about encouraging students understanding about holistic perspective of the world. Secondly, teachers make their students to hold an active role in society. The third theme focused on guiding their students to develop empathy with other people. Empowerment and ability to communicate is the forth theme defined by the teachers participated in Bjöeneloos' study.

In the paper conducted by (Dyment, et. al. 2014) researchers investigated preservice teacher's understandings of sustainability. In addition, they explored preservice teachers' willingness and capacities to integrate SD issues into their own teaching practices. The participants (N=392) completed a quantitative survey with a series of Likert Scale questions and were asked to list "5 words" when they think of sustainability. Researchers reported that preservice teachers had generally limited understandings of SD and ESD. In addition, their limited understanding were dominated by an environmental focus. Finally, they concluded that in order to improve narrow environmental understanding of SD and ESD, further research should explore the factors that not only restrict but also courage teachers educators to embed SD more explicitly.

Kennelly, Taylor, and Jenkins (2008) reported a qualitative study conducted with eight teachers engaged in the Sustainable Schools Programme (SSP) in New South Wales, Australia. Teachers were interviewed and their understandings about key

components of ESD. The findings of this study indicated that the program encouraged some of teachers' views. However, most of the teachers suggested that teachers need wider professional support about integration of ESD into curriculums.

Borg, Gericke, Höglund and Bergman (2011) reported that all Swedish teachers from all subject areas are responsible for integrating sustainable development into curriculum with a holistic perspective; however previous research reported that SD is differently perceived by educators from different subject areas. In this regard, researchers aimed to investigate how teachers' subject area influenced their ability to implement a holistic perspective of ESD. In addition, they explained the barriers that teachers experienced. 224 Swedish upper secondary schools teachers were included in the study and an online questionnaire was sent and answered by 3229 teachers at these schools. The data were analyzed using Pearson's Chi-square test and one-way ANOVA. According to results, teacher's subject areas were regarded as having influence on their perceptions. In addition, the most referred barrier by teachers was lack of examples revealing how to include SD in their teaching and necessary expertise about SD.

Bernardino (2000) intended to explore tertiary teachers' understandings of the theory and practice of education for sustainable development to contribute in highlighting ambiguities and contradictions. The qualitative study included thirteen research participants from two higher education institutions in Southern Philippines. Theory and practice of education for sustainable development was investigated through interviews, participant observations and document analysis.

Findings of this study indicated conflicts of teachers related to ESD. In other words, they reported some contradictions about concept and practice of ESD. As a conclusion, researchers disclosed that tertiary teachers desired for change in education in terms of goals, curricular structure and pedagogy.

In context of Turkey, there has been limited number of research studies examining ECEE's understandings on sustainable development. Alkis and Ozturk (2007) conducted a study in order to determine geography pre-service teachers' understanding of and attitudes towards the concept of sustainable development. In this aspect, these researchers administered a semi-structured questionnaire to totally 165 third-year students who had enrolled all geography modules. Researchers found that these participants did not have satisfactory level of understanding on sustainable development. Some of the participants associated this concept with effective use of natural resources or they linked this concept with the long-term development plans and identified it as maintained (continuous) development. On the other hand, geography preservice teachers could not develop an understanding of sustainable development in the context of poverty, social equality, human well-being, and social inclusion. Furthermore, the participants usually had favorable attitudes towards sustainability issues in local and national scale. But, the same trend could not be observed when it comes to global social issues such as poverty and underdevelopment.

2.5 Studies on teacher practice and related variables

Although there has been much documentation of the goals and aims of Sustainable Development and Education for Sustainable Development understandings, the literature holds a dearth of evidence about educator's knowledge, attitudes and practices related to SD and ESD. On the other hand, environmental education research highlighted teacher outcomes modeling a plenty of variables. In the current study, the gap in existing research about ESD practices, attitudes and knowledge is aimed to fulfill through utilizing EE research.

When the models reviewed explaining teacher practices, environmental attitudes and practices were related based on a linear progression from knowledge to attitudes, which led, in turn, to pro-environmental behavior. This model named as knowledge-attitude- behavior model and proposed by Hungerford & Volk, (1990). During the

process, this model created based on the linear relationship among knowledge and attitude merely was criticized as being too simple to explain environmental practices. Further, more elaborate and complex relationships including other factors that influence behavior were proposed for example theory of planned behavior proposed by Ajzen (1985) and Model of Responsible Environmental Behavior proposed by Hines, Hungerford and Tomera (1986). When these models examined, it can be concluded that expected behavior is prompted by internal and external factors frequently referred by psychological and sociological models. According to relevant literature, internal factors refer motivation, knowledge, values, attitudes, emotional involvement, and locus of control besides external factors are represented by physical, institutional, social, and cultural factors. According to Courtenay-Hall and Rogers (2002) transforming human behavior into more environmentally friendly is the main of EE. Despite all criticism towards knowledge- attitude- behavior model, an educational approach that targets the internal factors as related with environmental behavior. Direct influence of knowledge on behavior is controversial in the relevant literature. While some researchers agreed that knowledge cannot predict necessarily behavior (Schultz, 2002; Stern, 2000), on the other hand; some researchers proposed that lack of knowledge can be a barrier to forming behavior (DeYoung, 2000; Schultz, 2002). According to Schultz (2002) rather than directly determining environmental behavior, environmental knowledge might be instrumental in forming attitudes that inspire behavior.

As a psychological component, environmental attitude represents a set of values and beliefs regarding the feelings, pros or cons of an individual and what he/she favors or disfavors in terms of environment or the objects related to the environment (Hines et al., 1986/87). Newhouse (1990) suggested that one of the most effective variable associated with environmental behavior is attitude. Many studies have been conducted to investigate the relationship between environmental attitude and environmentally friendly behavior. In this regard, some studies defined attitude as a predictor of EFB (Boubonari et al., 2013; Esa, 2010; Hines et al., 1986/87; Hsu & Roth, 1999) whereas some studies did not (Hwang et al., 2000; Tuncer et al., 2009).

In an early study, Hines et al. (1986/87) investigated the relationship between environmental attitudes and environmental behavior with a meta-analysis study. They observed a moderate positive relationship between environmental attitudes and environmental behavior. Since the current study is the first explaining predictor factors of ESD practices, EE research and environmentally friendly practices were considered to exemplify relevant literature.

Considering EE research in the related literature, the assumption is that environmental related variables enhance environmentally friendly behaviors. In this regard, a variety of environmentally related variables were examined with different samples and research designs. To brighten missing parts of ESD literature, this studies selected from abroad and Turkey were presented following.

Since the Education for Sustainable Development is an emerging issue, the relevant literature investigating the interrelationships among internal - external variables and educators' practices is dearth breeding. Therefore, with the provision of environmental education research, the details about the variables chosen specifically for the present study will be handled in the following parts.

Hwang, Kim, and Jeng (2000) investigated littering practice of 523 visitors of forest in Korea. The model they proposed regarded knowledge, attitude, locus of control, and responsibility and intention to act as variables. Researchers assessed knowledge asking participants their perceived and actual knowledge of general environmental issues. In addition, attitude was examined by asking general feelings and opinions about forest. Proposed model was tested via path analysis using LISREL. Findings of the path analysis revealed that knowledge as starting point had direct effect on attitude ($\beta=.08$) indicating that having much knowledge about forest resulted with much positive attitude. On the other hand, knowledge did not have significant effect on intention to act.

Parallel to previous research, Lee (2008) also investigated the recycling and consumer practices of African American college students from Houston. In this concern, researcher examined the process of transformation of the attitudes into environmental behaviors. Adopting a quantitative research design, the survey was conducted. In the survey, beside attitude and practices test, information such as age, gender, major, marital and employment status, and current residential type were included. Results revealed that the mean scores of attitudes were 50.31 (SD=6.79) out of 75 indicating a moderate level of environmental attitudes. Regarding recycling behavior, mean was found as 10.01 (SD=5.24) out of 25 and conservation behaviors had a mean of 17.54 (SD=4.31) out of 30 indicating inadequate recycling and conservation behavior.

The study was conducted by Goldman et al., (2006) with 765 pre-service teachers in three major teacher-training colleges in Israel, examined their environmental practices with respect to background variables and environmental awareness. Researchers assessed environmental behavior through two parts. In the first part, 20 environmentally related activities rated by participants based on Likert-type scale from 1 (never) to 5 (almost always). In the second part, participants were asked multiple choice questions. In addition, demographic part included information about age, gender, hometown (rural and urban), and ethnicity, etc. According to results, pre-service teachers have moderate environmental behaviors and high environmental awareness. In terms of the relationship among demographic variables and practices, pre-service teachers growing up in rural areas tended to exhibit more environmentally friendly practices and environmental activism compared with pre-service teachers from urban areas. In addition, the study investigated appositive relationship between the students' engagement in environmental issues and level of mother's education. In addition, pre-service teachers were reported to exhibit more environmentally responsible behavior who were from NGO's than their counterparts who were not.

Pe'er et al. (2007) investigated the environmental attitudes, knowledge, and behavior with the same sample of their previous study (Goldman et al, 2006). Thus, 765 new students from three teacher-training colleges in Israel participated to the study.

Environmental knowledge of participants were evaluated by a multiple-choice questionnaire. Environmental attitude was also assessed with a Likert type scale. Practice was measured with the question that how frequently they performed given environment-related activities using a 5-point, Likert-type. Descriptive and correlation statistics were run to analyze collected data to determine environmental attitudes, knowledge, and practice. Considering descriptive results, pre-service science teachers were reported to not to have high levels of knowledge but high levels of environmental attitudes. Considering environmental practices, moderate levels of performance was observed. Researchers concluded that pre-service teachers did not have enough knowledge but they had positive attitude toward environment and environmental education. Correlation analysis of these three variables revealed there was a positive relationship between all variable pairs. In other words, relationship between behavior and attitude was founded as the highest ($r = .49$) and relationship between behavior and knowledge ($r = .23$), and knowledge and attitude ($r = .33$) was lower respectively.

Likewise, Esa (2010) examined the relationship among knowledge, attitude, and environmental practice of 115 pre-service biology teachers in Malaysia. The instrument included two sections. Along with environmental knowledge, attitude, and behavior of the pre-service teachers, background variables were also measured. Environmental knowledge was assessed by 27 items related to the concepts and facts. Attitude was evaluated through 17 four-point Likert-type items in terms of responsibility of human towards the environment and environmental practices were measured with 17 items on a scale ranging from 1 (never) to 4 (always). According to results, pre-service teachers had high levels of knowledge; similarly, they revealed high attitude level with a mean of 17.16 out of 22. When it comes to environmental behavior, the mean of attending an environmental action was reported as 9.66 out of 17. To conclude, these results showed the similar tendency with previous studies. Pre-service teachers had adequate environmental knowledge and positive attitudes toward environment but less environmental practices. In this regard, link between knowledge

and attitude ($r=.56$) was observed to be higher than the relationships between knowledge and practice ($r=.26$), and practice and attitude ($r=.26$).

Similarly, knowledge, attitudes, and self-reported behaviors of Greek pre-service primary teachers' specific to marine life were examined by Boubonari et al. (2013). The sample of the study included 445 pre-service primary teachers. Knowledge scale included 14 items, the attitude scale comprised of 13 items and behavior scale consisted of 12 items. According to results, researchers reported that Greek preservice teachers had moderate level of knowledge although they produced high levels of attitudes towards environmental issues. Regarding behavior, preservice teachers demonstrated higher participation to individual action but exhibited lower participation to collective action. In addition, results of this study indicated an increase in knowledge related to positive attitudes toward environment ($r=.24$, $p<.01$), however, behavior was not associated with knowledge. Considering relationship between attitude and behavior, relatively higher association behavior dimensions and attitude was observed.

At this perspective, to understand what motivate educators' knowledge, attitudes and practices, environmental education researchers have been worked on demographic variables brought from childhood and created a wide debate in environmental education research (Palmer & Suggate 1996; Chawla 1998). In the current study, some selected demographic variables were used to grasp which auto demographic variables relate with ESD practices of ECEEs. These were childhood location, household type in childhood, and membership to an NGO.

These demographic variables mostly used in environmental education research with a qualitative way of investigation. Palmer (1998) gathered data from 1259 participants, who were environmental educators and students of education, with international collaboration of nine countries (Australia, Canada, Greece, Hong Kong, Slovenia, South Africa, Sri Lanka, Uganda, and the United Kingdom). According to

results, 75% of participants reported that they were participated in outdoor activities during their childhood.

Sward (1999) aimed to investigate environmental sensitivity of environmental professionals living in El Salvador with the aim of guiding environmental education in developing countries (Sward, 1999). She proposed that a set of affective features in terms of appreciating caring or valuing environment can be resulted in adopting a more emphatic perspective towards environmental issues. With a qualitative perspective, participants of her study covered any individuals was born and raised in El Salvador as well as and closely worked on environmental issues. Researcher aimed to understand interactions of participants with environment in terms of things like childhood experiences, parental role models, outdoor activities, farming or friendships.

In her study Chawla aimed to identify significant life experiences of environmentalists. Chawla (1999) conducted a survey with a broad range of environmentalists from Kentucky and Norway who were involved with “recycling and waste management, pollution and radiation, transportation, land use planning, habitat and wildlife preservation, and environmental education” (p. 16). Chawla (1999) conducted interviews lasting approximately 2 hours with 56 participants and sought for answers the sources of commitment to environmental preservation and inspiring experiences brought from childhood and continued in adulthood. She categorized the responses into 11 sources of commitment, from most frequently mentioned to least: experience of natural areas, family, organizations, negative experiences, education, friends, vocation, sense of social justice, book or author, principles or religion, and concern for children or grandchildren. As a result, Chawla concluded the main sources for their environmental interests as experiences in nature, influences by family, participation in organizations, negative environmental experiences and environmental education.

Hsu (2013) conducted two phased study. For the first phase, his major purpose was to examine significant life experiences of environmental activists in eastern Taiwan. In this qualitative part, 40 autobiographical memories were collected and content-analyzed. Significant life experiences in terms of natural experiences, books or authors, environmental organizations, adult education, loss of beloved natural places, justice, friends, student organizations, principles, religion, fear of pollution and environmental disasters, primary or secondary education, parents or relatives and vocation were derived from respondents memories. Based on these accounts, a quantitative questionnaire of 24 items on significant life experiences variables was developed for the phase 2. 430 participants were included in this phase. 82 of them were determined as environmental activists with a high level of environmental action. Hsu concluded based on findings of his two phase study that the significant life experiences identified in Study 1 could effectively differentiate environmentally committed people from those apathetic to environmental protection. In addition, the research investigated that 54.6% of the variances in environmental actions could be explained by the significant life experiences.

Erten (2005) investigated pre-school prospective teachers' environmental knowledge, attitudes and behaviors. Sample of his study comprised of 352 preservice teachers. Questionnaire included 20 items for environmental attitude and 20 items for environmental behavior with a Likert type and 20 multiple choice questions for knowledge. Preservice teachers responses to questions tended to present an inconsistent line. Furthermore, it was reported in this study that great amount of inconsistency regarding knowledge and behavior responses. Similarly, inconsistent responses were observed regarding attitude and behavior items.

Similarly, Sadik and Sari (2010) investigated preservice teachers' (n= 542) environmental knowledge, attitudes and practices regarding environmental issues in terms of gender, enrolling environmental related course, being membership of any NGO. According to descriptive results pre-service teachers had high level of environmental knowledge despite moderate mean scores regarding environmental

attitude and behavior. When analyzing inferential results, female students had significantly higher mean scores than males regarding environmental behavior and attitude. However, no meaningful differences were found on knowledge, attitude and behavior tests in terms of attending an environmental course or not. And similarly, no significant differences were observed on environmental knowledge, attitude and behavior scores based on having membership of an environmental organization or not.

Tuncer et al. (2009) examined environmental literacy levels of 648 preservice teachers. The questionnaire included 45 items regarding environmental knowledge, attitude, uses and concern. According to results, nearly half of preservice teachers were reported to have insufficient level of environmental knowledge while their level of environmental attitudes were labelled as high. Tuncer et al. (2009) reported positive and low relationship between environmental behavior and environmental knowledge ($r=.17$, $p=.01$); however, the researchers declared that no correlation was observed between attitude and behavior. Findings of the study recommended that more environmental attitude and adequate knowledge might result in more concerned pre-service teachers.

Likewise, Karatekin (2013) conducted a quantitative study with 824 pre-service teachers to investigate and compare the environmental literacy levels based on their major teaching areas. The questionnaire included 5 subscales in terms of personal information, affective tendencies towards environment, environmental behavior, environmental knowledge, and cognitive skills. According to results, student teachers were found to have moderate environmental knowledge and deficient behaviors. Moreover, results of One Way Analysis of Variance (ANOVA) revealed that preservice teachers' environmental literacy levels differentiated in terms of their majors. Follow up analysis indicated that geography teachers significantly had the highest environmental literacy level than pre-service teachers educated in social studies and pre-service teachers educated in science education. Researcher suggested

that education in universities should be designed to enhance all components of environment literacy regardless of majors.

Factors promoting the environmental behaviors have been handled from different theoretical perspectives in many studies with pre-service teachers abroad and in Turkey. The pattern among knowledge, attitude, locus of control and behavior seems to be almost the same for all research regardless of environmental behavior types. Pre-service science teachers generally have inadequate environmental knowledge but they have positive attitudes toward environmental and they feel responsibility and power on the solution of environmental problems. However, they still have not developed intended environmentally friendly behaviors. Therefore, there are gaps between these variables and behavior. In order to find out this gap and to better define the environmentally friendly behavior, maybe some other variables should be used in addition to those abovementioned. There is a need for a study related to environmentally friendly behaviors of pre-service teachers with new additional variables. In this regard, environmental knowledge, environmental attitude, and locus of control which are the most popular predictors of EFB were selected for the current study. In addition to these, pre-service teachers' optimistic and pessimistic perceptions as psychological factors toward environmental issues also included in the scope of this study. Moreover, gender, hometown, being a member of any environmental organization, and taking courses related to environmental issues are also determining in identifying the profile of Turkish pre-service science teachers.

Based on the summary of referred literature above, it can be conclude that correlation and regression analysis were employed in nearly all studies with the aim of describing the best predictors of environmentally friendly behaviors. Result of these studies revealed that individual tends to have positive attitude toward environment despite their inadequate knowledge levels of environmental issues and low friendly behavior.

With the light of summarized literature above, the current study hold the aim of contributing education for sustainable development literature proposing a new model

describes early childhood education educators' commitment to education for sustainable development practices.

2.6 Conclusions from Literature Review

The summarized literature review revealed the scarcity of research studies about ESD in early years. The existing studies about ECEEs' understandings about need for and implementation of ESD reported that ECEEs believe the importance and necessity of ESD in early years as well as ECEEs encountered their limited understanding of ESD and lack of formal education about as the barriers of ESD practice. When the relevant literature was examined in terms of ESD practices and predictors of ESD practices, it was seen that Environmental Education Research provided a variety of frameworks that can lead ESD research in ECE.

The current study propose that eco Early Childhood Education Settings (ECESs) would provide facilities in achieving sustainable development including whole school community as similar with environmental education research that highlighted that appropriate facilities regarding environmental issues in the ECES have importance on positive changes in teachers practices as well as in young children's perceptions, attitudes and behaviors (Rickison, 2001; Rickison, Landholm, & Hopwood, 2009) and guide young children to take action in SD process (Cutter-Mackenzie, 2010).

In addition, knowledge and attitude are linked to teachers' practices (Shuman & Ham, 1997). For instance, Hines, Hungerford and Tomera (1986) proposed environmental attitudes as a predictor of environmentally responsible behavior. In addition, their meta-analysis of research on environmentally responsible behavior revealed the mean correlation between pro-environmental attitudes and pro-environmental behaviors. In this regard the current study proposed that knowledge about and attitudes towards sustainable development may be a key element affecting ECEEs' readiness to participate in ESD practice. At this perspective, to understand the underlying motives why some educators interested in education for sustainable development the current

study have been worked on demographic variables brought from childhood and attempted to create a wide debate in ESD research (Palmer & Suggate 1996; Chawla 1998). In addition, previous experiences was also regarded in Environmental Education research as a predictor of educators' attitude and practices. At this point, the current study attempted to investigate influence of previous ESD experiences on ESD practice.

In conclusion, the framework of this dissertation compares ESD practices of ECEEs across eco versus ordinary ECESs describing the predictors of their practices with an attempt to close the gap in the relevant research area.

CHAPTER III

METHOD

This chapter is about the methodological details of the study. It is organized in eight parts including the design of the study, the population and sample, the selection and development of measurement tools, procedure, data analyses, the examination of the internal and external validity issues of the study and ends with assumptions and limitations.

3.1 Design of the Study

The main aim of the current study is to compare early childhood education educators' thoughts about ESD and ESD practices across eco and ordinary preschools as early childhood education settings (ECESs). In addition, the predictors of ECEEs' ESD practices among eco versus ordinary settings was investigated in the current study.

This study was designed as a quantitative research that depends on ECEE's self-reported answers to the questionnaires. Since the focus of this study is to compare ECEEs' thoughts about ESD and ESD practices across eco versus ordinary ECESs, the design of the study can be considered as a comparative study. Comparative types of research are used to make comparison between two or more variables without any manipulation (Fraenkel & Wallen, 2012). The current study was conducted in four of Turkey's major cities using the survey research method. The survey type of research is used to describe the characteristics of a population by asking a set of questions.

Moreover, this study is also cross-sectional in that all the participants are questioned on one occasion (Fraenkel & Wallen, 2012).

The data from the participants' self-reported knowledge, attitude, and practices about SD and ESD was gathered and analyzed by conducting various descriptive analyses and two-level Hierarchical Linear Modeling (HLM).

3.2 Population and Sample

All public ECESs and ECEEs working in these ECESs in Turkey are identified as the target population of the study. Since it is difficult to reach this large target population, all public and private Eco- and ordinary ECESs and ECEEs who work in these ECESs in Ankara, Istanbul, Antalya, and Eskisehir are identified as the accessible population. The rationale for selecting these cities was that these cities possess the largest ECES population having an Eco-school certificate (FEE, 2015). Therefore, the results of the study will only be generalized to this population.

A two-stage sampling method was used to reach the representative sample of the study. Firstly, four of Turkey's metropolitan cities: Istanbul, Ankara, Antalya, and Eskisehir where most of the eco-ECESs are located were deliberately chosen in order to reach a large enough representative sample of ECEEs serving in ECO-ECESs. Accordingly, a total of 48 ECO-ECESs were selected for the present study. Among these ECO-ECESs, 17 ECESs were from Istanbul, 13 were from Ankara, 10 were from Antalya, and eight were from Eskisehir. Of these ECESs, a total of 349 ECEEs - 136 from Istanbul, 88 from Ankara, 62 from Antalya and 63 from Eskisehir - volunteered to participate in the study. In the second stage of sampling an equal number of ordinary ECESs were randomly selected from the same province of the same cities so as to be able to make a comparison between ECO-ECESs and ordinary ECESs. Accordingly, a total of 63 Ordinary ECESs were selected for the present study. Of these ECO-ECESs, 24 ECESs were from Istanbul, 17 were from Ankara, 11 were from Antalya and 11 were from Eskisehir. Of these ECESs, a total of 489

ECEEs - 192 from Istanbul, 123 from Ankara, 85 from Antalya and 89 from Eskisehir - volunteered to participate in the study. Overall, a total of 111 ECESs and 838 ECEEs were included in the current study. In the present study, while ECEEs who were serving at ordinary ECESs were labelled as ordinary ECES group, ECEEs who were serving at ECO-ECESs were labelled as ECO-ECES group. All of these steps are presented in Figure 3.1 with the respective figures.

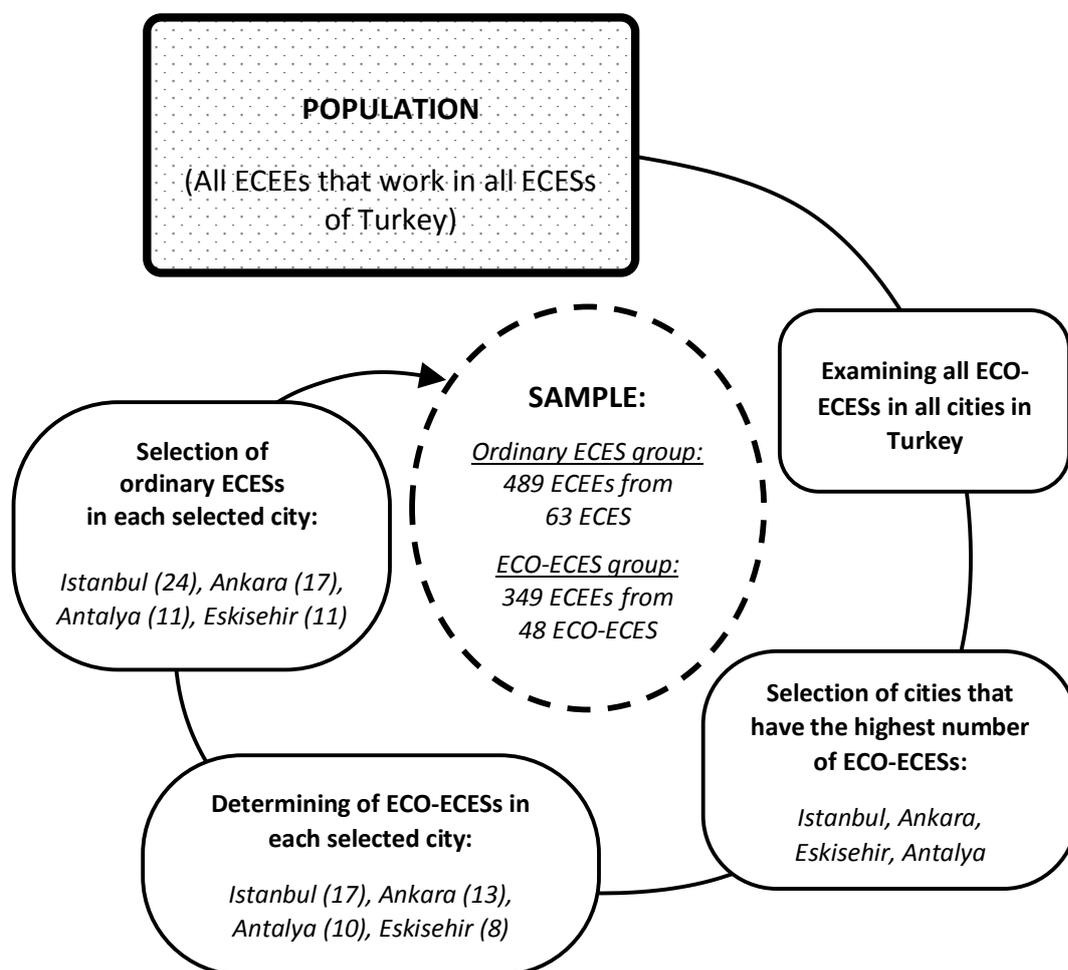


Figure 3.1. Steps of the sample selection procedure.

To define the ECESs sample in sufficient detail, the ECESs' characteristics and the number of ECEEs for each city are displayed in Table 3.1.

Table 3.1. ECESs' characteristics and the number of ECEEs in each city.

<i>City</i>	<i>Eco/Ordinary</i>	<i>Number of ECES</i>	<i>Number of ECEE in ECES</i>
Istanbul	ECO	17	136
	Ordinary	24	192
	Total	41	328
Ankara	ECO	13	88
	Ordinary	17	123
	Total	30	211
Antalya	ECO	10	62
	Ordinary	11	85
	Total	21	147
Eskisehir	ECO	8	63
	Ordinary	11	89
	Total	19	152
Grand Total for ECO		48	349
Grand Total for Ordinary		63	489
GRAND TOTAL		111	838

According to the results, 41.6% of the ECEEs served in ECO-ECESs and almost all ECEEs (98.3%) were female. 73.4 percent of the ECEEs' years of had one to 10 years of experience were whereas 21.2% of them had 11 to 20 years of experience. Additionally, the ages of the children they teach were categorized into two separate groups: 37-48 months (32.6%) and 49-60 months (59.8%). Table 3.2 provides more detailed information about the characteristics of the ECEE sample.

Table 3.2. Some demographic characteristics of ECEE sample.

		Frequency (<i>f</i>)	Percentage (%)
ECES's type that ECEEs work	ECO	349	41.6
	Ordinary	489	58.4
Gender	Female	808	98.3
	Male	14	1.7
Year of Experience	0-10 years	504	73.4
	11-20 years	146	21.2
	More than 20 years	37	5.4
Age Group	0-24 months	6	0.7
	25-36 months	18	2.2
	37-48 months	264	32.6
	49-60 months	484	59.8
	Mixed age	37	4.5
Education	Secondary School	55	6.6
	Associate Degree	177	21.4
	Bachelor Degree	545	65.0
	Master	48	5.8
	Doctorate	1	.1
	Missing	1	.1

3.3 Research Variables and Data Collection Instruments

The present study included seven variables. Four of them were categorical and independent variables: Experiences with the natural environment (Urban vs. Rural and House vs. Apartment), membership of an NGO (Yes vs. No), and ECEEs' implication of ESD practices (Yes vs. No). Three of the variables were continuous variables: ECEEs' knowledge about SD, ECEEs' attitude about SD and ECEEs' ESD practices.

Data from the ECEEs were collected using a demographic information form, three instruments and some items related to ECEEs' ESD perceptions. They were:

1. Demographic information form,
2. Scale for ECEEs' Knowledge about Sustainable Development,
3. Scale for ECEEs' Attitude towards Sustainable Development,
4. Scale for ECEEs' Education for Sustainable Development Practices,

5. Some additional questions related to the needs for and implementation of ESD.

With the exception of the demographic information form and ECEEs' ESD Practices Scale, the scales were taken from the "The perception and attitude of in-service teachers in early childhood education about Education for Sustainable Development (ESD) Survey". The demographic information form and the ECEEs' ESD Practices Scale were developed by the researchers. Figure 3.2 simply shows the ECEE-related data collection instruments.

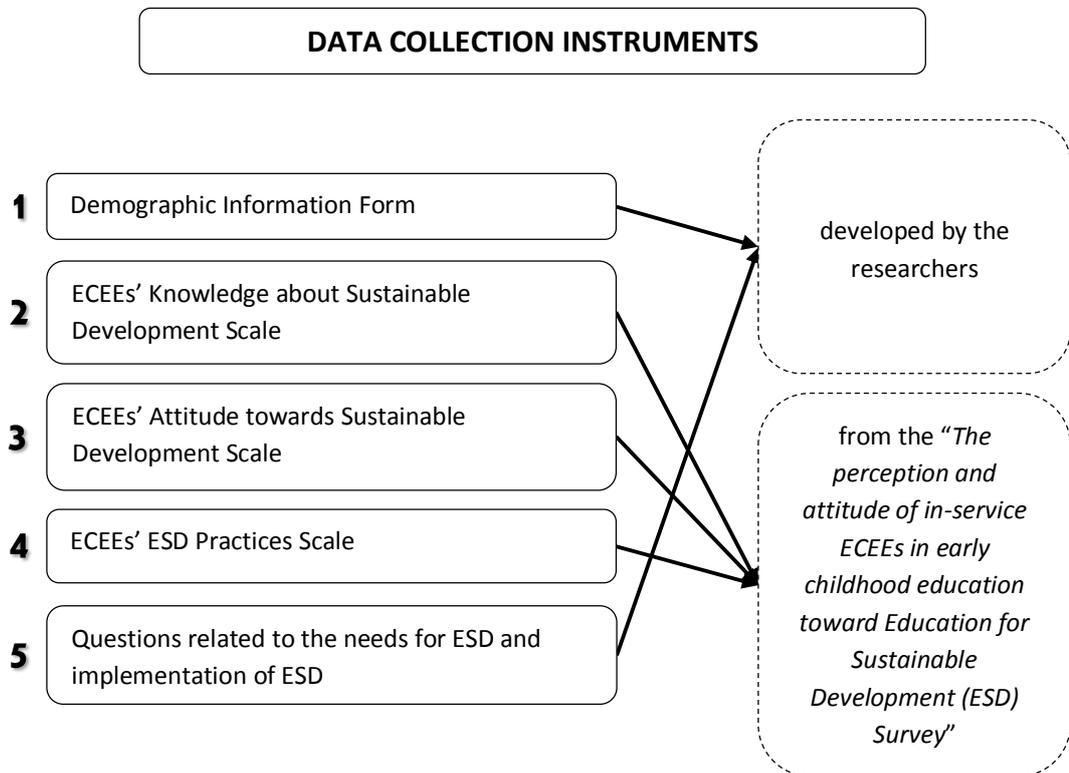


Figure 3.2. Data collection instruments.

3.3.1 Demographic Information Form

This part of the instruments used included items on ECEEs' background and socio-demographic information via some questions. More specifically, items were related to gender, years of experience, types of ECES (ECO vs. Ordinary), childhood residence (Urban vs. Rural), household type in childhood (House vs. Apartment), and membership to an NGO (Yes vs. No).

3.3.2 ECEEs' Knowledge about Sustainable Development Scale

The Scale for ECEEs' Knowledge about Sustainable Development is a part of "The perception and attitude of in-service ECEEs in early childhood education toward Education for Sustainable Development (ESD) Survey". It was developed by a Korean research group (Park, Kim & Yu, 2015). The survey includes five parts with 42 questions in total. The first part had six questions and was developed to gather information about ECEEs' background characteristics including gender, age, year of experience, graduated department, level of education, weekly working hours, class size, marital status, number of children etc. The second part was about ECEEs' perceptions about ESD and included four questions. The third part involved ECEEs' knowledge about SD and had nine questions. The fourth part involved ECEEs' perceptions about the need for and implementation of ESD and covered ESD in early childhood from a national and international perspective and included three questions. The final part of the scale was developed to grasp ECEEs' attitudes toward SD and was called the Scale for ECEEs' Attitude towards SD with 21 items. The research group is still in the process of collecting data. Therefore, there is no score reported about reliability issues and there is no discussion yet on validity issues. Therefore, in the current research in addition to adapting some parts of the Perception and Attitude of In-Service Teachers in Early Childhood Education toward Education for Sustainable Development (ESD) Survey, reliability and validity issues were also catered for below.

The Scale for ECEEs' Knowledge about Sustainable Development included nine questions. A three-choice Likert type scale was used saying: "Agree, Disagree and Uncertain." Examples of items are "SD implies maintaining biodiversity in the local environment" and "SD implies a significant degree of local production and consumption".

During the translation and adaptation process of the "ECEEs' Knowledge about SD Scale", which was originally developed in English, the International Test Commission (ITC) Guidelines for Translating and Adapting Tests (2005) were considered. During the translation procedure, the items were reviewed by (1) two experts who specialized in early childhood education for content validity, (2) an academician studying English Language Teaching from the faculty of education for adaptation to the Turkish language structure, and (3) a preschool teacher to ensure that the items were clear and easily understandable. Then, the scale is reverse translated from Turkish to English. After this process, initially, the scale context was reviewed to perceive any effect about cultural and linguistic differences that might be important for the intended population in terms of ECEEs. Secondly, the language use in the directions, rubrics and items was scanned to ensure the appropriateness of cultural and linguistic issues to ECEEs employed in public and private ECESs in Turkey. Then, familiarity of testing techniques, item formats, test conventions and item content for the intended population were checked.

After the translation and adaptation procedures were complete the Scale for ECEEs' Knowledge towards SD was pilot tested with 141 ECEEs in Ankara. The answers of the ECEEs who participated in the pilot study were entered into an SPSS 20.0 (Statistical Package for the Social Sciences) data file. The obtained data was analyzed with ITEMAN 3.6 and SPSS 20.0 for item and reliability analysis. The correlation between items was evaluated by examining item-scale correlation values. Item-scale correlation value of the fifth item (Item 5: SD implies "Putting the needs of nature before those of humanity") was found to be .242. It was decided that while this value was low it should be kept in the analyses and re-tested in the main study. Furthermore, Cronbach alpha was calculated as .81 for the knowledge scale. The mean scores,

standard deviations, and item-scale correlation scores for the scale are presented in Table 3.3.

Table 3.3. Mean scores, standard deviations and item-scale correlation scores for Knowledge part in the pilot study.

Items	Mean	SD	Item-Scale Correlation
Q1	2.32	.55	.571
Q2	2.45	.57	.723
Q3	2.53	.51	.765
Q4	2.56	.52	.770
Q5	1.88	.55	.242
Q6	2.38	.54	.650
Q7	2.42	.54	.750
Q8	2.21	.59	.610
Q9	2.54	.50	.695

The Scale for ECEEs’ Knowledge about SD was also examined in SPSS for the main study (n=838) and the Cronbach alpha score was calculated as .75. A principle Components Factor Analysis (EFA) with Varimax rotation method was conducted. The Kaiser-Meyer-Olkin values for EFA were checked for evaluating the distribution of values and were seen as adequate for conducting factor analysis. The value was found as 0.804 and was evaluated as adequate (George & Mallery, 2003). Furthermore, Bartlett’s test of sphericity was checked for the multivariate normality of the distribution and correlation matrix. This was found to be below .05 and appeared as safe to conduct a factor analysis without violating these assumptions.

First of all, the EFA result indicated that the one-factor solution explained 51.9% of variance for the knowledge scale. Furthermore, the scree plot was used to decide the number of factors to retain. Examining the scree plot, the curve begins to level off after the first factor. Thus, it seemed that ECEEs’ Knowledge about SD Scale was retained as the one-factor solution. Figure 3.3 presents the related scree plot.

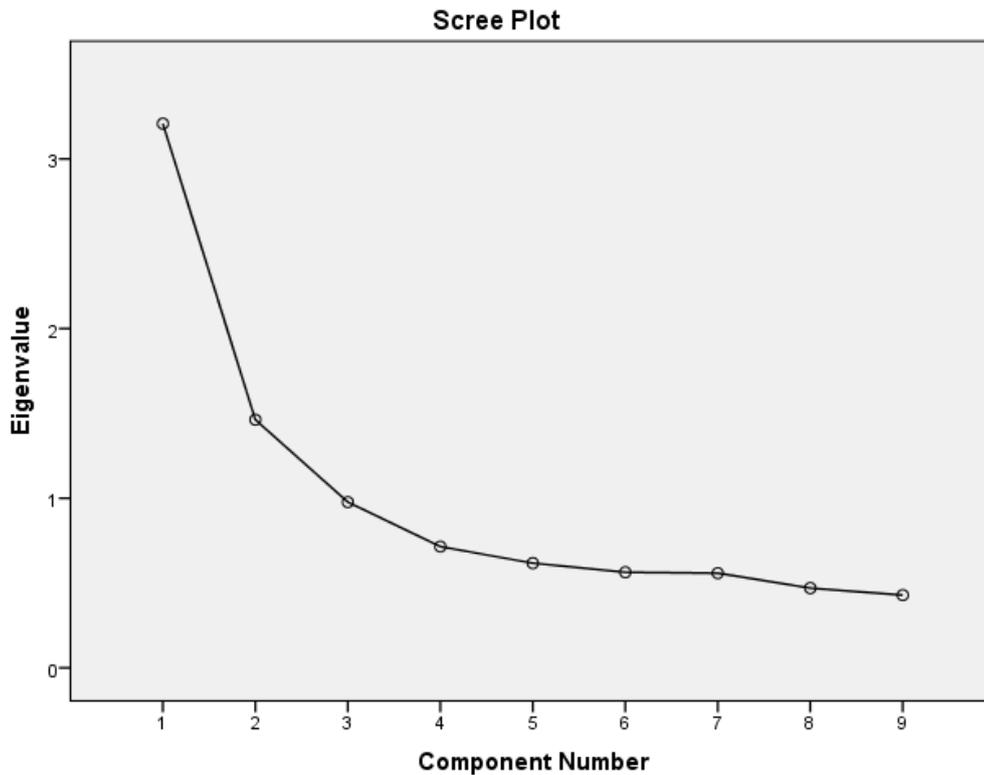


Figure 3.3. The scree plot for Knowledge part of the scale.

Additionally, knowledge scale was re-tested in ITEMAN in the main study. The results of the item analyses revealed that there were no problematic item-scale correlation scores except for the fifth item of the knowledge part (.383). Compares to the pilot study, the item-scale correlation score of this item was higher and, although it was lower than .5, this score was within acceptable limits, and so it was kept in the scale. The results of the item analyses of the main study are presented in Table 3.4.

Table 3.4. Mean scores, standard deviations, and item-scale correlation scores for Knowledge part in the main study.

Items	Mean	SD	Item-Scale Correlation
Q1	2.59	.33	.557
Q2	2.56	.38	.612
Q3	2.61	.37	.614
Q4	2.73	.25	.591
Q5	1.85	.57	.383
Q6	2.17	.53	.546
Q7	2.35	.46	.687
Q8	2.26	.47	.672
Q9	2.57	.37	.588

3.3.3 The ECEEs' Attitude towards Sustainable Development Scale

The original Scale for ECEEs' Attitude' towards Sustainable Development is another part of "The Perception and Attitude of In-Service ECEEs in Early Childhood Education Toward Education for Sustainable Development (ESD) Survey" and included 21 questions. A four-choice Likert type scale was used saying: "Strongly agree, Agree, Disagree, Strongly disagree." Examples of items are "I am willing to prioritize purchasing fair trade products", "I am willing to recycle garbage", "I am willing to clean the beach/river/mountain after an outdoor activity". As with the Knowledge part, International Test Commission (ITC) Guidelines for Translating and Adapting Tests (2005) were considered when translating and adapting this scale into Turkish. All the steps were applied for the Scale for Attitude Towards Sustainable Development. Of all the items, one item in the attitude scale referring to "Leaving-the-Car-at-Home Day" was considered as irrelevant for Turkish culture and the researcher decided to finalize this item after the pilot study. Before the pilot test process the scale was reviewed the content, and new items were added to the attitude part to advance the scale in terms of the socio-cultural pillar of ESD with the advice of the research group developing the scale because the original scale had mostly referred to the environmental and economic dimensions of ESD. The first issue considered in the process of adding items to "The Scale for ECEEs' Attitude towards SD" was whether or not each situation was considered to be an attitude. The decision was made based on the definition of attitude, and nine questions related to the socio-

cultural pillar of ESD were added to the scale. An example of these added items is “I am willing to adapt human rights”.

After the translation and adaptation procedures, the Scale for ECEEs’ Attitude towards SD was pilot tested ($N_p= 141$) with the Knowledge part and similar analyses were conducted. The correlation between the items of the Attitude part was calculated by examining the item-scale correlation values. None of the items was problematic in terms of item-scale correlation values, and Cronbach alpha was calculated as .96. The mean scores, standard deviations and item-scale correlation scores for the scale are presented in Table 3.5.

Table 3.5. Mean scores, standard deviations and item-scale correlation scores for the Attitude part in the pilot study.

Items	Mean	SD	Item-Scale Correlation
Q1	3.04	.38	.690
Q2	3.04	.33	.513
Q3	3.05	.40	.555
Q4	2.91	.52	.423
Q5	2.65	.81	.503
Q6	3.08	.37	.608
Q7	3.20	.38	.821
Q8	3.21	.39	.819
Q9	3.05	.39	.570
Q10	2.84	.50	.562
Q11	2.99	.39	.511
Q12	3.26	.38	.817
Q13	3.01	.52	.644
Q14	3.07	.37	.662
Q15	2.88	.59	.505
Q16	2.91	.54	.501
Q17	2.82	.52	.575
Q18	3.12	.33	.713
Q19	3.20	.49	.804
Q20	3.13	.43	.739
Q21	3.13	.49	.716
Q22	3.21	.49	.711
Q23	3.13	.41	.715
Q24	3.21	.39	.810
Q25	3.27	.29	.790
Q26	3.05	.27	.680
Q27	3.23	.27	.747
Q28	3.24	.37	.773
Q29	3.26	.34	.790
Q30	3.29	.39	.751

In the main study, Cronbach alpha score was calculated as .94 for the Scale for ECEEs' Attitude Towards SD. A principle Components Factor Analysis (EFA) with Varimax rotation method was conducted. The Kaiser-Meyer-Olkin values were calculated for EFA and found as to be .924 (George & Mallery, 2003). Furthermore, Bartlett's test of sphericity was found to be lower than .05 and it appeared as safe to conduct a factor analysis without violating these assumptions.

First of all, the EFA result indicated that the one-factor solution explained 49.9% of variance for the Attitude scale. Examining the scree plot, the curve begins to level off after the first factor. Thus, it seemed that the Scale for ECEEs' Attitude Towards SD retains the one-factor solution. Figure 3.4 presents the related scree plot.

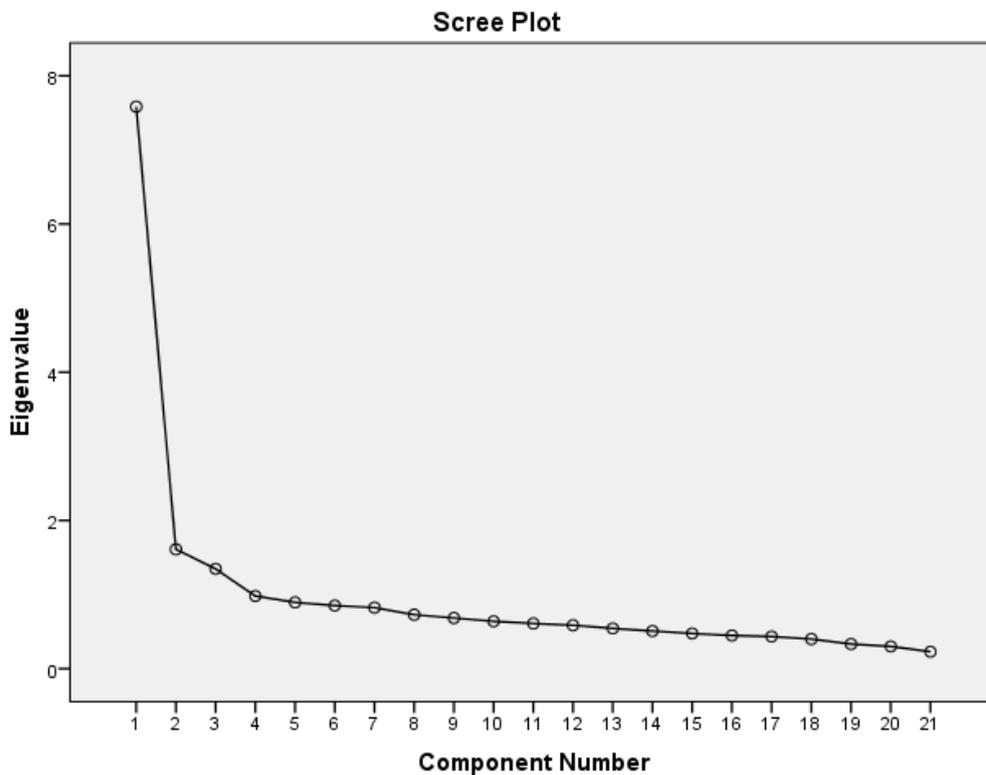


Figure 3.4. The scree plot for Attitude part of the scale.

Additionally, the attitude scale was re-tested in ITEMAN. The results of the item analyses revealed that there was no problem in the item-scale correlation scores. The results of the item analyses for the main study ($N_m=838$) are presented in Table 3.6.

Table 3.6. Mean scores, standard deviations and item-scale correlation scores for the Attitude part in the main study.

Items	Mean	SD	Item-Scale Correlation
Q1	3.61	.27	.558
Q2	3.44	.35	.553
Q3	3.49	.38	.553
Q4	3.16	.54	.498
Q5	3.29	.63	.490
Q6	3.36	.48	.556
Q7	3.73	.25	.614
Q8	3.68	.30	.655
Q9	3.35	.46	.586
Q10	3.21	.63	.528
Q11	3.39	.47	.598
Q12	3.72	.24	.656
Q13	3.41	.49	.458
Q14	3.46	.41	.701
Q15	3.20	.62	.579
Q16	3.17	.69	.550
Q17	3.16	.65	.562
Q18	3.61	.35	.629
Q19	3.79	.27	.583
Q20	3.65	.29	.675
Q21	3.58	.30	.671
Q22	3.66	.32	.626
Q23	3.58	.39	.556
Q24	3.71	.27	.689
Q25	3.76	.23	.662
Q26	3.56	.33	.622
Q27	3.70	.27	.692
Q28	3.62	.30	.696
Q29	3.65	.30	.717
Q30	3.73	.29	.627

3.3.4 ECEEs' ESD Practices Scale

ECEEs' ESD Practices Scale used in the present study was developed by the researcher to investigate the ECEEs' in-ECESs practices with respect to SD. The process of developing the scale was carefully planned and applied to ensure reliability and validity of the results. Essentially, ECEEs' ESD Practices Scale developed for

this study is a self-report test focusing on measuring SD practices of ECEEs. It was suggested that ECEEs' curriculums should be reoriented based on SD practices (UNESCO, 2005). Therefore, although in Turkish Early Childhood Curriculum (MONE, 2013) do not refer SD, the scale was tried to be linked to the tenets of Turkish Early Childhood Curriculum (MONE, 2013). In this sense, purpose of this scale was to measure ECEEs' in class SD practices in the line with Turkish Early Childhood Curriculum (MONE, 2013) After the purpose of the scale was determined, table of specification was constructed based on the ESD framework and Turkish Early Childhood Curriculum (MONE, 2013).

In the present study, the first issue taken into consideration while writing ESD practice items was the clarification of what can be an example of ESD practices in ECE. The decision was given based on the examples of ESD practices in international preschool education curriculums. Second issue considered was to refer the three integrated dimensions of SD in terms of environmental, economic and social- cultural into ESD practices. In this process, objectives of dimensions were listed and was tried to be integrated with national preschool education curriculum. The last issue considered was the decision of item of formats. After reviewing similar practice scales in the relevant literature, Likert type used in the scale and the time interval between choices was identified based on the schedule of national preschool education program.

Accordingly, 24 items and 5 choices Likert type scale was prepared and its content and format were investigated by three expert in early childhood education and sustainable development and three ECEEs. They examined the scale items with respect to their suitability, understandability, difficulty, appropriateness, etc. for validity issues. Their interpretations and evaluations were examined and investigated by the researcher and necessary revisions such as simplifying, shortenings, changings were conducted with their guidance.

ECEEs' SD Practices Scale was pilot tested with 141 ECEEs in Ankara and also re-tested in the main study ($N_m= 838$). Similar to other instruments, its reliability was investigated by conducting ITEMAN 3.6 and explanatory factor analysis. First of all, the correlation between items and scales were evaluated by examining item-scale correlation values. Item Analysis indicated that ninth and sixteenth items had relatively low item-scale correlation values. As a decision, although item-scale correlation values of these items were low, it was decided to keep in the analyses and re-tested in the main study. Moreover, Cronbach alpha coefficient score was calculated as .85 in the pilot study. Table 3.7 shows the results of item analysis.

Table 3.7. Mean scores, standard deviations, and item-scale correlation scores for practice scale in the pilot study.

Items	Mean	SD	Item-Scale Correlation
Q1	3.73	.92	.497
Q2	3.02	1.69	.436
Q3	4.22	1.09	.509
Q4	3.97	1.21	.352
Q5	4.68	.40	.380
Q6	3.65	1.47	.476
Q7	4.11	.98	.550
Q8	3.45	1.65	.684
Q9	4.54	.86	.260
Q10	3.56	.81	.625
Q11	2.15	2.19	.458
Q12	4.57	.47	.502
Q13	4.56	.61	.426
Q14	3.78	1.81	.333
Q15	4.35	.69	.468
Q16	2.52	2.25	.217
Q17	3.46	1.97	.487
Q18	3.63	1.55	.602
Q19	3.89	1.30	.553
Q20	2.50	2.27	.434
Q21	3.40	2.44	.585
Q22	4.60	.37	.363
Q23	4.76	.26	.340
Q24	3.58	2.07	.458

In the main study, practice scale was re-tested in ITEMAN. The results of the item analysis indicated that there was no problem in item-scale correlation scores except for the first (.371) and twenty second item (.375). Compare to the pilot study, item-scale correlation scores of these items were higher and, although they were lower than

.5, these score were in the acceptable limit. The results of the item analysis of the main study presented in Table 3.8.

Table 3.8. Mean scores, standard deviations, and item-scale correlation scores for practice scale in the main study.

Items	Mean	SD	Item-Scale Correlation
Q1	3.64	1.00	.371
Q2	2.84	2.14	.483
Q3	4.38	1.02	.495
Q4	4.05	1.27	.467
Q5	4.53	.65	.503
Q6	3.45	1.58	.560
Q7	3.45	1.64	.666
Q8	3.20	1.78	.635
Q9	4.38	1.19	.472
Q10	3.35	1.25	.596
Q11	1.97	1.61	.466
Q12	4.23	1.07	.543
Q13	4.33	.95	.560
Q14	2.79	2.29	.429
Q15	4.03	1.07	.618
Q16	3.41	2.15	.454
Q17	3.50	1.58	.658
Q18	4.01	1.37	.588
Q19	2.46	2.10	.530
Q20	2.95	2.09	.547
Q21	4.49	.76	.463
Q22	4.66	.63	.375
Q23	2.55	1.96	.522
Q24	3.42	1.68	.552

ECEEs’ SD Practices Scale was also examined in SPSS for the main study. First of all, Cronbach alpha score was calculated as .88. A principle Components Factor Analysis (EFA) with Varimax rotation method was conducted for the scale. The Kaiser-Meyer-Olkin values of each EFA were found as .901 and evaluated as adequate (George & Mallery, 2003). Furthermore, significance value of Bartlett’s test of sphericity was checked and found under .05 for the scale and appeared as safe to conduct a factor analysis without violating the assumptions.

EFA results indicated that one-factor solution explained 38.9% of variance and two-factor solution explained 44.1% of variance for practice scale. Also, the scree plot (Figure 3.5) in EFA was used to decide the number of factors to retain. Examining

the scree plot, the curve begins to start level off after third factor. However, similar to previous measurements, one-factor solution was preferred for this scale, because the integrated structure of ESD. In other words, Education for Sustainable Development addresses environmental, economic, and socio-cultural issues as a whole (UNESCO, 2005, 2006) and as Summers and Childs (2007) and Warburton (2003) stated addressing the dimensions of SD separately would create confusion in people on this matter. Understanding the interrelationship between the various aspects of sustainable development supports individuals' interdisciplinary holistic thinking skills. Besides this; in many national and international reports published in the related literature (UNESCO, 2005; UNESCO, 2006; UNESCO, 2008, UNESCO, 2014) the term SD is discussed as a holistic approach that emphasizes the dynamic relationship among environmental, economic, and social and cultural elements. Figure 3.5 indicated related scree plot.

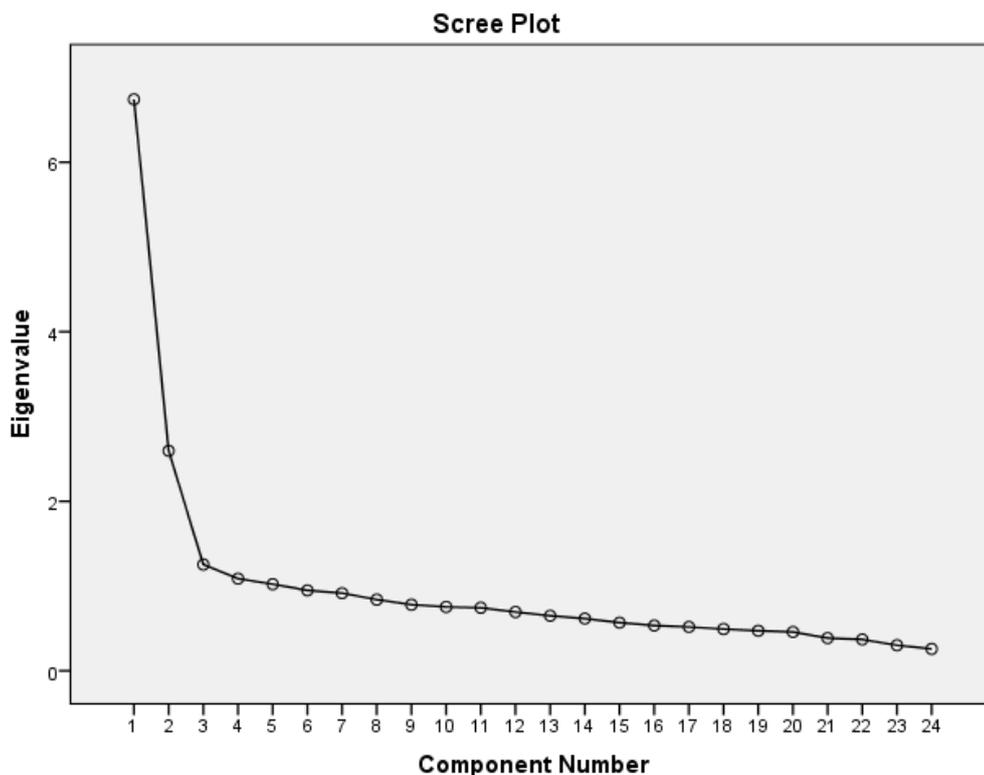


Figure 3.5. The scree plot for the practice scale.

3.3.5 Questions related to the needs for and implementation of ESD

In this part, six questions were asked to ECEEs to learn their views about **the needs for and implementation of ESD**. These questions were taken from the “The perception and attitude of in-service ECEEs in early childhood education about Education for Sustainable Development (ESD) Survey”. First question of this part was “What do you think of the needs for ESD in early childhood?” and ECEEs are guided to select the appropriate one for them among choices of “Unnecessary, Undecided, and Necessary”.

Second question was “What do you think of the purpose of ESD in early childhood?”. Choices of this items were (1) Acquisition of the concepts and knowledge of SD/ESD, (2) Awareness of SD/ESD issues, (3) Ability to think creatively and holistically, to solve problems, and make decisions, and (4) Practical behavior for a sustainable lifestyle for SD.

In the third question, ECEEs were asked their previous experiences of ESD. They answered the question of “Have you ever implemented ESD program/activities?” as “Yes” or “No”. If their answers were “Yes”, they answered next question that was “What type of teaching activity did you use for your ESD program/activities?”. Choices of this question were Circle time discussion, Field trip, Role play, Song and movement, Reading books, and Observation.

Next question was “What do you consider to be the most difficult aspect in implementing ESD program/activities?”. ECEEs selected appropriate choices for them among (1) The teacher’s lack of understanding of ESD, (2) The teacher’s lack of pedagogical content knowledge (applicability of ESD concept using its activity), (3) Lack of teaching and learning materials for ESD, (4) The teacher’s lack of formal training in ESD, (5) The parents’ lack of interest in ESD, and (6) The principal/director’s lack of interest in ESD.

Final question of this part was “What do you think the most necessary aspect in activating ESD program/activities?”. Choices of this question were (1) Expanding teachers’ training, (2) Developing teaching and learning materials, (3) Applying ESD to the curriculum, (4) Cultivating the interest of schools, and (5) Associating with family and the local community.

3.4 Data Collection Procedure

The Turkish Ministry of National Education requested permission to conduct the questionnaires to ECEEs that were selected using the random sampling method. In the fall semester a pilot study was conducted with 141 ECEEs to validate ECEEs’ Knowledge about SD and ECEEs’ Attitude towards SD Scale, and ECEEs’ SD Practices Scale. The main study was administrated during the spring semester. The ECEEs’ questionnaires were conducted in a single time and took about 40 minutes to complete. The researchers read the directions to the ECEEs before they start to fill out the questionnaires. To protect confidentiality, any information ECEEs like their names or any other information were not collected. All of the questionnaires and answers were kept confidential and only used for research purposes. Also to protect confidentiality, after filling the questionnaires, each ECES’s and ECEE related questionnaires were sealed in an envelope prepared for each ECESs and viewed only by the researchers.

3.5 Analysis of Data

To examine the data of the study, preliminary analysis, descriptive statistical analysis, and inferential statistical analysis were conducted. In the preliminary analysis, ECEE and ECES related data were examined concerning missing values, outliers, and univariate and multivariate normality. Descriptive statistical analyses were conducted to examine mean, standard deviation, skewness, and kurtosis values of ECEE and ECES related variables. Hierarchical Linear Modelling (HLM) was used as inferential

statistical procedures to investigate the relations within ECEE related variables and between ECEE and ECES related variables.

3.5.1 Hierarchical Linear Modeling (HLM)

In this study, as a part of the inferential statistical procedure, Hierarchical Linear Modeling (HLM) technique was conducted to explain how ECEE-level variables (Level-1 variables) are interrelated. In this case, since the facilities and/or barriers in the ECESs' in terms of physical environment, curriculum resources, professional development of staff, positive perception about ESD, etc. might have influence on ECEEs. Considering the ECEEs who work in different ECESs, HLM provides an advantage of predicting outcome variable (Raudenbush & Bryk, 2002). HLM provides a different regression model for each ECEEs' group (Level-1). These regression models in each level draw an outline by using structural relations and residual variability at that level. As a result, it can be examined how ECEE related variables interrelated in their level. Accordingly, the outcome variables was determined among ECEE-level variables for all models. Level-1 predictors were determined among ECEE-level variables for each model.

3.5.2 Level-1 and Level-2 Variables, Their Descriptions, and Types

The variables of the study that were used in HLM analyses can be grouped as Level-1 variables. These are the outcome variable and the predictors of the outcome variable. The outcome variable of this study is ECEEs' sustainable development (SD) practices. Additionally, ECEE-level variables are defined as Level-1 variables that are ECEEs' knowledge and attitude towards sustainable development, and demographic variables of the study. Table 3.9 represents all of these variables, their descriptions, and their types.

Table 3.9. Descriptions and types of variables.

Name	Description	Type
<i>ECEE-Level Variables (Level-1)</i>		
SD_KNOW	ECEEs' Knowledge It was a composite variable that was constructed by computing average score of items Q1 to Q9.. Possible mean scores of it could be within range between 1 and 3.	Predictor
SD_ATT	ECEEs' Attitude towards Sustainable Development It was a composite variable that was constructed by computing average score of items Q1 to Q30. Possible mean scores of it could be within range between 1 and 4.	Predictor
SD_PRA	ECEEs' SD Practices It was a composite variable that was constructed by computing average score of items Q1 to Q24. Possible mean scores of it could be within range between 1 and 5.	Outcome
CHILD_R	ECEEs' Childhood Location It was a categorical variable that was answered as 'Yes' or 'No' by ECEEs.	Predictor
CHILD_H	ECEEs' Household Type at Their Childhood It was a categorical variable that was answered as 'Yes' or 'No' by ECEEs.	Predictor
NGO_P	ECEEs' Membership to A NGO It was a categorical variable that was answered as 'Yes' or 'No' by ECEEs.	Predictor
PRE_EX	ECEEs' Previous Experiences on Implementing ESD Activities It was a categorical variable that was answered as 'Yes' or 'No' by ECEEs.	Predictor

3.6 Threats to Validity of the Study

3.6.1 Threats to Internal Validity of the Study

According to Fraenkel and Wallen (2012), some variables or factors might have an effect on relationship observed among another two or three variables in unintended ways. This situation can be labelled as threats to internal validity. These possible threats should be considered, controlled, eliminated, or minimized at least systematically.

Subject characteristics can be considered as a potential threat to internal validity: In the present study, the sample was selected from different cities of Turkey. Also, selection of ECESs was done randomly. These are the metropole cities and considered as reflecting the general characteristics of ECEEs of all metropole cities in Turkey. Some information about the subjects such as their age, gender, socio-economic status, etc. were gathered. But, subject characteristics can create a threat in this study, because it was not possible to control all ECEEs characteristics.

Mortality (loss of subjects) was not considered as a threat to internal validity for the present study because while the samples of the study were selected, loss of subject or absenteeism, were taken into consideration. In addition, since the instruments of the current study were administrated to the participants in their ECESs and their classes had similar testing condition, *location* was not considered as a threat for this study. *Instrumentation* which can be examined under the headings of *Instrument Decay*, *Data Collector Characteristics*, and *Data Collector Bias* is also not considered as a serious threat to internal validity: in the present study ECEEs responded to likert type scales and multiple choice items. They filled out optical forms. Thus, scoring was objective and instrument decay did not pose a threat to internal validity. To avoid data collector characteristics and bias threats, the data were collected by one data collector who administrated the scales to all participants and she behaved in a standard way throughout data collection procedures. Moreover, *maturity* are not expected to be threats to internal validity because, data collection period which took about two months can be considered as too short to cause maturity threat considering variables of the study.

However, *testing* can be a threat to internal validity because participants' responses to one instrument may be influenced by their responses to previous instruments.

3.6.2 Threats to External Validity of the Study

External validity was defined as the generalizability of the findings of a research study (Franke & Wallen, 2012). The present study was administered in metropole cities of Turkey and half of the ECESs randomly selected from four cities were used for the sample of the study. Therefore, it can be considered that the sample of the study was enough to generalize the findings of the study to the population.

Moreover, all the administration procedure of the study took place in ECESs during regular school-time. Hence, most environmental conditions were under similar conditions and it can be considered that external effects were controlled.

3.7 Assumptions of the Study

1. During the instruments' administration, all conditions were standard for ECESs.
2. The participants of the study respond honestly the items of the instruments seriously.
3. The participants' beliefs and opinions truly measured using the selected self-report questionnaires.

3.8 Limitations of the Study

1. This research was limited to the information obtained from the questionnaires.
2. This study relies solely on the self-report data. This can lead to common method bias about verifying consistency and accuracy of the findings. In order to get an in-depth understanding of the observed relationships and provide better explanations, qualitative approach may be employed in future studies.

Such an approach can help determine to what extent the unexpected findings can be explained by culture. In line with this idea, the study can be replicated in different cultures.

3. The third limitation concerns the specific data analysis technique used to analyze the data. Like the other correlational methods, Hierarchical Linear Modeling technique does not confirm causation in a model. More specifically, the constructs that are shown to be related each other cannot be shown to have a causal relationship.
4. Finally, in the HLM analyses, for level-2 variables, the percentage of variance explained was low. In order to improve the proposed model, additional variables, such as those related to ECESs (i.e. administrations, physical environment, location, etc.), can be integrated to the model.

CHAPTER IV

RESULTS

This chapter presents the results of preliminary data analysis, inferential statistics, and Hierarchical Linear Modeling (HLM) analyses. Preliminary data analysis covers treatment of missing values and outliers, and the results of some important descriptive analyses about Early Childhood Education Educators' (ECEEs) related data. In the second part, the results of independent sample t-tests and correlation analysis were presented. Finally, third part presents the results of a series of hierarchical linear models that were tested and explained by conducting the HLM.

4.1 Preliminary Data Analysis

4.1.1 Treatment of Missing Values and Outliers

The investigation and data cleaning procedure were conducted for this study before the analyses because missing data values may impact the results of statistical analyses (Pallant, 2001). Accordingly, if a participant did not complete a scale more than 70%, or it was completely empty, and also it was drawn in a clearly apparent pattern, this data were excluded from the analyses. Then, for each group, missing data of the items that were less than 10% were replaced with the mean of own group for that item (Tabachnick & Fidell, 2007). Finally, missing data in demographic variables such as gender, education level, experience, etc. were not replaced with any other values.

Mahalanobis distance values were checked for the ECEEs related data in order to determine outliers. Accordingly, cases that were determined as having high Mahalanobis distance value were removed from the data to get more reliable results from HLM analysis. After treatment of missing values and outliers, the data obtained from 111 ECESs and 838 ECEEs from these settings were used in the analyses.

4.2 Descriptive Analysis on ECEEs' understandings about the needs for and implementing ESD

First of all, ECEEs' understandings about the needs for ESD were asked. Accordingly, the most of the ECEEs that were serving at ordinary ECESs (93.55%) and ECO-ECESs (91.89%) stated that ESD should be the key part of early childhood education. (Figure 4.1).

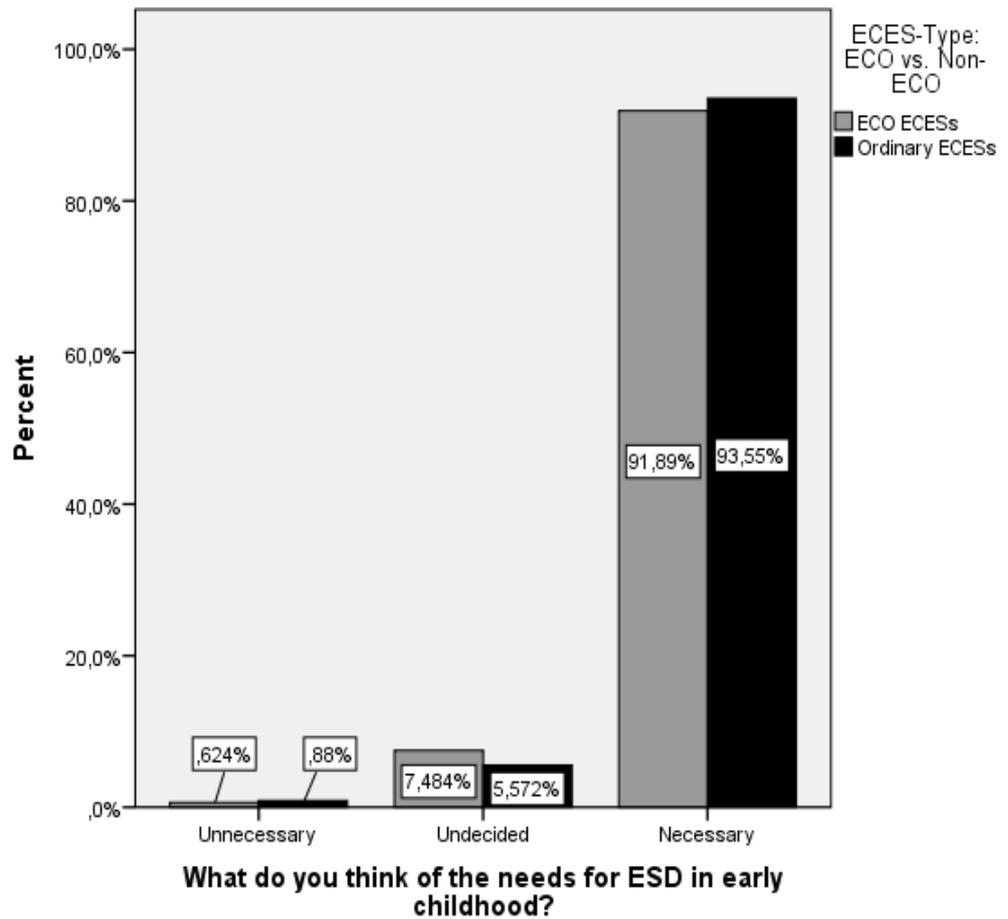


Figure 4.1. The opinions of ECEs about the needs for ESD in ECE.

According to the ECEs' thoughts about the purpose of ESD in early childhood, the most important purpose of ESD was "awareness of SD/ESD issues" for ECEs that serving at ordinary ECEs (37.43%) and at ECO-ECEs (39.96%). "Ability to think creatively and holistically, to solve problems, and make decisions" and "practical behavior for a sustainable lifestyle for SD" were also other reported as responses by ECEs that were serving at ordinary ECEs (28.74% and 25.45%, respectively) and at ECO-ECEs (24.15% and 27.14%, respectively) as important purposes of ESD. However, only 7.19% of ECEs at ordinary ECEs and 6.8% of ECEs at ECO-ECEs thought that "acquisition of the concepts and knowledge of SD/ESD" was a purpose of ESD in early childhood (Figure 4.2).

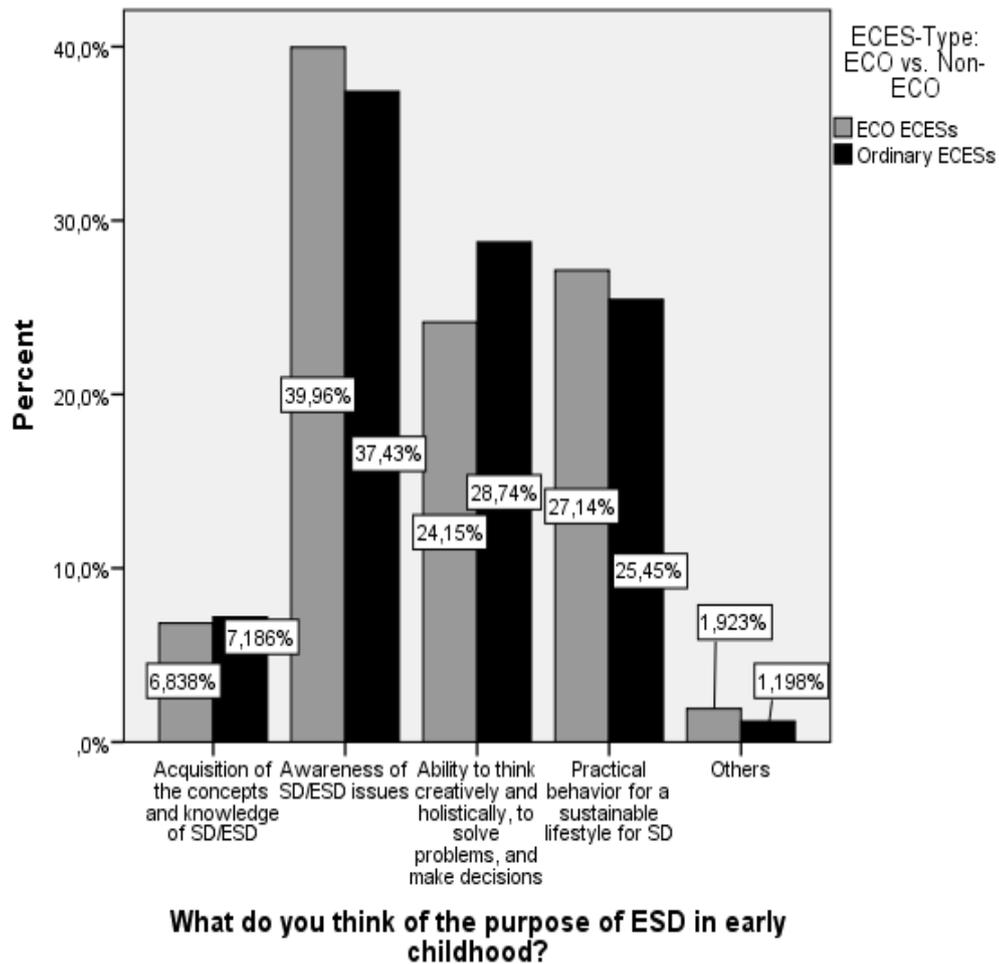


Figure 4.2. ECEEs’ thoughts about the purpose of ESD in early childhood.

Then, types of teaching methods do ECEEs that were serving at ordinary ECESs use for their ESD program/activities were examined in the present study. According to the results, only 36.6% of ECEEs confirmed that they have previous experiences of ESD and they reported almost all type of teaching methods they use in their ESD program/ activities. Among them, role play (20.30%), field trip (18.80%), observation (17.29%), reading books (15.04%), and circle time discussions (14.29%) were the most preferred teaching methods by the ECEEs (Figure 4.3).

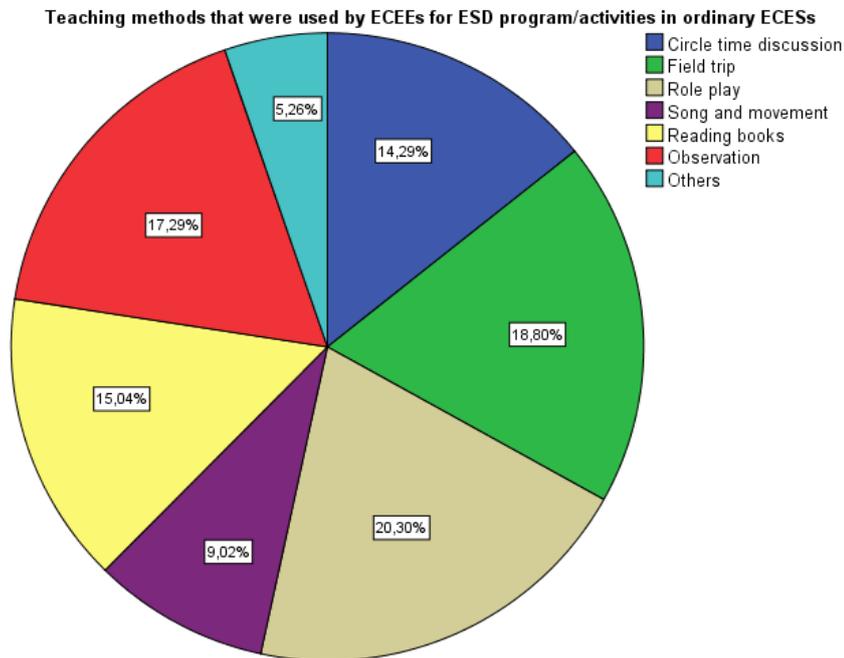


Figure 4.3. Teaching methods that were used by ECEs at ordinary ECESs for ESD program/activities.

Furthermore, only 39.1% of ECEs at ECO-ECESs confirmed that they have previous experiences of ESD and they reported almost all type of teaching methods they use in their ESD program/activities. Among them, field trip (19.61%), reading books (18.30%), and observation (17.65%) were the most preferred teaching methods by the ECEs (Figure 4.4).

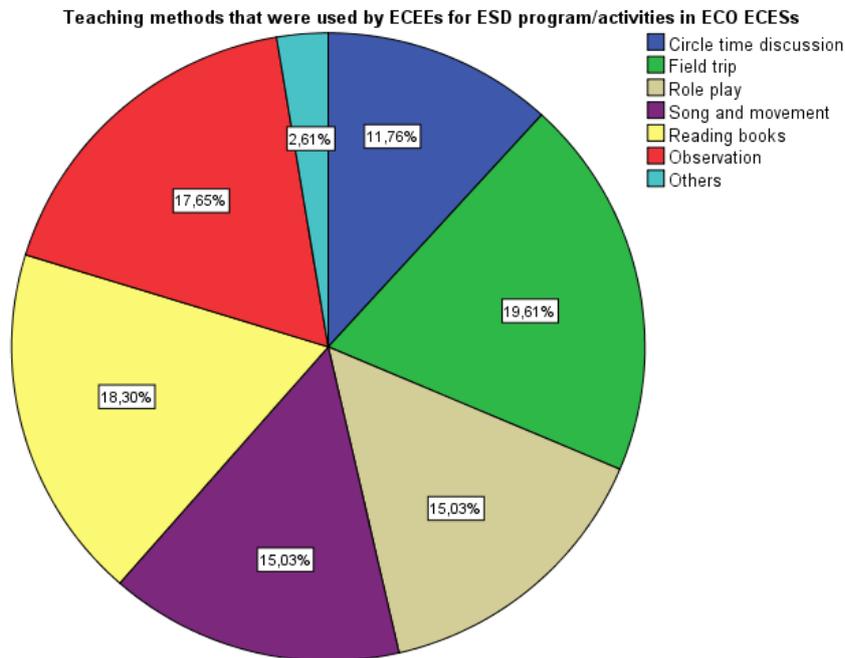


Figure 4.4. Teaching methods that were used by ECEEs at ECO-ECESs for ESD program/activities.

The results also indicated that ECEEs’ have some difficulties with implementing ESD program/activities. Accordingly, the ECEEs that were serving at ordinary ECESs regarded “lack of teaching and learning materials for ESD” and “the ECEEs’ (their) lack of formal training in ESD” as the barriers of implementing ESD practices (respectively 26.90% and 25.73%). Similar responses were reported by ECEEs that were serving at ECO-ECESs, respectively 25.0% and 22.46%. On the other hand, “the teacher’s lack of pedagogical content knowledge” was regarded as the least difficulty aspect in implementing ESD program/activities by ECEEs that were serving at both ordinary and ECO-ECESs (respectively 12.28/% and 11.86%) (Figure 4.5).

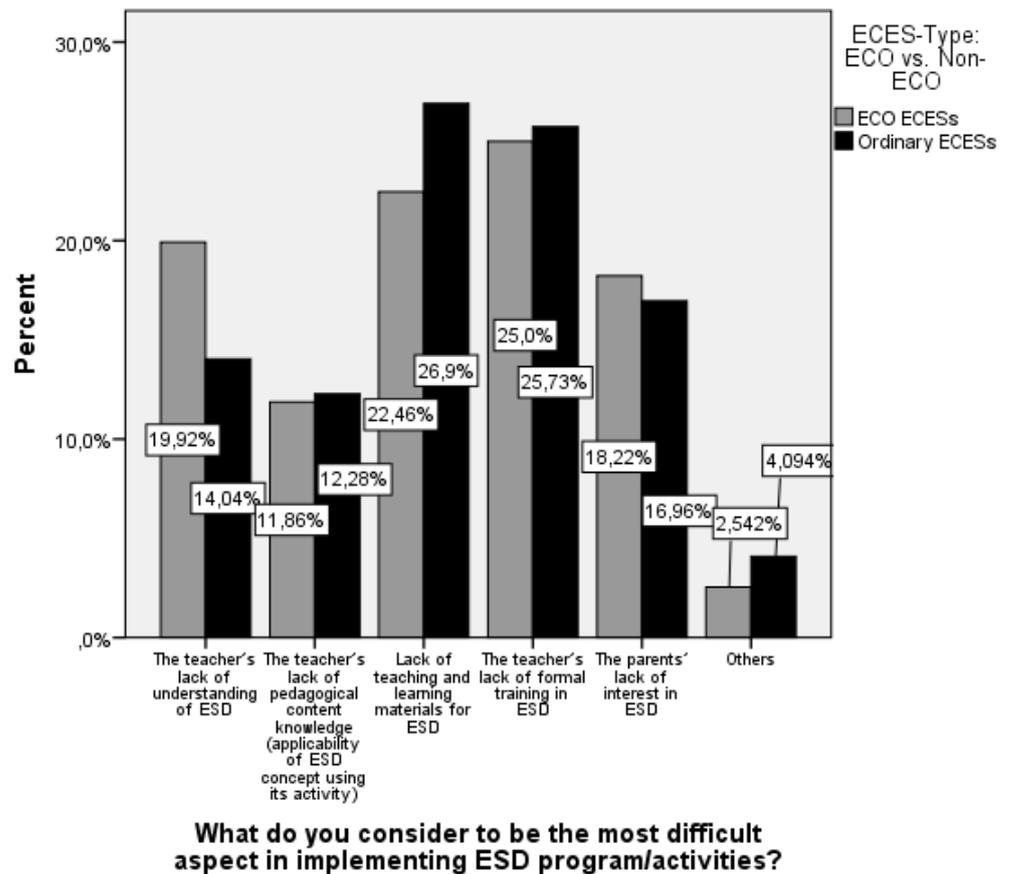


Figure 4.5. Most difficult aspects in implementing ESD program/activities according to ECEEs.

The ECEEs' opinions about the most necessary aspect in activating ESD program or activities was another important issue for this part. The results showed that the ECEEs that were serving at ordinary ECESs stated two significant aspects; expanding ECEEs training (34.62%) and applying ESD to the curriculum (31.32%). ECEEs that were serving at ECO-ECESs reported similar aspects at most (respectively 33.2% and 41.2%). Developing teaching and learning materials, cultivating the interest of the ECESs, associating with family and the local community were reported by the ECEEs that were serving at both ordinary and ECO-ECESs as other necessary aspects in activating ESD program/activities (Figure 4.6).

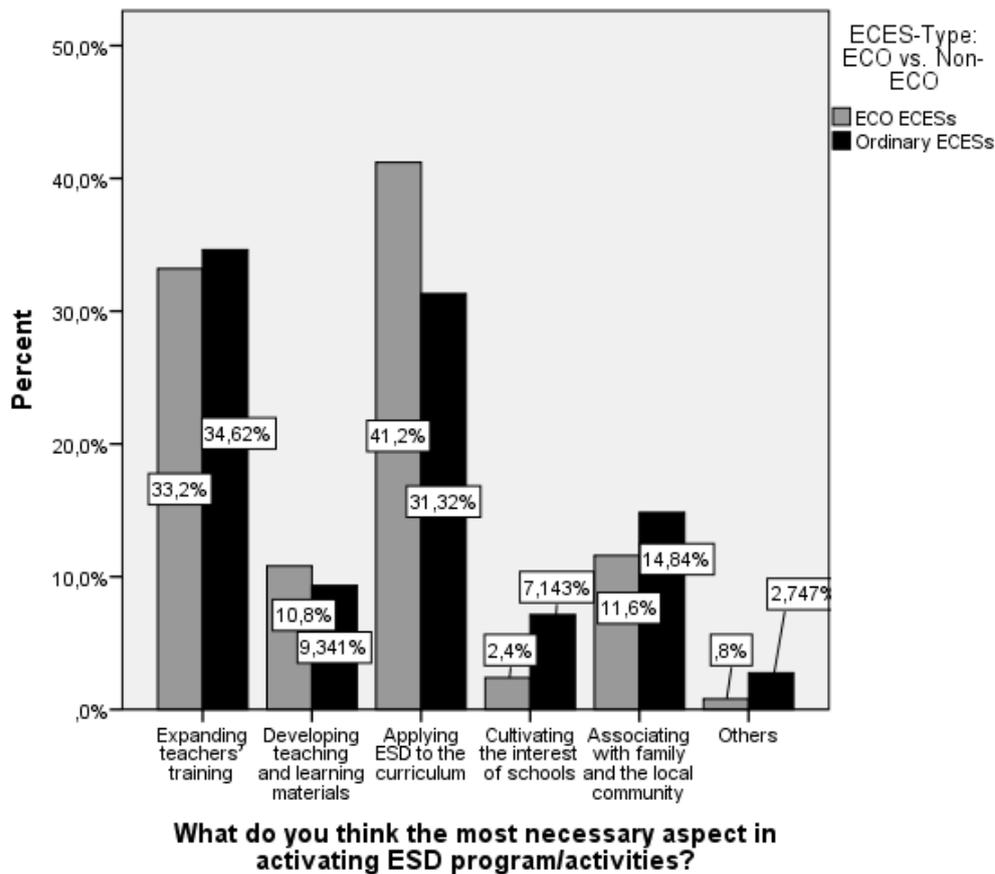


Figure 4.6. The most necessary aspects in activating ESD program/activities according to ECEEs.

4.3 Descriptive Analyses on the Background Information of ECEEs

Demographic information about ECEEs were examined and compared regarding their ECES-types. These were experience with the natural environment regarding (1) childhood residence and (2) household type location in that was lived at childhood, (3) membership to an NGO, and (4) previous experiences on implementing ESD related activities.

Natural Experiences in terms of (1) childhood residence and (2) household type

To grasp natural experiences in childhood two questions were asked. These questions were related to their childhood residence and household type at childhood. The results indicated that among all ECEEs that were serving at ordinary ECESs 412 of them lived in rural area, whereas 64 of them lived in urban area in their childhood. For ECEEs that were serving at ECO-ECESs, the results indicated that among all ECEEs that were serving at ordinary ECESs 280 of them lived in rural area, whereas 64 of them lived in urban area in their childhood (Figure 4.7). In addition, regarding their household type at childhood, the results showed that 180 of ECEEs that were serving at ordinary ECESs lived in house, whereas 300 of them lived in apartment. These values were respectively 156 and 188 for ECEEs that were serving at ECO-ECESs (Figure 4.8).

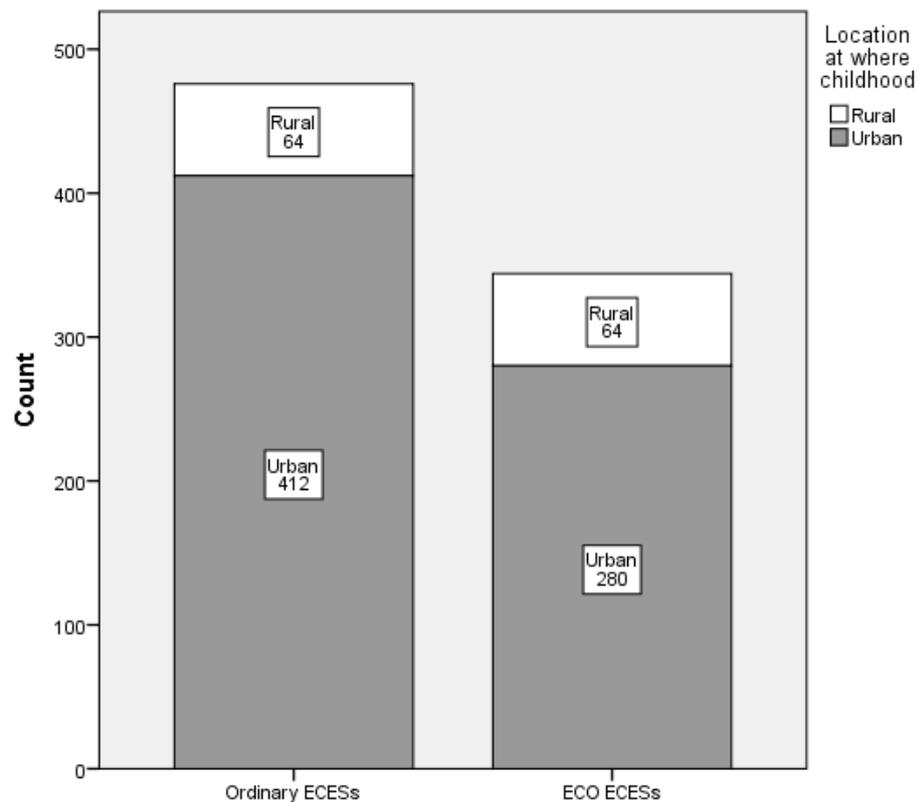


Figure 4.7. The percentages of natural experiences in terms of childhood residence of ECEEs.

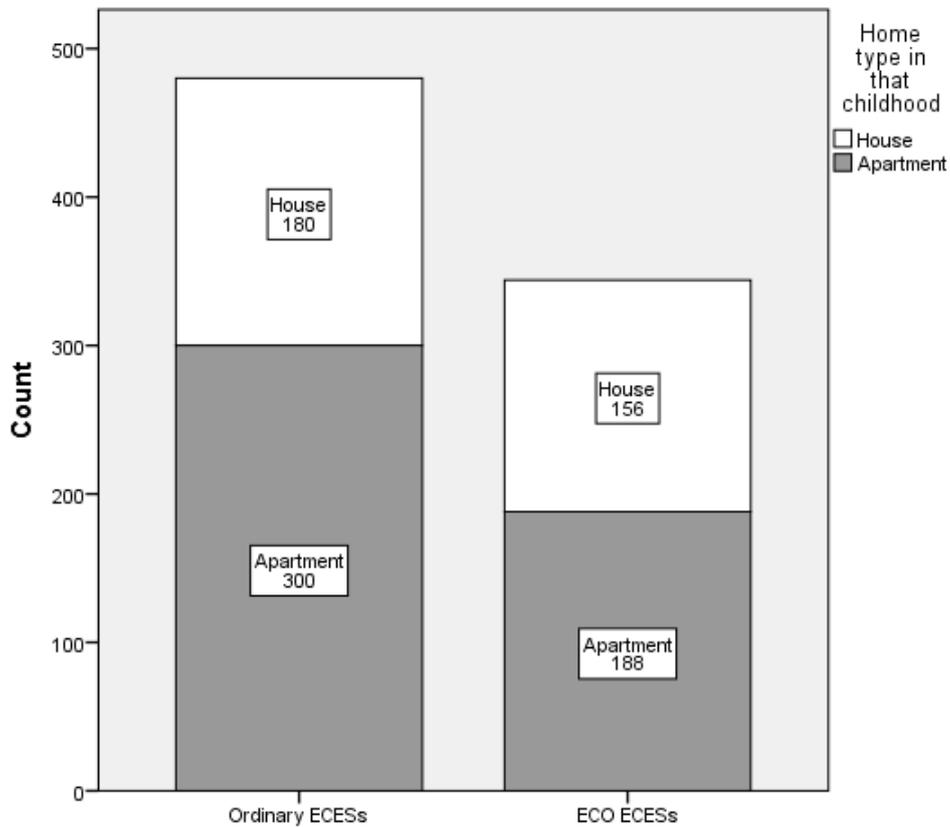


Figure 4.8. The percentages of natural experiences in terms of childhood household type of ECEEs.

(3) Membership to an NGO

When examining answers that related to “the membership to an NGO related to environmental, social and cultural issues”, most of ECEEs that working at ordinary ECEs ($N=401$) answered as “yes”. Similarly, most of ECEEs that working at ECO-ECEs ($N=300$) answered this question as “yes” (Figure 4.9).

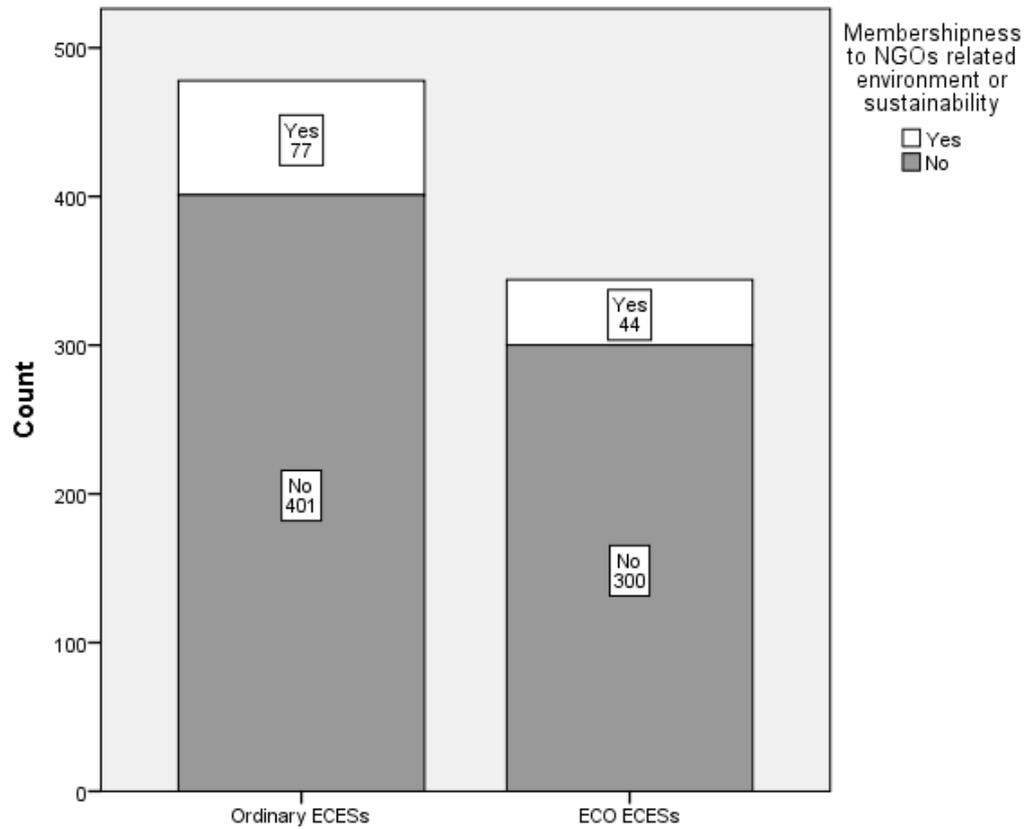


Figure 4.9. The percentages of ECEEs that were membership to an NGO.

(4) Previous experiences on implementing ESD related activities

Previous experiences on implementing ESD related activities were asked to all ECEEs. The results indicated that 185 of ECEEs that were serving at ordinary ECEEs and 331 of ECEEs that were serving at ECO-ECEEs had experiences on implementing ESD related activities (Figure 4.10).

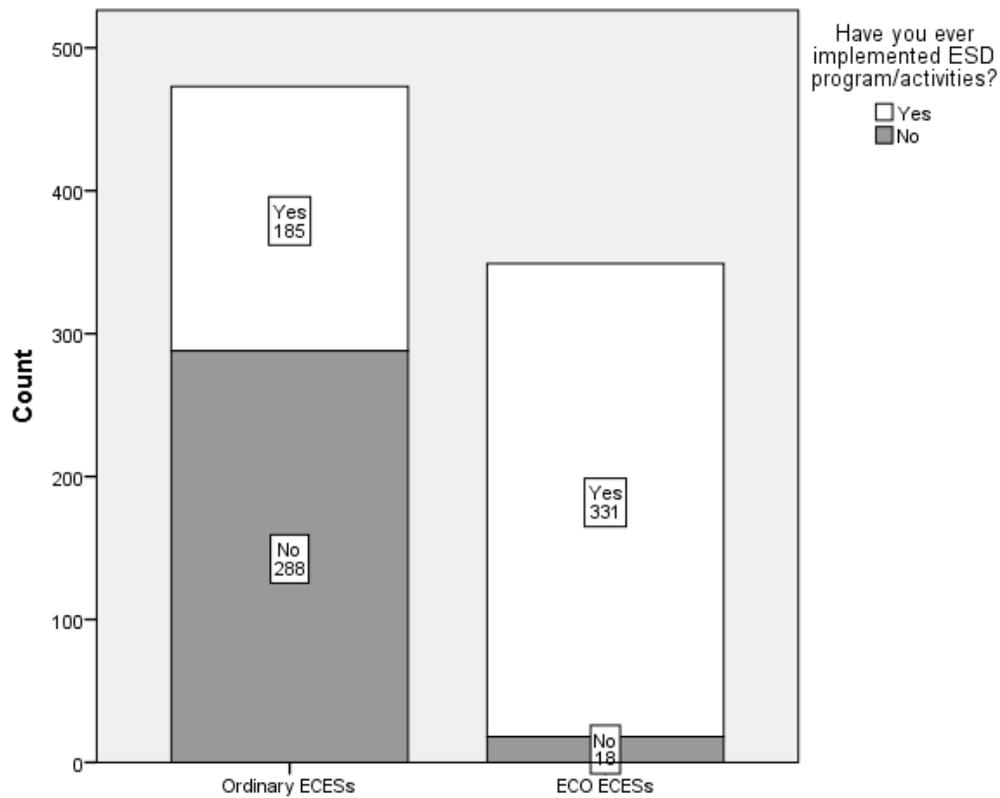


Figure 4.10. The percentages of ECEEs that have fear of pollution and environmental disaster.

In the Table 4.1, some main descriptive results about knowledge, attitude, and practice scale such as minimum and maximum scores, mean scores, standard deviations, and variances were presented.

Table 4.1 Mean and SD scores for all scales and sample items that had highest and lowest means.

		<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>	<i>Variance</i>
Knowledge about SD	in Ordinary ECEs	1.00	3.00	2.38	.37	.13
	in ECO-ECEs	1.00	3.00	2.40	.39	.15
Attitude towards SD	in Ordinary ECEs	1.00	4.00	3.50	.38	.14
	in ECO-ECEs	1.00	4.00	3.54	.35	.12
ESD Practice	in Ordinary ECEs	1.00	5.00	3.45	.56	.31
	in ECO-ECEs	1.00	5.00	3.68	.66	.43

The level of knowledge about SD, attitude towards SD, and ESD practices of all ECEEs were examined. Concerning the ECEEs' knowledge, the mean score was slightly above the midpoint and almost same for all ECEEs that were serving at ordinary and ECO-ECESs. It implies that ECEEs serving either eco ECESs or ordinary ECESs seem to be informed about issues of sustainable development. Moreover, the results indicated high scores on their attitude towards SD. The average score was 3.50 for ECEEs that were serving at ordinary ECESs and 3.54 for ECEEs that were serving at ECO-ECESs implying that regardless with the setting type they work, ECEEs value SD and have positive sense of feeling. In addition, mean score of ECEEs' ESD practices was slightly above the midpoint. It was 3.45 for ECEEs that were serving at ordinary ECESs and 3.68 for ECEEs that were serving at ECO-ECESs. This results may indicate that ECEEs serving at eco ECESs have more ESD practices in their settings.

4.4 The Results of the Hierarchical Linear Modeling (HLM) Analyses

The HLM analyses were conducted to test the research questions focusing on ECEEs' ESD practices.

4.4.1 Predicting ESD Practices of ECEEs in Ordinary ECESs

The first set of HLM model was tested to examine predictor effects of ECEEs' knowledge about SD, attitude towards SD, childhood location, household type at childhood, membership to a NGO, and previous experiences. For the analysis, ECEEs' ESD practices was determined as outcome variable. HLM analysis was conducted under two sub-analyses. These were:

1. One-Way Random Effects ANOVA Model
2. Random Coefficient Model

With these two steps, proposed model for ECEEs' ESD practices was tested, finalized, and represented.

4.4.1.1 First step: One-Way Random Effects ANOVA Model

First of all, One-Way Random Effects ANOVA was conducted by using HLM.

The data was analyzed based on the following regression equation:

Level-1 (ECEE-level) model:

$$Y_{ij} = \beta_{0j} + r_{ij}$$

Level-2 (ECES-level) model:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

Y_{ij} is the outcome variable (ECEEs' ESD practices)

β_{0j} is the regression intercept of ECES j, that is, the ECES's mean on an outcome variable.

γ_{00} is the grand mean, that is, the overall average score of an outcome variable for all ECESs.

r_{ij} is the random effect of ECEE i in ECES j.

u_{0j} is the random effect of ECES j.

One-Way Random Effects ANOVA was conducted to see the variability in ECEEs' ESD practices. In order to see the variation between ECES means in ECEEs' ESD practices, Intraclass Correlation Coefficient (ICC) score was calculated by using the following formula:

$$\rho = \tau_{00} / (\tau_{00} + \sigma^2)$$

The results of the present study revealed that 75.9% of total variability in ECEEs' ESD practices can be attributed to the ECESs. Table 4.2 presents the final estimation of fixed effects for ECEEs' attitude towards SD.

Table 4.2 Final estimation of fixed effects for ECEEs' attitude towards SD.

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>ICC (ρ)</i>	<i>Reliability (λ)</i>
Model for attitude towards SD (β_0)	3.45	.04	.759	.577
Intercept (γ_{00})				

The results of the One-Way Random Effects ANOVA revealed that the variance of the ECES-level (τ_{00}) component was statistically significant. It means that there is a significant variability in ECEEs' ESD practices across ECESs ($\tau_{00} = .07$, $X^2 = 144.94$, $df = 57$, $p < .001$). Table 4.3 presents that final estimation of variance components for ECEEs' attitude towards SD.

Table 4.3 Final estimation of variance components for ECEEs' attitude towards SD.

<i>Random Effects</i>	<i>Variance Components</i>	<i>df</i>	<i>X²</i>
Attitude towards SD			
ECES mean, u_{ij}	.07	57	144.94***
Level-1 Effect, r_{ij}	.37		

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

4.4.1.2 Second step: Random Coefficient Model

The Random Coefficient Model was tested to investigate the explained variances in ECEEs' ESD practices due to Level-1 or ECEE-level predictor, which were ECEEs' knowledge about SD, attitude towards SD, childhood residence, household type at childhood, membership to a NGO, and previous experiences. This analysis was done by addressing regression equations for each ECES, by computing averages of these ECESs' intercepts-slopes and all variations. Based on the result, the final model is constructed.

Accordingly, the Random Coefficient Model was tested based on the following regression equation:

Level-1 (teacher level) model:

$$Y_{ij} = \beta_{0j} + \beta_{1j} * (KNOW) + \beta_{2j} * (ATT) + \beta_{3j} * (CHILD_R) + \beta_{4j} * (CHILD_H) + \beta_{5j} * (NGO_P) + \beta_{6j} * (PRE_EX) + r_{ij}$$

Level-2 (ECES-level) model:

$$\beta_{0j} = \gamma_{00} + u_{oj}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

In these models,

Y_{ij} is the outcome variable (ECEEs' ESD practices)

β_{0j} is the mean on ECEEs' ESD practices for each ECES.

β_{1j} is the differentiating effect of ECEEs' knowledge about SD in ECES j.

β_{2j} is the differentiating effect of ECEEs' attitude towards SD in ECES j.

β_{3j} is the differentiating effect of ECEEs' childhood residence in ECES j.

β_{4j} is the differentiating effect of ECEEs' household type at childhood SD in ECES j.

β_{5j} is the differentiating effect of ECEEs' membership to a NGO in ECES j.

β_{6j} is the differentiating effect of ECEEs' previous experiences in ECES j.

γ_{00} is the average of ECES means on the outcome variable across the population of ECES.

r_{ij} is the level-1 residual.

u_{0j} = the unique increment to the intercept associated with ECES j.

Figure 4.11 shows the representative model that was tested in the Random Coefficient Model.

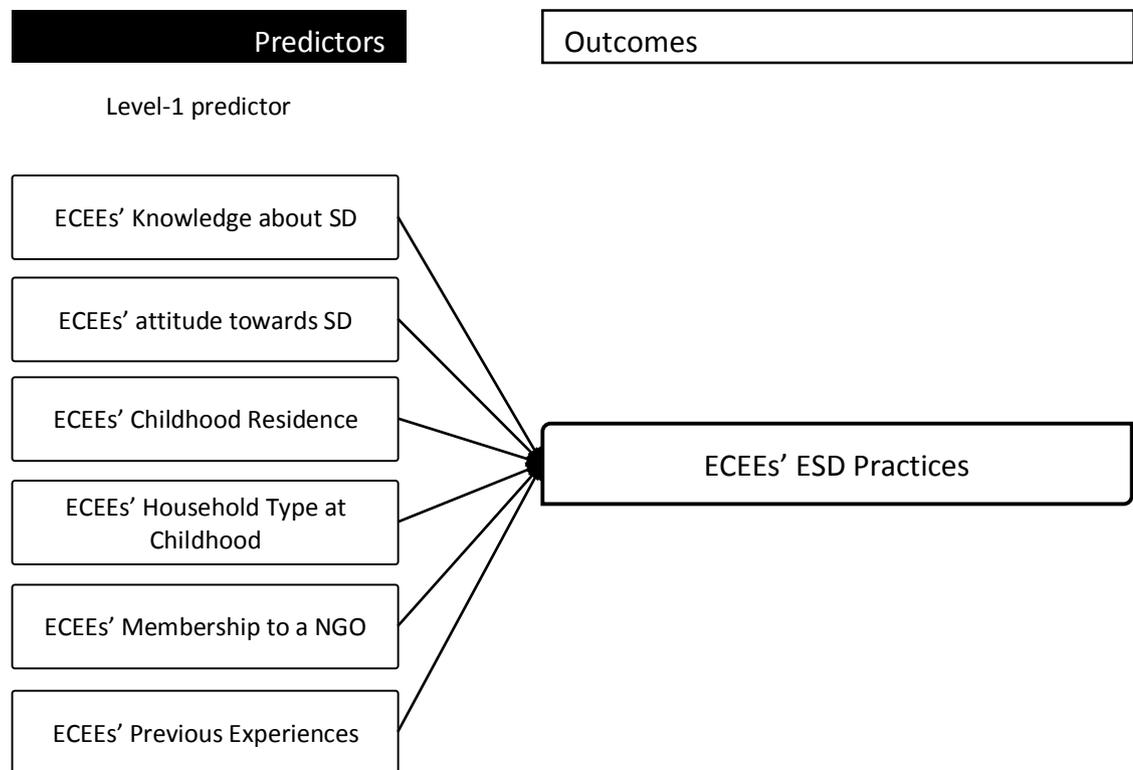


Figure 4.11. The representative model that was tested in the Random Coefficient Model

The Random Coefficient Model revealed that *ECEEs' attitudes towards SD* was significantly and positively associated with *ECEEs' ESD practices* ($\gamma = .497$, $SE = .07$, $p < .01$). In addition, previous experiences of ECEEs had a predictor effect on their ESD practices ($\gamma = .145$, $SE = .06$, $p < .05$). Accordingly, If ECEEs had previous

experiences on implementing ESD activities, their actual practices included more ESD activities. Table 4.4 revealed the final estimation of fixed effects for ECEEs' attitude towards SD

Table 4.4 Final estimation of fixed effects for ECEEs' attitude towards SD.

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>p</i>
Attitude towards SD			
Intercept, γ_{00}	3.777	.25	.000***
KNOW, γ_{10}	.069	.07	.352
ATT, γ_{20}	.497	.07	.000***
CHILD_R, γ_{30}	.009	.08	.918
CHILD_H, γ_{40}	.050	.06	.417
NGO_P, γ_{50}	.136	.07	.060
PRE_EX, γ_{60}	.145	.06	.011*

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

To calculate the proportion of the reduction in residual variance for *ECEEs' ESD practices*, the sigma squared that was obtained from the One-Way Random Effects ANOVA and the sigma squared that was obtained from the Random Coefficient Model were used:

$$R^2 = \frac{\sigma^2(\text{random ANOVA}) - \sigma^2(\text{Random Coefficient})}{\sigma^2(\text{random ANOVA})}$$

$$R^2 = \frac{.36850 - .33301}{.36850}$$

$$R^2 = .096$$

Accordingly, when the level-1 variable was added to the model as predictors of *ECEEs' ESD practices*, the residual variance was reduced by 9.6%. However, there was still a significant variation among ECES means that might be explained adding level-2 variables ($X^2 = 126.27, p < .001$).

Table 4.5 Final estimation of variance components for ECEEs' attitude towards SD.

<i>Random Effects</i>	<i>Variance Components</i>	<i>df</i>	<i>X²</i>	<i>R²</i>
ECEEs' Attitude towards SD				
ECEE mean, u_{ij}	.047	57	126.27***	.514
Level-1 Effect, r_{ij}	.333			

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

These findings implied that if ECEEs hold higher attitudes and had previous experiences on implementing ESD activities, their in-class practices included more ESD related activities (Figure 4.12).

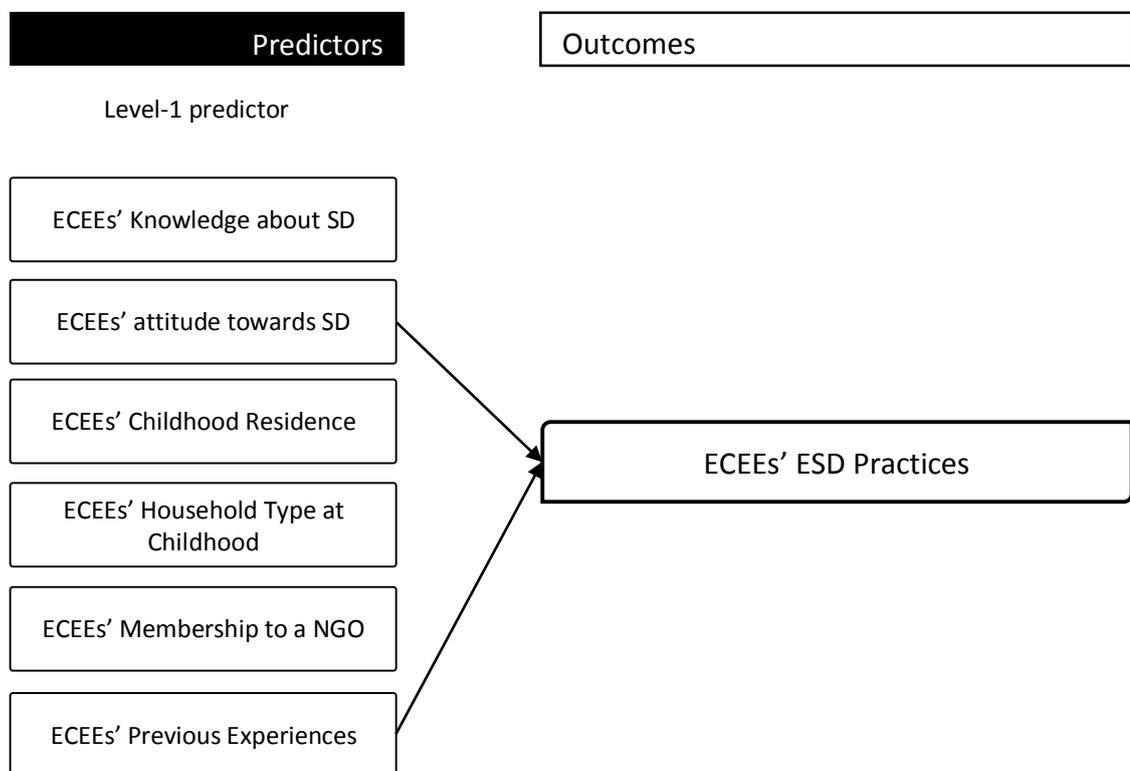


Figure 4.12. The final model that was tested in the Random Coefficient Model

4.4.2 Predicting ESD Practices of ECEEs in ECO ECESs

The second set of HLM model was tested to examine predictor effects of ECEEs' knowledge about SD, attitude towards SD, childhood residence, household type at childhood, membership to a NGO, and previous experiences. For the analysis,

ECEEs' ESD practices was determined as outcome variable. HLM analysis was conducted under two sub-analyses. These were:

1. One-Way Random Effects ANOVA Model
2. Random Coefficient Model

With these two steps, proposed model for ECEEs' ESD practices was tested, finalized, and represented.

4.4.2.1 First step: One-Way Random Effects ANOVA Model

First of all, One-Way Random Effects ANOVA was conducted by using HLM.

The data was analyzed based on the following regression equation:

Level-1 (ECEE-level) model:

$$Y_{ij} = \beta_{0j} + r_{ij}$$

Level-2 (ECES-level) model:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

Y_{ij} is the outcome variable (ECEEs' ESD practices)

β_{0j} is the regression intercept of ECES j, that is, the ECES's mean on an outcome variable.

γ_{00} is the grand mean, that is, the overall average score of an outcome variable for all ECESs.

r_{ij} is the random effect of ECEE i in ECES j.

u_{0j} is the random effect of ECES j.

One-Way Random Effects ANOVA was conducted to see the variability in ECEEs' ESD practices. In order to see the variation between ECES means in ECEEs' ESD practices, Intraclass Correlation Coefficient (ICC) score was calculated by using the following formula:

$$\rho = \tau_{00}/(\tau_{00} + \sigma^2)$$

The results of the present study revealed that 58.4% of total variability in ECEEs' ESD practices can be attributed to the ECESs. Table 4.6 presents the final estimation of fixed effects for ECEEs' attitude towards SD.

Table 4.6 Final estimation of fixed effects for ECEEs' attitude towards SD.

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>ICC (ρ)</i>	<i>Reliability (λ)</i>
Model for attitude towards SD (β_0)	3.68	.05	.584	.273
Intercept (γ_{00})				

The results of the One-Way Random Effects ANOVA revealed that the variance of the ECES-level (τ_{00}) component was statistically significant. It means that there is a significant variability in ECEEs' ESD practices across ECESs ($\tau_{00} = .02$, $X^2 = 78.17$, $df = 53$, $p < .014$). Table 4.7 presents that final estimation of variance components for ECEEs' attitude towards SD.

Table 4.7 Final estimation of variance components for ECEEs' attitude towards SD.

<i>Random Effects</i>	<i>Variance Components</i>	<i>df</i>	<i>X²</i>
Attitude towards SD			
ECES mean, u_{ij}	.02	53	78.17*
Level-1 Effect, r_{ij}	.30		

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

4.4.2.2 Second step: Random Coefficient Model

The Random Coefficient Model was tested to investigate the explained variances in ECEEs' ESD practices due to Level-1 or ECEE-level predictor, which were ECEEs' knowledge about SD, attitude towards SD, childhood residence, household type at childhood, membership to a NGO, and previous experiences. This analysis was done by addressing regression equations for each ECES, by computing averages of these ECESs' intercepts-slopes and all variations. Based on the result, the final model is constructed.

Accordingly, the Random Coefficient Model was tested based on the following regression equation:

Level-1 (teacher level) model:

$$Y_{ij} = \beta_{0j} + \beta_{1j} * (KNOW) + \beta_{2j} * (ATT) + \beta_{3j} * (CHILD_R) + \beta_{4j} * (CHILD_H) + \beta_{5j} * (NGO_P) + \beta_{6j} * (PRE_EX) + r_{ij}$$

Level-2 (ECES-level) model:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\beta_{4j} = \gamma_{40}$$

$$\beta_{5j} = \gamma_{50}$$

$$\beta_{6j} = \gamma_{60}$$

In these models,

Y_{ij} is the outcome variable (ECEEs' ESD practices)

β_{0j} is the mean on ECEEs' ESD practices for each ECES.

β_{1j} is the differentiating effect of ECEEs' knowledge about SD in ECES j.

β_{2j} is the differentiating effect of ECEEs' attitude towards SD in ECES j.

β_{3j} is the differentiating effect of ECEEs' childhood residence in ECES j.

β_{4j} is the differentiating effect of ECEEs' household type at childhood SD in ECES j.

β_{5j} is the differentiating effect of ECEEs' membership to a NGO in ECES j.

β_{6j} is the differentiating effect of ECEEs' previous experiences in ECES j.

γ_{00} is the average of ECES means on the outcome variable across the population of ECES.

r_{ij} is the level-1 residual.

u_{0j} = the unique increment to the intercept associated with ECES j.

Figure 4.13 shows the representative model that was tested in the Random Coefficient Model.

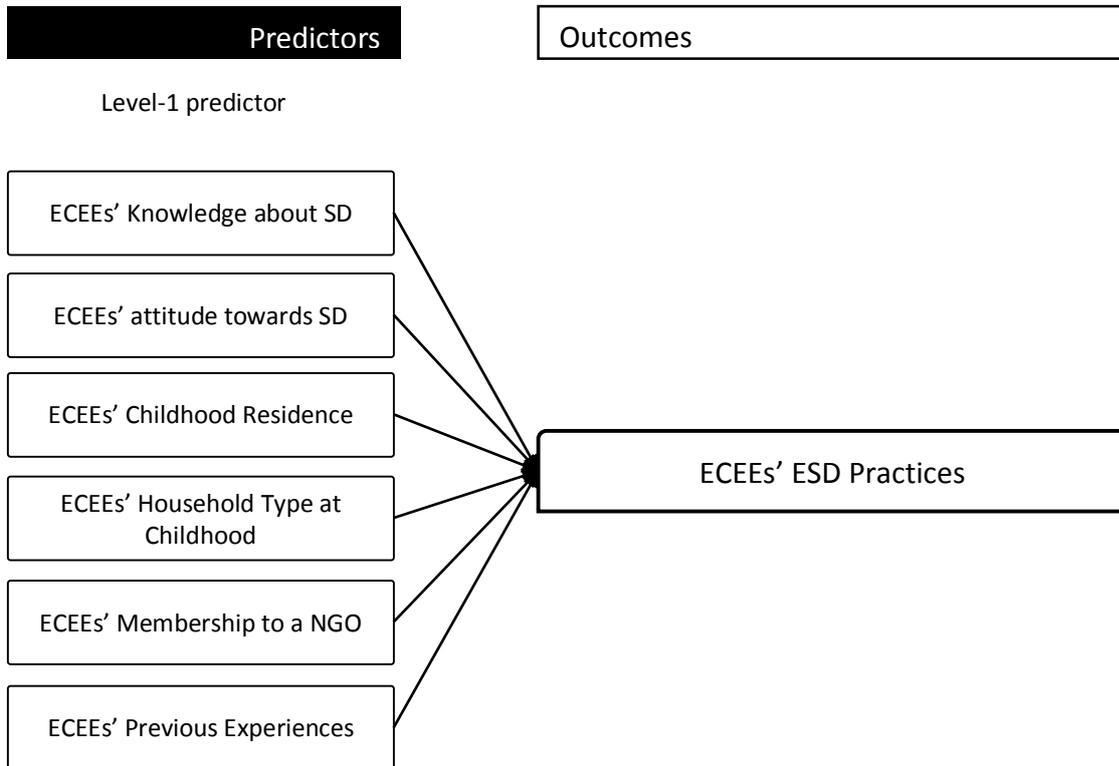


Figure 4.13. The representative model that was tested in the Random Coefficient Model

The Random Coefficient Model revealed that *ECEEs' attitudes towards SD* was significantly and positively associated with *ECEEs' ESD practices* ($\gamma = .497$, $SE = .07$, $p < .01$). In addition, membership to a NGO of ECEEs had a predictor effect on their ESD practices ($\gamma = .145$, $SE = .06$, $p < .05$). Accordingly, If ECEEs had membership to a NGO, their actual practices included more ESD activities.

Table 4.8 Final estimation of fixed effects for ECEEs' attitude towards SD.

<i>Fixed Effects</i>	<i>Coefficient</i>	<i>SE</i>	<i>p</i>
Attitude towards SD			
Intercept, γ_{00}	3.784	.27	.000***
KNOW, γ_{10}	.073	.08	.333
ATT, γ_{20}	.309	.09	.001**
CHILD_R, γ_{30}	.128	.08	.117
CHILD_H, γ_{40}	.052	.07	.426
NGO_P, γ_{50}	.216	.08	.011
PRE_EX, γ_{60}	.041	.06	.494

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

To calculate the proportion of the reduction in residual variance for *ECEEs' ESD practices*, the sigma squared that was obtained from the One-Way Random Effects ANOVA and the sigma squared that was obtained from the Random Coefficient Model were used:

$$R^2 = \frac{\sigma^2(\text{random ANOVA}) - \sigma^2(\text{Random Coefficient})}{\sigma^2(\text{random ANOVA})}$$

$$R^2 = \frac{.36850 - .33301}{.36850}$$

$$R^2 = .059$$

Accordingly, when the level-1 variable was added to the model as predictors of *ECEEs' ESD practices*, the residual variance was reduced by 5.9%. However, there was still a significant variation among ECES means that might be explained adding level-2 variables ($X^2 = 75.23, p < .024$).

Table 4.9 Final estimation of variance components for ECEEs' attitude towards SD.

<i>Random Effects</i>	<i>Variance Components</i>	<i>df</i>	<i>X²</i>	<i>R²</i>
ECEEs' Attitude towards SD				
ECEE mean, u_{ij}	.014	53	126.27***	.231
Level-1 Effect, r_{ij}	.278			

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

These findings implied that if ECEEs hold higher attitudes and had membership to a NGO, their in-class practices included more ESD related activities (Figure 4.14).

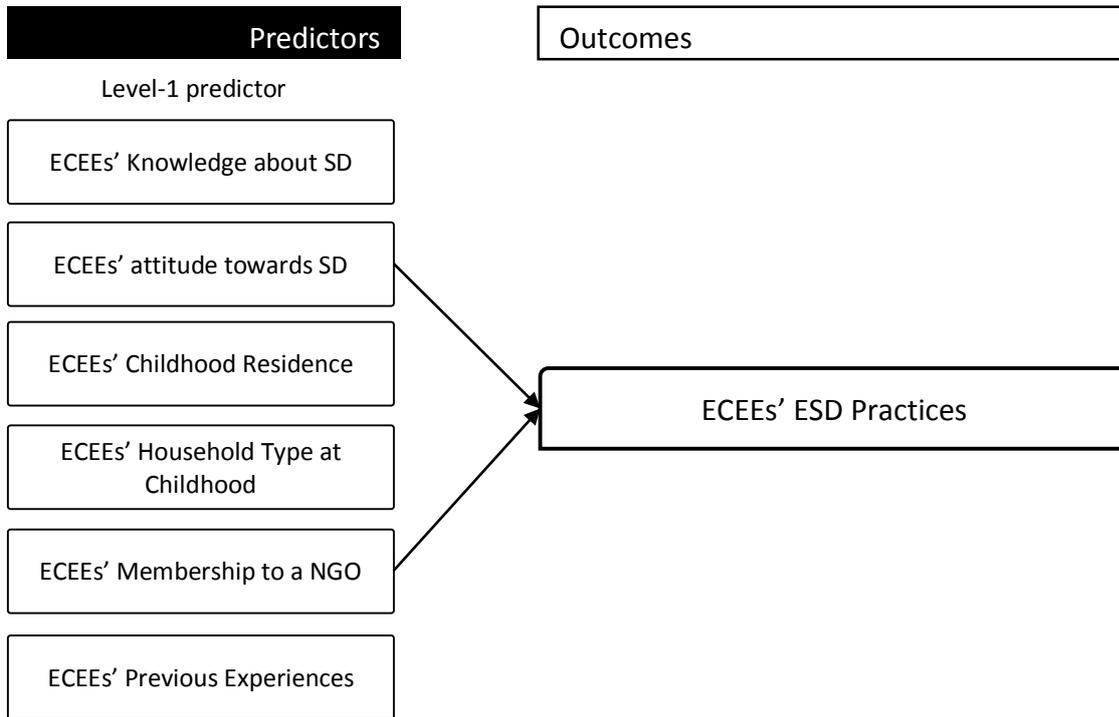


Figure 4.14. The final model that was tested in the Random Coefficient Model

4.5 Summary of the Results

According to the first results of this study, most of ECEEs that were serving at both ordinary and ECO-ECESs thought that ESD should be the key part of early childhood education. The most important purpose of ESD for the ECEEs that were serving at both ordinary and ECO-ECESs was increasing awareness of SD/ESD issues. Other purposes rated by ECEEs are to improve thinking creatively and holistically, solving problems, and making decisions and guiding practical behavior for a sustainable lifestyle for SD. They reported almost all type of teaching methods to use in their ESD program/activities. The results also indicated the teacher's lack of formal training in ESD and lack of teaching and learning materials for ESD as the most difficult aspects of implementing ESD program/activities for ECEEs that were serving at both ordinary and ECO-ECESs thought. ECEEs' opinions about activating ESD program or activities showed two significant aspects; expanding ECEEs training and applying ESD to the curriculum. The final results of the first part revealed that

ECEEs had limited knowledge about SD, and held high level of attitude about it, but their ESD practices were not high compare to their attitudes. In general, ECEEs that were serving at both ordinary and ECO-ECESs thought reported similar answers to the questions related understandings about the needs for and implementing ESD.

Possible predictors of ECEEs' ESD Practices were investigated by conducting two set of HLM analyses. In the first set, possible predictors were tested for ESD practices of ECEEs that were serving at ordinary ECESs. According to empty model, 75.9% of total variability in ECEEs' ESD practices was accounted for the ECESs, whereas 24.1% of total variability was accounted for ECEEs-related variables. According to results of Random Coefficient Model, ECEEs' ESD practices was significantly and positively associated with their attitude towards SD. It means that if ECEEs has high level of attitudes towards SD, they tended to practice ESD issues more SD. In addition, if ECEEs had previous experiences on implementing ESD activities, they tended to implement more ESD related activities in their class. Examining the variance, the proportion of variance for ECEEs' attitude towards SD and their previous experiences was calculated as 9.6%.

In the second set of HLM analyses, predictors of ECEEs' ESD practices were also reviewed for ECEEs that were serving at ECO-ECESs. In the first proposed model, variation between and within ECES means in ECEEs' ESD practices was tested and explained. Accordingly, 58.4% of total variability in ESD practices of ECEEs were accounted for the ECESs, whereas 41.6% of total variability were accounted for ECEEs-related variables. The latter model explained the variability of ECEEs' knowledge about SD, attitudes towards SD, and other ECEEs-related variables in ECEEs' ESD practices. According to results, ECEEs' attitudes towards SD was significantly and positively associated with their ESD practices. It is meant that the more positive ECEEs' attitudes towards SD develop, the more ECEEs' take role in ESD practices. Also, If ECEEs had membership to a NGO, they tended to implement ESD activities in their class. Examining the variance, the proportion of variance for ECEEs' attitudes towards SD in ESD practices of them was calculated as 5.9%.

CHAPTER V

DISCUSSION AND CONCLUSION

In this chapter the results and their implications are discussed. Within this context a discussion of the proposed model with national and international research studies is made. Then, implications and recommendations for further research are stated.

5.1 Discussion of the Results and Conclusion

5.1.1 Comparison of what eco and ordinary ECEEs think about ESD

First of all, ECEEs' thoughts about the needs for and implementation of ESD were asked to participants. Accordingly, most of the ECEEs that were serving at ordinary ECESs (93.55%) and ECO ECESs (91.89%) stated that ESD should be the key part of early childhood education. These results indicated that both ECEEs' either serving at eco or ordinary ECESs believe the key importance of ESD for early years as UNESCO (2010) declared the necessity of starting ESD from the early years of life.

According to the ECEEs' serving at ordinary ECESs reported the most important purpose of ESD in ECE as thoughts about the purpose of ESD in early childhood, the most important purpose of ESD was "awareness of SD/ESD issues" for ECEEs that serving at ordinary ECESs (37.43%) and at ECO ECESs (39.96%). "Ability to think creatively and holistically, to solve problems, and make decisions" and "practical behavior for a sustainable lifestyle for SD" were also other reported as responses by

ECEEs that were serving at ordinary ECESs (28.74% and 25.45%, respectively) and at ECO ECESs (24.15% and 27.14%, respectively) as important purposes of ESD. In other words, ECEEs serving at ordinary settings highlighted ability to think creatively and holistically while their counterparts mostly highlighted practical applications for a sustainable life. ECEEs' have similar ratings about purpose of ESD; however, only 7.19% of ECEEs at ordinary ECESs and 6.8% of ECEEs at ECO ECESs thought that "acquisition of the concepts and knowledge of SD/ESD" was a purpose of ESD in early childhood. These results indicated that all ECEEs either serving at eco ECESs or ordinary ECESs perceive the purpose of ESD in a parallel way. With the parallel aim of investigating how ECEEs' perceive ESD, Arlemalm-Hagser and Sandberg (2011) explicitly made reference to the understanding held by Swedish ECEEs. The findings of the referred study confirmed this study's findings emphasizing the need for ESD in ECE. In addition, the ECEEs who participated in the study by Arlemalm-Hagser and Sandberg highlighted the purpose of ESD as raising awareness of SD/ESD issues and improving creative and holistic thinking, solving problems, making decisions and guiding practical behavior for SD. At that point, it may be concluded that ECEEs generally have similar thought about purpose of ESD with regardless the setting they work.

Then, types of teaching methods of ECEEs that were serving at ordinary ECESs use for their ESD program/activities were examined in the present study. According to the results, ECEEs serving at ordinary ECESs reported that almost all type of teaching methods they use in their ESD program/ activities. Among them, role play (20.30%), field trip (18.80%), observation (17.29%), reading books (15.04%), and circle time discussions (14.29%) were the most preferred teaching methods by the ECEEs. Furthermore, ECEEs at ECO-ECESs confirmed that almost all type of teaching methods they use in their ESD program/ activities. Among them, field trip (19.61%), reading books (18.30%), and observation (17.65%) were the most preferred teaching methods by the ECEEs. In conclusion it may be concluded that ECEEs serving at both eco and ordinary ECESs utilize the similar teaching methods for their ESD activities. When the relevant literature was examined studies by Cengizoğlu (2013) and Alici

(2013) also indicated that existing teaching methods in the national early childhood education curriculum such as field trips, role play and observation can be used to implement ESD practices at both type of settings. Therefore, it may be concluded that ECEEs serving either eco or ordinary settings utilize the teaching methods which currently exist in the national early childhood education curriculum.

The results also indicated that ECEEs' have some difficulties with implementing ESD program/activities. Accordingly, the ECEEs that were serving at ordinary ECESs regarded "lack of teaching and learning materials for ESD" and "the ECEEs' (their) lack of formal training in ESD" as the barriers of implementing ESD practices (26.90% and 25.73%, respectively.). Similar responses were reported by ECEEs that were serving at ECO ECESs, 25.0% and 22.46%, respectively. On the other hand, "the teacher's lack of pedagogical content knowledge" was regarded as the least difficulty aspect in implementing ESD program/activities by ECEEs that were serving at both ordinary and ECO ECESs (12.28/% and 11.86% respectively.). These results indicates that regardless of the setting (eco or ordinary), most of all ECEEs perceive the teachers' lack of formal training about ESD as barrier for ESD practices in ECE. On the other hand, the ECEEs' opinions about the most necessary aspect in activating ESD program or activities was another important issue for this part. The results showed that the ECEEs that were serving at ordinary ECESs stated two significant aspects; expanding ECEEs training (34.62%) and applying ESD to the curriculum (31.32%). ECEEs that were serving at ECO ECESs reported similar aspects at most (33.2% and 41.2% respectively). These results indicates that comparing with their counterparts ECEEs serving at eco ECESs pointed out the practical applications mostly, similar with the results discussed above. Developing teaching and learning materials, cultivating the interest of the ECEEs, associating with family and the local community were reported by the ECEEs that were serving at both ordinary and ECO ECESs as other necessary aspects in activating ESD program/activities. Combining the results of the current study indicated the remarkable point that ECEEs' especially serving at eco ECESs thought that integrating ESD into curriculum is the most necessary aspect to activate ESD practices. Besides, expanding teacher training is the

most referred choice to be selected by all ECEEs. The noteworthy point is to be underlined that ECEEs' serving either ordinary or eco ECESs need supportive teacher training about ESD in ECE. Supporting these findings, Inoue, O'Gorman and Davis (2016) reported that Australian early childhood teacher candidates highlighted the inadequate national curriculum frameworks and guidelines promoting ESD practices as obstacles to ESD practice.

When the level of knowledge about SD, attitude towards SD, and the ECEE's ESD practices were compared among educators of eco and ordinary ECESs, the results indicated that ECEEs from eco ECESs and ordinary ECESs had level of knowledge was similar and held positive attitudes. On the other hand, practices of ECEEs serving at eco ECESs was slightly above than their colleagues serving at ordinary ECESs.

When the level of their knowledge was examined, it can be implied that ECEEs serving either eco ECESs or ordinary ECESs seem knowledgeable about issues of sustainable development. The significance of educators' knowledge related to sustainable development should be considered since they play a key role in introducing sustainable development to the children (WCED, 1987). Furthermore, educators serving at eco settings are expected to be knowledgeable about issues of SD since educators serving at eco settings participate in professional development courses to promote their understandings about ESD (FEE, 2013) Besides, eco school program is one of the examples of best practices promoting educators' competencies (UNESCO, 2011). As an unpredicted result, ECEEs serving at ordinary ECESs are as knowledgeable as their counterparts serving at eco ECESs.

Similar to knowledge, ECEEs either serving at eco ECESs or ordinary ECESs have higher levels of attitudes which implies that regardless of the setting type they work, ECEEs have positive sense of feeling. Attitude is mostly referred to affective components as positive or negative feeling towards an object or a class of objects. (Fishbein & Ajzen, 1975; Zimbardo et al., 1977; Flanagan, 1984; Wu, 1996). ECEEs' attitudes towards SD is a key element relating with their role in expanding ESD in

ECE (UNESCO, 2008). At this point, eco school program aims to promote not only students but also educators' attitudes towards sustainable development and therefore; ECEEs serving at eco ECESs are expected to be ready to participate in ESD practice rather their colleagues serving at ordinary settings. On the other hand, ECEEs' serving at ordinary ECESs hold similar levels of attitudes with their counterparts despite the promising approach of eco settings to enlarge attitudes.

When it comes to discuss ESD practices of ECEEs across eco versus ordinary ECESs, it was concluded as expected that ECEEs from eco ECESs have more practices than their counterparts from ordinary settings. Eco ECESs are regarded as a good example of whole school approach providing a variety of opportunity to promote ESD in educational settings (Scoot, 2010). In addition, UNESCO (2009) also mentioned eco settings as one of the good practices supporting ESD and so a sustainable future. On the other hand, despite the appropriateness of the national curriculum for implementing ESD practices (Kocaoğlu, 2013), ECEEs serving at ordinary ECESs had lower levels of practices. This result is expected; however, after providing necessary conditions for a whole school approach, it is well know that ECEEs serving at ordinary schools can enlarge their ESD practices.

In summary, the current study's results partially contradicted the trends in line with purpose of eco settings (FEE, 2015). Educators serving at eco settings are expected to be more knowledgeable about issues of SD; to develop more positive attitudes and to conduct more ESD practices that their counterparts serving at ordinary schools since eco school program provides professional development opportunities for their member educators to promote their knowledge, attitude and practice.

5.1.2 Predictors of ECEEs' ESD Practices

Possible predictors of ECEEs' ESD practices across eco versus ordinary ECESs were investigated in the current study by conducting HLM analyses. According to results, ECEEs' ESD practices serving at ordinary and eco preschool was significantly and

positively associated with their attitudes towards SD. It means that ECEEs who serve at ordinary or eco preschools if has high level of attitudes towards SD, they tended to practice ESD issues more. This implies that as ECEEs' attitudes towards SD become more positive so the ECEEs' take on more roles in ESD practices. These findings are also not surprising since the conclusion about the relationship between attitude towards SD and ESD practice are supported by a variety of studies reported in the environmental education research area (Nordlund & Garvill, 2002; Schultz & Zelezny, 1998; Schultz, Gouveia, Cameron, Tankha, Schmuck, & Franek, 2005; Thompson & Barton, 1994) inferring that attitudes towards sustainable development is one of the most important factors influencing practices. Thus, it may be concluded for the current study that ECEEs who have positive attitudes towards SD tended to exhibit more ESD practices in their ECESs. On the other hand, ECEEs' knowledge did not relate with their practices with regardless of the setting type they work. Similarly, Hwang, Kim, and Jeng (2000) reported similar findings that knowledge did not relate with the practice. As Boubonari et al. (2013) indicated similar to the current study results that practice was not associated with knowledge. As far as the results of the related literature are concerned, a non-significant relationship between knowledge and practice is not surprising. A variety of studies also reported an indirect relationship between knowledge and practice (e.g. Alp et al., 2006; Barr, 2003; Fielding & Head, 2012; Hines et al., 1986/87; Hsu & Roth, 1999) and stated that knowledge about environmental issues does not influence environmental practices directly. In conclusion, the results indicated that ECEEs' ESD practices were significantly and positively associated with their attitudes towards SD, but not with their knowledge about SD for the both school type as inferred by relevant literature.

When examining the demographic variables of ECEEs' across eco versus ordinary ECESs, childhood location and childhood household type did not relate with ESD practices across eco versus ordinary ECESs. It means that regardless of the ECESs they work, ECEEs' ESD practices did not link to the location and the household type they grow up. These results revealed non-significant differences between ECEEs who had lived in rural or urban areas and grow up in an apartment or house with respect

to their ESD practices. These findings were largely inconsistent with the relevant literature. Despite the scarcity of quantitative research, a rich variety of qualitative reports (Palmer, 1998, Sward, 1999, Chawla, 1999) highlighted that childhood location and household type in childhood may be indicators of the natural experiences having had in childhood. In this regard, people growing up rural rather than urban and living at house rather than apartment are regarded as tending to have more relatedness with natural as well as social- cultural and economic issues. Palmer's (1995) cross-cultural study with a huge sample from many countries highlights the underlying reason for the contradiction between the current research and emerging research. Palmer et. al., (1999) concluded that increasing sample sizes and international coverage may result not only in some similarities but also in some differences from one country to the next.

Afterwards, membership to NGO was the only background variable that significantly predicted ESD practices of ECEEs serving at eco ECESs but not in ordinary settings. It implies that membership to an NGO is in an association with ESD practices for the ECEEs serving at eco ECESs. In parallel with emerging research, the results of the current study were supported by the relevant literature. Pe'er, Goldman and Yavetz (2007) also investigated that pre-service teachers who are members of NGOs involved in environmental, economic and socio-cultural issues more than others. Similarly, Goldman (2006) reported a positive relationship between the students' engagement in NGO's and their act for environmental issues. This relationship may be explained by the notion that educators serving at eco ECESs who are members of NGOs have greater exposure to environmental, economic and socio-cultural issues in their settings since eco schools have also had links with a variety of NGOs and have had their support for a variety of issues (FEE, 2014). On the other hand, ESD practices of their counterparts serving at ordinary ECESs were not significantly predicted by membership to NGO. It can be inferred from these discussion that as stated by the Millennium Developmental Goals, NGOs can be best support to promote innovative way of teaching in education (Toly, 2010). By the way, education for sustainable development is also an important issue received more attention not only form NGOs

(UNESCO, 2007) but also eco-school approach (UNESCO, 2010). When comparing the eco and ordinary settings in terms of ESD practices it may be concluded that since serving at eco settings as a prosperous enterprise in the field of education is also related with NGO participation.

The final result of the current study indicated that ECEEs serving at ordinary preschools seemed to implement more ESD practices if they had previous ESD while having previous ESD experience did not predict ECEEs ESD practices serving at eco preschools. When the relevant literature examined, Mastropieri (1993) reported that previous teaching experiences seem to have a positive effect on later teaching experiences. In addition, according to Rajeki (1982) direct experiences have stronger influences on people's practices than indirect experiences. The reason why ESD practices of ECEEs' serving at eco ECESs were not seemed to significantly influence by their previous experiences may be explained that they have already involved in ESD practices as eco school curriculum proposed. Their daily plans, the activities they conduct with children, and curriculum resources etc. should also be related with ESD. On the other hand, the ECEEs serving at ordinary ECESs do not have any commitment to conduct ESD practices like their counterparts. In other words, if they are interested in practicing ESD in the settings they work, they can. In this regard, it is meaningful that the ECEEs who have previous experiences of ESD practices may significantly have more ESD practices in their ordinary settings.

5.2 Educational Implications of the study

Considering the points discussed in the previous chapters, the current study can provide a great contribution to the education system in Turkey since it offers suggestions and advice for early childhood education educators, curriculum developers, researchers, and social politicians.

While the ESD thoughts of ECEEs is currently under-theorized and only partially explored in this paper it is an area worthy of discussion in the current study. The

Gothenburg Recommendations on Education for Sustainable Development (Centre for Environment and Sustainability, 2009) stated that early childhood should be regarded as a “natural starting point” for SD education and suggested that ECEEs play the key role in this process. One of the key intentions of the current study was to contribute relevant literature comparing how ECEEs serving across eco or ordinary ECESs perceive ESD. Results indicated that both ECEEs’ either serving at eco or ordinary ECESs believe the key importance of ESD for early years. In addition, ECEEs generally have similar thoughts about purpose of ESD with regardless the setting they work. In addition, results of the current study indicated that regardless of the setting (eco or ordinary) they work, most of all ECEEs perceive the educators’ lack of formal training in ESD as a barrier for their practices. The remarkable point is to be underlined that more ECEEs’ serving ordinary ECESs rather than others highlighted lack of teaching and learning material for ESD as a handicap for their ESD practices. Finally results about the thoughts of ECEEs about needs for and implementation of ESD in ECE indicated that, either serving at eco or ordinary all ECEEs utilize the same teaching methods referred in the national early childhood education curriculum. The last point should be referred is that despite the similar evaluations of educators’ thoughts about ESD, it is seen that ECEEs who think about practical applications of ESD is serving in eco settings more than their colleagues serving at ordinary settings, when comparing.

Based on the results discussed above, one may infer that all ECEEs believe the key importance of ESD in ECE as UNESCO declared. UNESCO clearly highlighted that (2007) starting ESD from the early years of life is a necessity, and at that point, it may be suggested to curriculum planners and the Ministry of National Education to reorient ECE towards ESD. What is more, it is known from the existing national research that national ECE curriculum is appropriate to integrate ESD into existing program (Kocaoğlu, 2013 & Alici, 2013). At this point, when comparing ECEEs understanding about needs for and implementation of ESD, we report similar results for the ECEEs serving at the both setting type. All teachers mentioned their difficulties about lack of formal ESD training and learning and teaching materials.

However, it is known that eco ECESs are regarded to have facilitators such as teacher training, curriculum resources, teaching and learning materials, etc. to ease ESD practices. In other word, as keen on in the current study, eco schools are expected to eliminate the barriers about teacher training and teaching and learning materials. Moreover, the results indicated that ECEEs from both eco ECESs and ordinary ECESs presented similar levels of knowledge and attitude. Only the practices of ECEEs serving at eco ECESs was found slightly higher than their colleagues serving at ordinary ECESs.

In this regard, results of the current study proposes a contradiction with the trends in the line with purpose of eco settings (FEE, 2015). Educators serving at eco settings are expected to be knowledgeable about issues of SD, to value environmental, social cultural end economic issues more, and to conduct extra ESD practices. Hallfreðsdóttir (2011) emphasized that eco-schools could encourage pro-environmental actions directly linked to the facilities like teacher training and teaching and learning materials available in the school. Similar to Hallfreðsdóttir, Mogensen and Mayer (2005) described the characteristics of eco-schools in 13 countries and pointed out that eco-school programs should not be considered only in terms of their physical facilities like having recycling bins or outdoor areas to play in, etc. Their educational benefits need to be perceived. To the best of our knowledge the current study is the first one to compare eco versus ordinary ECESs in terms of ESD in national and nationwide. Hence based on the discussed above, it is suggested by the current study that eco school program may be monitored more effectively in Turkey in terms of formal teacher training and teaching and learning materials.

At that point, referring the educators' lack of formal training it also can be suggested that how ECEEs can contribute more effectively to ESD in early years shall be investigated and ECEEs serving either eco or ordinary settings may be provided professional development opportunities to handle their lack of ESD training. In the most recent study published on the professional development of ECEEs Inoue, Gorman and Davis (2016) noted that the provision of courses, lessons, seminars and

so on related with ESD for ECEEs would positively enhance their understanding of ESD. At this point it should be considered that professional development programs concerning ESD should become more widespread in ECESs. These professional development programs, like in other content areas (math, science, etc.) should be planned accordingly and should not only include short term seminars, courses and workshops, but also long term practice sections.

Furthermore, in this context, the study by Tuncer (2008) demonstrated 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 ESD understanding among those who had taken an undergraduate course related to ESD. When the pre-service teacher education systems elsewhere in the world are examined the research literature reveals that ESD has already been professionally incorporated into teacher education systems. For example, both in-service and pre-service teacher education programs in England, Denmark, Germany, and Sweden take great responsibility for implementing national policies relating to ESD (Nikel, 2007). In this regard, the teacher training programs in Turkey reveal that some universities offer elective courses related to ESD (YÖK, 2010). Based on the points discussed, the results of the current study imply that ECEEs should be provided with a variety of ESD-related courses during pre-service years nationwide. It should be considered that if such courses are offered to pre-service teachers effectively ECEEs would be able to implement ESD related activities in a more conscious and relevant way. Hence, education for sustainable development should be included more in both in-service and pre-service education in order to develop ECEEs' ESD understanding and help them eliminate their own barriers.

In summary, as also Martínez Agut et. al. (2013) reflected the importance of both preservice and in-service trainings of ECEEs who teach children aged 0–6 years and suggested that reforms have been made to the initial training and the professional development of educators. Similarly, according to UNESCO, the professional development of educators is 'the priority of priorities' for ESD. In other words,

educators hold the key to reorienting schools towards sustainable development and their professional development is essential.

Afterwards, according to results, ECEEs' ESD practices serving both ordinary and eco preschool was significantly and positively associated with their attitudes towards SD. It means that ECEEs who serve at ordinary or eco preschools if they hold high level of attitudes towards SD, they tended to practice ESD issues more. However, their knowledge about SD did not seem to in a relationship with their practice. The World Conference on Education for Sustainable Development (2009) defined ESD as “an approach to teaching and learning based on the ideals and principles that underline sustainable development.” In this regard, the Belgrade Charter (1976) highlighted two main factors behind ESD practices: knowledge and attitude. Knowledge helps individuals and social groups acquire a basic understanding of the environmental, socio-cultural and economic issues and associated problems. Attitude aids individuals and social groups to acquire concern for the environment and to motivate individuals to act effectively. In this regard, the findings of this study established some baseline data for investigating the relationship between knowledge and practices as well as attitudes and practice.

In this regard, it is clear that both pre service and in-service ECEEs shall be supported to have more positive attitudes towards issues of sustainable development. At that point, as mentioned above, professional development courses may be organized to help preservice and in-service ECEEs to develop positive attitudes towards SD. These professional development courses should be planned as seminars, workshops, etc. to support both theoretical and practical dimensions of ESD (Dyment et. al., 2014). As studied in the field of educational science (Supovitz, Mayer, & Kahle (2000) to promote attitudes of educators, in these professional courses, participants may be told about the benefits of ESD and moreover, they should be role modeled to develop more positive attitudes. In addition, it was also highlighted by Peer (2007) that appropriate attitudes towards the environment do not always turn into appropriate practices. In this regard, in the current study, when comparing knowledge, attitude

and practice levels of ECEEs', only ESD practice was the construct differentiated among eco versus ordinary settings. In other words, ECEEs serving at eco settings have higher levels of practice than their colleagues serving at ordinary ECESs. Therefore, other factors reported as promoting ESD practices and provided by Eco School setting such as physical environment features of the settings and curriculum resources shall be considered by school community (Kaladatizs, 2010)

In addition, another contribution made by the current study to the existing research area is the investigation into how NGO membership influences ECEEs' ESD practices serving at eco ECESs. Actually, NGO was the only background variable that significantly predicted ESD practices of ECEEs serving at eco- schools not ordinary preschools. Accordingly, this result of the current study the highlighting importance of NGOs for a sustainable life, may also encourage stakeholders in non-governmental organizations to focus on making an effort in the field of ESD so as to contribute to educators' ESD practices as addressed in the Millennium Development Goals (2015). On the other hand, the current study reported NGO participation as a non-significant predictor for ECEEs who are serving at ordinary settings. In this regard, role of eco-school program should also be considered by both stakeholders and curriculum planners. Since it is clear that eco setting are also in a corporation with a variety of NGOs. In this regard, administrators of ordinary ECESs may also consider to have partnership with NGOs.

In this study, as a predictor of ECEEs' ESD practices, previous ESD experiences was found significant only for the ECEEs' serving at ordinary ECESs but not for their counterparts serving at eco ECESs. In other words, ECEEs serving at ordinary ECESs had higher levels of ESD practices if they previously experienced ESD practice; on the other hand, previous ESD experience was found unrelated with ECEEs' ESD practices serving at eco preschools. In summary, previous ESD experiences may have significantly promoted ECEEs' ESD practices for the serving at ordinary ECESs. In this aspect, it can be implied that the more ECEEs implement ESD practices, the more they hold positive attitudes towards SD, which in turn results in more implementation

of ESD practices. Therefore, ECEEs may be provided with a variety of opportunities to implement ESD practices in ECEs.

The unexpected result of the current study indicated that childhood location and household type in childhood do not necessarily result in higher levels of ESD practices of ECEEs serving at both eco and ordinary ECEs. On the other hand, it was believed that living in rural and a house during childhood does bring out acting more for the nature. Furthermore, the relevant literature proposed that ECEEs who engaged in a variety of outdoor activities in their childhood may adopt experiences throughout their lives, and these experiences may have influenced their ESD practices. At this point, UNESCO's suggestion: "It is crucial to draw the attention of young children to sustainable lifestyles that will lead to life-long habit." (UNESCO, 2014a, p30) needs to be recognized. Without doubt, early childhood education requires more attention than was expected. Although there is contradiction between existing research and the current study, young children should be provided with a variety of opportunities to spend time in nature especially by ECEEs' even though this implication is beyond the scope of the current study.

It is obvious that there has been a growing interest in ESD in ECE. However, even though UNESCO (2014) has provided significant support through the publication of research and discussion papers a great deal more needs to be done for mainstream ESD framework and practice. This dissertation makes an attempt to contribute towards ESD theory and practice across eco versus ordinary ECEs. Finally, the present study compared the predictors of ESD practices among these settings in a developing country, Turkey. Since the reorientation of education for a sustainable future is regarded as the main target of the education for sustainable development, these variables should be considered by educators as guides for building ESD framework and putting it into practice.

5.3 Limitations and Recommendation for Further Research

There are some limitations associated with the current study. First of all, when the limitations embedded within the theoretical framework were examined one may conclude that there is a need for studies that can measure the relationships between those variables that can be associated with ESD practice. In this regard, other factors such as belief, attitude, subjective norms, perceived behavioral control, and intention, referred to by Ajzen (1985) in the Theory of Planned Behavior should be considered in ESD research. Moreover, demographic can be considered in a larger range. For example, the participants may be asked as how much time they spend outdoors, how many hours they participated in courses, workshops, seminars related to ESD, etc. In addition, it must be acknowledged that further research is needed to explore other determinants that may play an important role in ECEEs' ESD practices. Further research may also examine the effects of socio-demographic attributes, such as gender, socioeconomic status, years of experience etc.

This study involved only 111 ECESs and 838 ECEEs in four of Turkey's metropolitan cities. Accordingly, a nationwide study might be considered to generalize the relationships between the associated variables. On the basis of ESD practices, it is suggested that future research should look more thoroughly at patterns within Turkey's different regions and social economic backgrounds. This will enable a thorough research of the both ECESs' and ECEEs' variables to make a complete understanding of the current state of "Early Childhood Education for Education for Sustainable Development" in Turkey. In addition, cross cultural studies may be conducted to obtain a holistic point of view about ESD framework in the world and to understand the socio-cultural and economic factors in ESD practice.

The study is also limited because of its method. The comparative nature of the data raises questions about the causal links between variables. On the other hand, the only way to examine factors shaping ESD practices across eco versus ordinary ECESs is through experimental research. In addition, the study was limited by its reliance on

quantitative data. The present study was exploratory in nature and the “why” question was not addressed. The use of extra qualitative data strategies in further studies is highly recommended in order to form a comprehensive perception of the responses given by ECEEs in terms of ESD practices and associated variables. As for measurement-related limitations; the study was limited by its reliance on self-reported data. Although precautions were taken to promoting honest responses, the practice of self-reporting has not reached the intended level yet. Further research might benefit from treating the actual behavior as an indicator of ESD practices. To this end, observation sessions can be performed both to evaluate ECEEs’ ESD practices and ECESs climate in more detail. Furthermore, in-depth interviews can be conducted with ECEEs’ and other school staff. Moreover, there is still a strong need for a thorough investigation of the relationship between eco-schools and education for sustainable development practices of early childhood education educators. Additionally and most importantly, how young children benefit from this relationship should be the research problem of further studies. A longitudinal further research study may investigate whether the benefits of the eco-school program for the school community are long lasting. Lastly, it may be useful to measure the ESD knowledge in more detail with a longer scale meaning that further research should enable a more comprehensive knowledge scale including different forms of knowledge and different measuring methods. Finally, experimental and longitudinal studies regarding teachers’ learning and teaching about ESD would provide important lessons for this research area. In this regard, school related variables such as the school’s physical environment, location, staff attitudes, outdoor preferences, lighting, curriculum resources, etc. should be investigated to see whether they predict ESD practice or not.

Although investigating whether or not ESD is essential to build a sustainable world is beyond the grasp of this current study, an attempt was made to document efforts toward this goal from the ECEEs’ perspective. As Green (2013) had underlined the lack of empirical research into the practice of ESD in ECE, the current study focused on teacher-related internal variables and school-related external variables in an attempt to reveal the relationships between these variables in order to contribute to

the development of ESD practices in the early years with the ultimate aim of promoting ESD in ECE. However, there is a need for additional research, especially in developing countries. As a final thought, Education for Sustainable Development is a challenging process for all and offers an important opportunity to actively create a better, more sustainable world. It is the final recommendation based on the findings of this thesis that ESD continues to be employed, discovered and investigated.

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APPENDICES

Appendix A: Data Collection Instruments

OKUL ÖNCESİ ÖĞRETMENLERİN SÜRÜDÜRÜLEBİLİR KALKINMA EĞİTİMİ (SKE) KONUSUNDA ALGILARI, TUTUMLARI VE UYGULAMALARI

BÖLÜM 1 – DEMOGRAFİK BİLGİLER

Aşağıdaki sorular kişisel bilgileriniz ve eğitim geçmişinizle ilgilidir. Lütfen size uyan seçeneği "✓" ile işaretleyiniz.

1. Okul öncesi öğretmeni olarak mesleki deneyim yılınız:
2. Cinsiyetiniz:
 - Kadın
 - Erkek
3. Çocukken yaşadığınız yer:
 - Köy
 - Şehir
4. Çocukken yaşadığınız konut tipi:
 - Müstakil Ev
 - Apartman Dairesi
5. Atölye çalışmaları, konferanslar, bilim kampları gibi bir etkinliğe en son ne zaman katıldınız?
 - Son 1 ay içerisinde
 - Son 6 ay içerisinde
 - Son 1 yıl içerisinde
 - Son 5 yıl içerisinde
 - 5 yıldan daha eski ya da hiç katılmadım

6. Öğrenim durumunuz nedir?

- Lise (Genel)
 - Kız Meslek Lisesi*
 - Anadolu Öğretmen Lisesi
 - Ön Lisans
 - Üniversite (Lisans)*
 - Yüksek Lisans
 - Doktora
 - Diğer (Lütfen belirtiniz)
-

7. Annenizin öğrenim durumu nedir?

- İlkokul
 - Ortaokul
 - Lise (Genel)
 - Kız Meslek Lisesi*
 - Anadolu Lisesi
 - Ön Lisans
 - Üniversite (Lisans)*
 - Yüksek Lisans
 - Doktora
 - Diğer (Lütfen belirtiniz)
-

8. Babanızın öğrenim durumu nedir?

- İlkokul
 - Ortaokul
 - Lise (Genel)
 - Kız Meslek Lisesi*
 - Anadolu Lisesi
 - Ön Lisans
 - Üniversite (Lisans)*
 - Yüksek Lisans
 - Doktora
 - Diğer (Lütfen belirtiniz)
-

9. Çevresel ya da sosyal konularla ilgili herhangi bir sivil toplum kuruluşuna üye misiniz?

- Evet
- Hayır

10. Ailenizde ya da yakın çevrenizde, çevresel ya da sosyal konularla ilgili herhangi bir sivil toplum kuruluşuna üye olan bir tanıdığınız var mı?

- Evet
- Hayır

11. Deprem, sel, vb. herhangi bir doğal afet yaşadınız mı?
 Evet
 Hayır
12. Hava kirliliği, nükleer santral kazası gibi çevresel felaketlerden korkuyor musunuz?
 Evet
 Hayır
13. Çevresel, sosyal ve ekonomik konularla ilgili görsel ve yazılı medyayı takip eder misiniz?
 Evet
 Hayır
14. Şu anda çalıştığınız kurum tipi:
 MEB DEVLET
 MEB ÖZEL
 Aile ve Sosyal Politikalar Bakanlığı'na bağlı ÖZEL
15. Çalıştığınız okul "EKO-OKUL" mu?
 Evet
 Hayır
16. Çalıştığınız okulda "MİNİK TEMA" programı uygulanıyor mu?
 Evet
 Hayır
17. Okulun bulunduğu yeri nasıl tanımlarsınız?
 Apartman Dairesi
 Müstakil Konut
18. Şu anda çalıştığınız yaş grubu?
 0-24 ay
 25-36 ay
 37-48 ay
 49-60 ay
 Karma yaş

BÖLÜM 2 – SÜRDÜRÜLEBİLİR KALKINMA HAKKINDAKİ GÖRÜŞLER

Aşağıda Sürdürülebilir Kalkınmayı (SK) açıklayan ifadeler verilmiştir. Size göre SK'nın kapsamı bu ifadelerden hangilerini içerir? Her bir tanım için “katılıyorum” “emin değilim” veya “katılmıyorum” şıklarından birini işaretleyiniz.

	Katılıyorum	Emin Değilim	Katılmıyorum
1. SK “yaşanılan çevrede biyolojik çeşitliliğin sürdürülmesi” anlamına gelir.	①	②	③
2. SK “üretim sırasında oluşan zararlı atıkların etkilerinin azaltılması için yeni teknolojilerin geliştirilmesi” anlamına gelir.	①	②	③
3. SK “atık malzemelerin geri dönüştürülmesi” anlamına gelir.	①	②	③
4. SK “Doğal kaynakları insanlığın yararına kullanırken “canlı yaşamını destekleme kapasitesinin” devamlılığını sağlamak” anlamına gelir.	①	②	③
5. SK “doğanın ihtiyaçlarına insanlığinkinden daha fazla önem vermek” anlamına gelir.	①	②	③
6. SK “ekonomik büyümeyi yüksek ve istikrarlı şekilde sürdürmek” anlamına gelir.	①	②	③
7. SK “yerli malı üretim ve tüketiminin belirli bir düzeye ulaşması” anlamına gelir.	①	②	③
8. SK “ açlık ve hastalığın önlenmesi amacıyla insanlara yardım edilmesi” anlamına gelir.	①	②	③
9. SK “herkesin ihtiyacının gözetildiği bir sosyal kalkınma” anlamına gelir.	①	②	③

BÖLÜM 3 – SÜRDÜRÜLEBİLİR KALKINMA İLE İLGİLİ TUTUM

Aşağıdaki sorular sürdürülebilir kalkınma ile ilgili kişisel niyetinizle ilgilidir (tüketici alışkanlıklarını değiştirme, geri dönüşüm, enerji ve su tasarrufu, toplu taşıma ve doğayı koruma, insan hakları, demokrasi, eşitlik, vb.). Lütfen size uyan seçeneği işaretleyiniz.

	Kesinlikle Katılıyorum	Katılıyorum	Katılmıyorum	Kesinlikle Katılmıyorum
1. Çevre dostu ürünleri satın almaya öncelik verme konusunda istekliyim.	①	②	③	④
2. Çiftçi, satıcı ve tüketici arasındaki dengeyi sağlayan adil ticaret ürünlerini, doğrudan üreticisinden satın almaya öncelik verme konusunda istekliyim.	①	②	③	④
3. Yerel ürün satın almaya öncelik verme konusunda istekliyim.	①	②	③	④
4. Kendi meyve ve sebzemi yetiştirme ve tüketme konusunda istekliyim.	①	②	③	④
5. Çevre konusunda hiçbir duyarlılığı olmayan markaların ürünlerini satın almama konusunda istekliyim.	①	②	③	④
6. Sadece gerçekten kullanabileceğim ürünleri seçerek, satın alma alışkanlıklarımı değiştirme konusunda istekliyim.	①	②	③	④
7. Materyallerin geri dönüştürme konusunda istekliyim (ve kağıt tüketimini azaltma konusunda).	①	②	③	④
8. Atıkları geri dönüştürmeye istekliyim.	①	②	③	④
9. Köylülerin kendi yetiştirdikleri ürünleri sattıkları pazarlara ya da ikinci el satış yapan mağazalara gitmek için istekliyim.	①	②	③	④

- | | | | | |
|--|---|---|---|---|
| 10. Suyu başka amaçlar için kullanma konusunda istekliyim (örneğin meyve ve sebzeleri yıkadığım suyu tuvalete dökmek). | ① | ② | ③ | ④ |
| 11. Duş alırken daha az su kullanma konusunda istekliyim. | ① | ② | ③ | ④ |
| 12. Enerji tasarrufu yapma konusunda istekliyim (örneğin, gereksiz ışıkları söndürmek ve elektronik cihazların fişini çekmek). | ① | ② | ③ | ④ |
| 13. Enerji verimliliği yüksek ürünler kullanma konusunda istekliyim. | ① | ② | ③ | ④ |
| 14. Alternatif enerji kaynaklarını kullanma konusunda istekliyim (örneğin, güneş/rüzgar enerjisi). | ① | ② | ③ | ④ |
| 15. Araba ya da taksiye binmek yerine yürüme ya da bisiklete binme konusunda istekliyim. | ① | ② | ③ | ④ |
| 16. Daha fazla toplu taşıma aracı kullanma konusunda istekliyim (daha az taksi ya da araba kullanmak). | ① | ② | ③ | ④ |
| 17. “Arabanı Evde Bırak” günü kurallarını uygulama konusunda istekliyim. | ① | ② | ③ | ④ |
| 18. Bir açık hava etkinliği sonrasında bulunduğum ortamı (sahil/dere/dağ) temizleme konusunda istekliyim. | ① | ② | ③ | ④ |
| 19. Yere çöp atmama konusunda istekliyim. | ① | ② | ③ | ④ |
| 20. Ağaç dikme konusunda istekliyim. | ① | ② | ③ | ④ |
| 21. Herhangi bir doğa koruma hareketini destekleme konusunda istekliyim. | ① | ② | ③ | ④ |
| 22. Kişilerin giyimine, kültürüne, dini inancına, maddi durumuna, ya da fiziksel | ① | ② | ③ | ④ |

görünüŖüne göre farklı davranmaktan kaçınma konusunda istekliyim.

- | | | | | |
|--|---|---|---|---|
| 23. Birlikte çalıştığım ya da iletişim kurduğum kişilerinin cinsiyetine göre farklı davranmaktan kaçınma konusunda istekliyim. | ① | ② | ③ | ④ |
| 24. İnsanların farklı özelliklerine saygı duyma konusunda istekliyim. | ① | ② | ③ | ④ |
| 25. İnsanların huzurlu ve güvenli bir ortamda yaşamalarını sağlayacak kurallara uymaya özen gösterme konusunda istekliyim. | ① | ② | ③ | ④ |
| 26. Temiz içme suyu ve gıdaya ulaşma zorluğu çeken insanları destekleme konusunda istekliyim (Hem maddi yönden hem de medya araçları yardımıyla seslerini duyurma gibi aktivitelerle). | ① | ② | ③ | ④ |
| 27. İnsanların, görüşlerini açık ve şeffaf bir şekilde özgürce ifade edebilmelerini destekleme konusunda istekliyim. | ① | ② | ③ | ④ |
| 28. “Eşitlik ve sosyal adalet” konularında fikir alış-verişi yapmaya istekliyim. | ① | ② | ③ | ④ |
| 29. İnsan haklarını temel alan bir yaşam prensibi benimseme konusunda istekliyim. | ① | ② | ③ | ④ |
| 30. Seçimlerde oy kullanarak demokratik katılım hakkımı korumak konusunda istekliyim. | ① | ② | ③ | ④ |

BÖLÜM 4 – OKUL ÖNCESİ ÖĞRETMENLERİN SÜRDÜRÜLEBİLİR KALKINMA EĞİTİMİ UYGULAMALARI

Sürdürülebilir Kalkınmanın gerçekleşmesi için okul öncesi eğitim ortamlarında yapılabilecek düzenlemelerden bazıları aşağıda sıralanmıştır. Siz eğitim ortamında bunları ne sıklıkla uygularsınız?

	Hiçbir	Nadiren	Bazen	Genellikle	Her zaman
1. Plastik yerine cam ya da kâğıttan yapılan malzemeler kullanırız.	①	②	③	④	⑤
2. Okul bahçesinde sebze ve meyve yetiştiririz.	①	②	③	④	⑤
3. Geri dönüşebilecek materyalleri sınıfta biriktirip geri dönüşüm kutusuna atarız.	①	②	③	④	⑤
4. Resim yaparken kâğıtların iki yüzünü de kullanırız.	①	②	③	④	⑤
5. Artık materyalleri sanat etkinliklerinde kullanırız.	①	②	③	④	⑤
6. Sokakta gördüğümüz hayvanları besleriz.	①	②	③	④	⑤
7. Çevre gezilerine piknik, doğa yürüyüşü vb. gideriz.	①	②	③	④	⑤
8. Ağaç dikme etkinliklerine katılırız.	①	②	③	④	⑤
9. Çevre gezilerinden (piknik, doğa yürüyüşü vb.) sonra bulunduğumuz yerden çöplerimizi toplamadan ayrılmayız.	①	②	③	④	⑤
10. Etkinliklerimizi açık havada yaparız.	①	②	③	④	⑤
11. Yağmur sularını biriktirerek bahçe sularken kullanırız.	①	②	③	④	⑤
12. Okuldaki su tüketimini kontrol ederiz/Okulda suyun gereksiz kullanımını engelleriz.	①	②	③	④	⑤
13. Okulda elektriğin gereksiz kullanımını engelleriz.	①	②	③	④	⑤
14. Kısa mesafeli okul gezilerinde “araç” kullanmak yerine “yürümeyi” tercih ederiz.	①	②	③	④	⑤
15. Kullanmadığımız oyuncak/kitap/materyallerimizi farklı amaçlarla değerlendiririz.	①	②	③	④	⑤
16. Dışarda gördüğümüz çiçekleri toplarız.	①	②	③	④	⑤
17. Dışarda gördüğümüz hayvanlarla onlara zarar vermeden onarız.	①	②	③	④	⑤

18. Sosyal eşitsizliğe dikkat çekmek için yaşadığımız toplumla işbirliği yaparız. (1) (2) (3) (4) (5)
19. Sosyal kültürel konulara dikkat çekmek için okul panomuzu kullanırız. (1) (2) (3) (4) (5)
20. Sosyal kültürel konulara dikkat çekmek için posterler hazırlayıp yürüyüşler yaparız. (1) (2) (3) (4) (5)
21. Kermesler ve yardım kampanyaları düzenleyerek, geliri/malzemeleri yardıma ihtiyacı olan ailelere/okullara bağışlarız. (1) (2) (3) (4) (5)
22. Sınıf kurallarımızı belirlerken insan haklarını dikkate alırız. (1) (2) (3) (4) (5)
23. Çocuk haklarını benimseriz. (1) (2) (3) (4) (5)
24. Huzurevi, çocuk bakım merkezi, vb. toplum hizmet merkezlerine geziler düzenleriz. (1) (2) (3) (4) (5)
25. Dramatik oyunlarda farklı cinsiyet, kültür, din, ırk ve etnik kökenleri simgeleyen kıyafetler kullanırız. (1) (2) (3) (4) (5)
26. Yukarıda belirtilenler dışında, sürdürülebilir kalkınmanın gerçekleşmesi için okulöncesi eğitim ortamlarında sizin yaptığımız uygulamalar/ etkinlikler/düzenlemeler varsa lütfen belirtiniz.

BÖLÜM 5– SÜRDÜRÜLEBİLİR KALKINMA EĞİTİMİ’NİN GEREKLİLİĞİ HAKKINDAKİ GÖRÜŞLER

Aşağıdaki sorular SKE’nin gerekliliği ve uygulaması ile ilgilidir. Lütfen SKE’nin tanımını okuyunuz ve size uyan ifadeye karşılık gelen sayıyı işaretleyiniz.

“Sürdürülebilir Kalkınma Eğitiminin amacı insanlara, kendileri ve başkaları için şimdi ve gelecekte, bilinçli bir şekilde karar almalarını ve harekete geçmelerini sağlamak için uygun tutum, beceri, bakış açısı ve bilgi seviyelerini geliştirmeleri için yardım etmektir. SKE dünya vatandaşlarına daha sürdürülebilir bir gelecek için kendi yollarını çizmelerine yardım eder. (www.unesco.org, 2010)”

1. Okul öncesi eğitimde, SKE’i gerekli midir?
 - ① Hiç gerekli değil
 - ② Gerekli değil
 - ③ Kararsız
 - ④ Gerekli
 - ⑤ Çok gerekli

2. SKE’nin okul öncesi eğitimdeki amacı nedir? (**LÜTFEN SADECE “BİR” SEÇENEĞİ İŞARETLEYİNİZ.**)
 - ① SK ve SKE hakkında kavram ve bilgi kazanımı sağlama
 - ② SK ve SKE konuları hakkında farkındalık kazandırma
 - ③ Problem çözme ve karar verme aşamalarında yaratıcı ve bütünsel düşünme becerisi kazandırma
 - ④ SK için sürdürülebilir bir yaşam tarzı edinme
 - ⑤ Diğerleri

3. SKE ile ilgili program/etkinlik uyguladınız mı?
 - ① Evet ② Hayır (Eğer evetse Soru 3.1’e gidin. Eğer hayırsa Soru 4’e gidin.)

3.1. SKE için hangi öğretim yöntem ve tekniklerini kullandınız?

- ① Grup tartışması
- ② Alan gezisi
- ③ Canlandırma
- ④ Müzik ve hareket
- ⑤ Kitap okuma
- ⑥ Gözlem
- ⑦ Diğerleri

4. SKE programı/etkinliği uygulamanın en zor tarafı sizce nedir?

(LÜTFEN SADECE “BİR” SEÇENEĞİ İŞARETLEYİNİZ)

- ① Öğretmenlerin SKE anlayışının yetersiz olması
- ② Öğretmenin pedagojik alan bilgisinin yetersiz olması (SKE kavramını etkinliklerde kullanma yeterliği)
- ③ SKE için gerekli olan öğretme ve öğrenme materyallerinin yetersiz olması
- ④ Öğretmen eğitiminin SKE konusunda yetersiz olması
- ⑤ Ailelerin SKE konusuna ilgisizliği
- ⑥ Okul müdürünün SKE konusuna ilgisizliği
- ⑦ Diğerleri

5. SKE uygulamalarının başlatılabilmesi için en gerekli boyut aşağıdakilerden hangisidir?

(LÜTFEN SADECE “BİR” SEÇENEĞİ İŞARETLEYİNİZ.)

- ① Öğretmen eğitimi programına SKE’ni dâhil etmek
- ② Eğitim-öğretim materyalleri geliştirmek
- ③ SKE’ni eğitim programına dahil etmek
- ④ Okulların ilgisini çekmek
- ⑤ Aile ve yerel çevre arasında işbirliği sağlamak
- ⑥ Diğerleri

Appendix B: Permission related to Ethical Considerations

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
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Gönderen : Prof. Dr. Canan Sümer
IAK Başkan Vekili

İlgi : Etik Onayı

Danışmanlığını yapmış olduğunuz İlköğretim Bölümü öğrencisi Deniz Kahrıman Öztürk'ün "Okul Öncesi Öğretmenlerin Sürdürülebilir Kalkınma için Eğitim Hakkındaki Algıları-Tutumları- Uygulamaları ve Anaokulu Fiziksel Ortamı İlişkisi" isimli araştırması "İnsan Araştırmaları Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı

Uygundur

18/02/2015

Prof. Dr. Canan Sümer
Uygulamalı Etik Araştırma Merkezi
(UEAM) Başkan Vekili
ODTÜ 06531 ANKARA

Appendix C: Turkish Summary

EKO VE EKO OLMAYAN EĞİTİM KURUMLARI ARASINDA ERKEN ÇOCUKLUK EĞİTİMCİLERİNİN SÜRDÜRÜLEBİLİR KALKINMA EĞİTİMİ UYGULAMALARININ KARŞILAŞTIRILMASI

Giriş

“Sürdürülebilir Kalkınma” terimi, 30 yılı aşkın süredir, eğitimden ekonomiye birçok alanda kullanılmaktadır (Yang, 2001). Teknoloji ve sanayideki gelişimlere bağlı olarak küreselleşen dünya, canlıları iklim değişikliği, çarpık kentleşme, biyolojik çeşitliliğin ve enerji kaynaklarının azalması gibi birçok problemle yüz yüze getirmiştir (UNESCO, 1992; UNESCO, 1997). Bu gelişmeler üzerine kalkınmanın çevreye zararlarını azaltmak ve gelecek nesillerin yaşam kapasitesini artırmak adına; Dünya Çevre ve Kalkınma Komisyonu, Sürdürülebilir Kalkınmayı (SK) Brundtland Raporu ile "*Bugünün ihtiyaçlarını, gelecek nesillerin gereksinmelerini karşılama yeteneğinden ödün vermeden karşılama*" olarak tanımlanmıştır (WCED, 1987). Rio de Janeiro’da 1992 yılında toplanan Dünya Zirvesi’nde, yaşanan bu problemlerin sadece çevresel olmadığı; sosyal- kültürel, ekonomik ve çevresel problemlerin birbirleriyle etkileşim halinde olduğunun üzerinde durulmasının ardından, yıllar

içinde SK terimi çevresel, sosyal- kültürel ve ekonomik öğelerin oluşturduğu bir girişim olarak kabul edilmiştir (UNESCO, 2005).

Sürdürülebilir Kalkınma'nın çevresel boyutu, daha çok biyolojik çeşitlilik ve doğal kaynakların devamlılığının sağlanması ile ilgilidir. İnsanların çevresel eylemlerinin, ekonomik ve sosyal kalkınma ile ilgili olduğunun altı çizilir. Sosyal ve kültürel olarak sürdürülebilir kalkınma, sosyal adalet, eşitlik, insan hakları ve kültürel farklılıkları temel alır ve sosyal kurumların değişim ve gelişimdeki önemini vurgular. SK'nın ekonomik boyutu ise, ekonomik sistem içinde, üretim ve tüketim arasındaki dengeyi, zengin- fakir arasındaki eşitliği ve ekolojik süreçleri gözeterek sürdürmek anlamına gelir (UNESCO, 2005).

İlgili alan yazında “Sürdürülebilir Kalkınma” ile ilgili süregelen kavram karmaşası, “Sürdürülebilir Kalkınma için Eğitim” (SKE) konusunda da geçerlidir. Eğitim bilimcilerin ve çevre eğitimcilerinin “Eğitim” ve “Sürdürülebilir Kalkınmanın” iç içe geçtiği bu terimi, çok farklı şekillerde ve daha çok çevre odaklı tanımladıkları görülmektedir (Yang, Lam, & Wong, 2010). Ancak, UNESCO 1975–1995 yılları arasında uygulanan “Uluslararası Çevre Eğitimi Programını”, “Sürdürülebilir Gelecek İçin Eğitim” programıyla değiştirerek, SKE'nin sadece çevre değil sosyal kültürel ve ekonomik boyutları da kapsadığına vurgu yapmıştır (UNESCO, 1997).

UNESCO'nun tanımına göre ise sürdürülebilir kalkınma eğitimi (SKE), dünyanın ihtiyaçları doğrultusunda ortaya çıkan, gelişmekte olan ve dinamik bir olgudur. Her yaşta insanı, yaşadıkları toplumda sorumluluk alarak, sürdürülebilir bir gelecek için öncü olmaya davet eder (UNESCO, 2002). SKE, günümüzde, birçok gelişmiş ve gelişmekte olan ülkede, eğitim sisteminin en önemli unsurlarından biri olmuştur (UNESCO, 2005). Birleşmiş Milletler Çevre ve Kalkınma Konferansı tarafından yayınlanan Gündem 21'de SKE'nin önemi vurgulanmış ve okul öncesi dönemden başlanarak eğitim programlarına kaynaştırılması önerilmiştir (UNESCO, 1992). Bireylerin SK'ya yönelik görüşleri ve tutumlarının, okul öncesi dönemde şekillenmeye başladığı ve okul öncesi dönemin, ileriki yıllarda da sürdürülebilir bir

yaşam biçimi edinmede önemli bir yeri olduğu vurgulanmaktadır (Didonet, 2008, UNESCO, 2007).

Erken çocukluk döneminde sürdürülebilir kalkınma eğitimi hayat boyu öğrenme için bir başlangıç noktasıdır (The Gothenburg Recommendations on Education for Sustainable Development, 2009). Üstelik çağımızın çocukları, geleceğin yetişkin adayları, toplum içinde sürdürülebilir bir hayat için en önemli rolü oynamaktadır çünkü insanların yaşamın erken yıllarında edindikleri tutum ve davranışlar kalıcı ve değişime dirençlidir. Bu noktada okul öncesi dönemdeki çocukların sürdürülebilir bir yaşamda etkin rol oynamaları için erken yıllarda edindikleri deneyimler önemlidir. Bu noktada UNESCO tarafından da önerildiği gibi sürdürülebilir kalkınma eğitimi erken çocukluk eğitimi ile birlikte başlamalıdır

Dünyada erken çocukluk eğitimi uygulamaları incelendiğinde, sürdürülebilir kalkınma eğitimini başarıyla uyguladığı görülen İsveçten Avustralyaya birçok ülke vardır. Bu ülkeler bağımsız bir sürdürülebilir kalkınma eğitimi geliştirmek yerine kendi ulusal eğitim programlarına sürdürülebilir kalkınmanın felsefesini bütünleştirmiştir. Türkiye'deki durum incelendiğinde ise ayrı bir SKE programı olmadığı gibi, Ulusal Okul Öncesi Eğitim Programında da (2013), SK ile ilgili doğrudan bir kazanım ve gösterge bulunmamaktadır. Ancak mevcut olan kazanım göstergeler ve kullanılarak farklı etkinlikler düzenlenebileceği çalışmalarla ortaya konmuştur (Alicı, 2013; Cengizoğlu, 2013).

Öte yandan, çocuklarda sürdürülebilir gelişime dair farkındalık kazandırmayı amaçlayan ve dünya çapında faaliyet gösteren eko-okullar bulunmaktadır (Eco-schools, 2013). Dünyada, Türkiye'nin de dâhil olduğu 56 ülkede bu okullar vardır. Türkiye 1995 yılında sürdürülebilir gelişmeyi ve ekolojik bilinçliliği arttırmak için Avrupa Çevre Eğitim Vakfı tarafından desteklenen eko-okullar programı projesine üye olmuştur. Eko-okullar programı öğrencilere hem okul içinde hem okul dışında sürdürülebilir gelişmeyi destekleyen eğitim uygulamaları sunmaktadır (FEE, 2015). Özellikle çocuklara ve eğitimcilere günlük yaşantılarıyla bağlantılı sürdürülebilir

gelişme ve çevre bilgilerini kullanma olanağı sağlamaktadır (Bajd & Lescanec, 2011). Türkiye eko-okullar projesine üye olduğundan bu zamana kadar birçok anaokulu, eko-okul programını kendi okul programına bütünleştirerek uygulamaktadır. Eko-okullar uzun süreli bir eğitim programı uygulayarak eğitimciden öğrenciye okul ortamındaki bütün bireylerin sürdürülebilir bir yaşam için olumlu tutum ve davranışlar geliştirmelerini amaçlar.

Gerek eko eğitim kurumlarında gerek eko olmayan eğitim kurumlarında, sürdürülebilir kalkınma eğitimi uygulamalarının işlevsel bir şekilde yürütülebilmesinde en önemli rol erken çocukluk eğitimcilerine düşmektedir. Eğitimciler tarafından yürütülen sürdürülebilir kalkınma eğitimi uygulamalarının, erken çocukluk dönemindeki çocukların sürdürülebilir bir gelecek için daha fazla inisiyatif alabilmelerine olanak sağlayacağı düşünülmektedir. Bu nedenle, küçük çocuklara her konuda rol model olan okul öncesi eğitimcilerinin sürdürülebilir kalkınma eğitiminin gerekliliği ve uygulanması ile ilgili düşünceleri, sürdürülebilir kalkınma uygulamaları ve bu uygulamaları şekillendiren faktörlerin belirlenmesi önem kazanmaktadır. İlgili alan yazında yer alan sınırlı sayıdaki çalışmaların bulguları, eğitimci görüş ve uygulamaları açısından değerlendirildiğinde, yapılan araştırmaların özellikle bu uygulamaları şekillendiren değişkenleri tartışmada yetersiz kaldığı tespit edilmiştir. Aynı zamanda eko erken çocukluk eğitimi programlarının bu süreçte nasıl bir rol oynadığı da araştırılması gereken bir sorudur. Konu ve benzer konularla ilgili araştırma bulguları incelendiğinde, çevre eğitimi alanında yapılan çalışmaların çocukluğu şehir yerine köyde geçmiş ve apartman yerine müstakil evde büyümüş yetişkinlerin çevreye yönelik tutum ve uygulamalarının anlamlı yönde pozitif olduğunu göstermiştir. Bunun yanı sıra sivil toplum kuruluşuna üye olmanın bu anlamda anlamlı bir değişken olduğu düşünülmektedir. Aynı zamanda ilgili alan yazında yer alan çalışmalar, eğitimcilerin önceki deneyimlerinin de sınıf içi uygulamalarını desteklediğini göstermektedir.

Bu bağlamda bu çalışmanın amacı eko ve eko olmayan eğitim kurumlarında görev yapan eğitimcilerin sürdürülebilir kalkınma eğitimi uygulamalarına yönelik

düşüncelerini ve uygulamalarını incelemektir. Ayrıca bu çalışmada eko sertifikalı eğitim kurumlarında ve eko olmayan eğitim kurumlarında görev yapan okul öncesi eğitimcilerinin, sürdürülebilir kalkınma eğitimi uygulamalarını yordayan değişkenler tahmin edilip karşılaştırılmıştır.

Bu çalışmaya ait beş temel araştırma sorusu yer almaktadır. Bunlar:

1. Eko sertifikalı ve eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimcilerinin SKE'nin gerekliliği ve uygulanmasına dönük düşünceleri nelerdir?
 - a. Eko sertifikalı ve eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimciler, SKE'nin okulöncesi dönemde gerekli olup olmadığına dair görüşleri nelerdir?
 - b. Eko sertifikalı ve eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimcilere göre okulöncesi dönemde SKE'nin amacı nedir?
 - c. Eko sertifikalı ve eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimciler, daha önce SKE etkinlikleri uyguladılar mı? Uyguladıysa hangi öğretim metotlarını kullandılar?
 - d. Eko sertifikalı ve eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimcilere göre SKE'nin uygulanmasındaki en zorlayıcı etken nedir?
 - e. Eko sertifikalı ve eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimcilere göre SKE'nin aktive edilmesini sağlayacak en önemli etken nedir?
2. Eko sertifikalı ve eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimcilere ait demografik bilgiler nelerdir?

3. Eko sertifikalı ve eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimcilerinin SK hakkındaki bilgi düzeyleri, tutumları ve pratikleri nasıldır?
4. Eko sertifikası olmayan eğitim kurumlarında çalışan okulöncesi eğitimcilerinin SK hakkındaki bilgi düzeyleri, tutumları, çocuklukta yaşadıkları yer, ev tipi, çevre ile ilgili STK'lara üye olup olmamaları ve daha önce SKE deneyimine sahip olup olmamaları, onların SKE pratiklerini ne derece yordamaktadır?
5. Eko sertifikalı eğitim kurumlarında çalışan okulöncesi eğitimcilerinin SK hakkındaki bilgi düzeyleri, tutumları, çocuklukta yaşadıkları yer, ev tipi, çevre ile ilgili STK'lara üye olup olmamaları ve daha önce SKE deneyimine sahip olup olmamaları, onların SKE pratiklerini ne derece yordamaktadır?

Yöntem

Bu çalışma, İstanbul, Ankara, Antalya ve Eskişehir illerinden eğitim-öğretim faaliyeti gösteren 111 okulöncesi eğitim kurumunda çalışan okulöncesi eğitimcilerinin katılımıyla, bir dizi ölçek ve testler uygulanarak yapılmıştır. Toplanan veriler, hem tanımlayıcı hem de çok düzeyli analiz yöntemi (HLM) kullanılarak analiz edilmiştir.

Evren ve Örneklem

Çalışmanın evrenini Türkiye'de eğitim-öğretim faaliyeti gösteren okulöncesi eğitim kurumlarında çalışan okulöncesi eğitimcileri oluşturmaktadır. Çalışmanın örnekleme belirlenirken, çalışmanın amacı doğrultusunda İstanbul, Ankara, Antalya ve Eskişehir illerindeki tüm eko sertifikalı okulöncesi eğitim kurumları belirlenmiş ve çalışmaya katılmak isteyen tüm kurumlara ($N=48$) gidilmiştir. Bu kurumlardan 349 okulöncesi eğitimcisi çalışmaya gönüllü olarak katılmışlardır. Daha sonrasında ise aynı

şehirlerde eko sertifikalı bu kurum sayılarınca eko sertifikası olmayan okul öncesi kurumlar ($N=63$) rastgele belirlenmiş ve çalışma bu kurumlarda da uygulanmıştır. Bu kurumlardan ise 489 okulöncesi eğitimcisi çalışmaya gönüllü olarak katılmıştır.

Veri Toplama Araçları

Çalışmada kullanılan veri toplama araçları Tablo E.1’de ayrıntılı olarak verilmiştir.

Tablo E.1 Veri toplama aracının içerdiği ölçekler.

<i>Veri Toplama Aracı</i>	<i>Değişkenler</i>
Demografik Bilgi Ölçeği	Cinsiyet İş deneyimi Eğitim verdiği çocuk yaş grubu Eğitim düzeyi
Sürdürülebilir Kalkınma Bilgi Ölçeği <i>Geliştiren: Park, Kim ve Yu (2015)</i> <i>Türkçe’ye Adaptasyon: Araştırmacı tarafından yapılmıştır.</i>	Sürdürülebilir Kalkınma Bilgisi
Sürdürülebilir Kalkınma Tutum Ölçeği <i>Geliştiren: Park, Kim ve Yu (2015)</i> <i>Türkçe’ye Adaptasyon: Araştırmacı tarafından yapılmıştır.</i>	Sürdürülebilir Kalkınmaya Karşı Tutum
Sürdürülebilir Kalkınma Eğitimi Pratiği Ölçeği <i>Geliştiren: Araştırmacı tarafından yapılmıştır</i>	Sürdürülebilir Kalkınma Eğitimi Pratiği
Sürdürülebilir Kalkınma Eğitiminin Gerekliliği ve Uygulanmasına Dönük Ek Sorular <i>Geliştiren: Park, Kim ve Yu (2015)</i> <i>Türkçe’ye Adaptasyon: Araştırmacı tarafından yapılmıştır.</i>	

Çalışmanın Sayıtları ve Sınırlamaları

1. Çalışmada kullanılan ölçekler tüm okulöncesi eğitimcileri için aynı şartlarda uygulanmıştır.
2. Okulöncesi eğitimcileri, ölçeklerdeki maddeleri ciddiyle ve dürüstlikle cevaplandırmışlardır.

3. Okulöncesi eğitimcilerinin bilgileri, inançları, uygulamaları ve fikirleri hakkındaki tüm veriler kendilerinin rapor ettikleri ölçekler vasıtasıyla toplanmıştır. Bu nedenle çalışmanın bulguları bu sınırlı kapsamda değerlendirilmelidir.
4. Çalışmanın analiz yöntemi ilişkisel sonuçlar veren diğer yöntemler gibi neden sonuç ilişkisi verememektedir. Bu nedenle sonuçlar bu kapsamda değerlendirilmelidir.

Bulgular ve Tartışma

Çalışmada okulöncesi eğitimcilerden toplanan veriler, hem tanımlayıcı hem de HLM yöntemi kullanılarak analiz edilmiştir.

Tanımlayıcı Analiz Bulguları

Okulöncesi eğitimcilerden toplanan verilerin analizine göre, okulöncesi eğitimcilerinin çok büyük bir kısmı okulöncesi eğitimde sürdürülebilir kalkınma eğitimini gerekli görmektedirler. Bu oranlar eko sertifikalı eğitim kurumlarında çalışan eğitimciler için %91.89, eko olmayan eğitim kurumlarında çalışan eğitimciler için ise %93.55'tir.

Kendilerine, okulöncesi dönemde sürdürülebilir kalkınma eğitiminin amacı sorulduğunda ise her iki grupta da (1) SK ile SKE konuları hakkındaki farkındalığın yükseltilmesi, (2) problem çözme ve karar vermede yaratıcı ve bütüncül düşünme yeteneğini artırılması ve son olarak (3) sürdürülebilir bir yaşam tarzı için davranışlar sergilenmesi seçenekleri ön plana çıkmıştır.

Önceki SKE deneyimleri sorulduğunda, eko okullardaki eğitimcilerin %94.8'i, diğer eğitim kurumlarındaki eğitimcilerin ise %36.6'sı daha önceden SKE etkinlikleri

uyguladıklarını belirtmişlerdir. En çok uygulanan öğretim metotlarında ise doğa gezileri, gözlem, kitap okuma her iki grup içinde ön plana çıkmaktadır.

Okulöncesi eğitimcilere SKE programı/etkinliği uygulamanın zorlukları sorulduğunda, çok az farklılıklar olsa da eko sertifikalı eğitim kurumlarında çalışanlar ile diğer eğitim kurumlarında çalışan eğitimciler genelde aynı seçenekleri öne sürmüşlerdir. Buna göre SKE'nin uygulanması için gerekli eğitim-öğretim materyallerinin eksikliği ve eğitimcilerin SKE'ne dönük formal eğitim eksiklikleri en çok işaretlenen seçenekler olarak dikkat çekmektedir.

SKE programının aktif edilebilmesi için en önemli gereklilikler arasında ise her iki grup için de eğitimcilerin SKE eğitimlerinin genişletilmesi ve SKE'nin eğitim öğretim programına eklenmesi/uygulanması gösterilmiştir.

Öte yandan demografik bilgiler incelendiğinde ise her iki gruptaki okulöncesi eğitimcilerin büyük kısmının şehirde ve apartman dairesinde bir çocukluk geçirdiklerini ve çevre veya SK ile ilgili herhangi bir STK'ya üye olmadıklarını göstermiştir. Genel olarak analiz sonuçları, okulöncesi eğitimcilerin SK ile ilgili bilgi sahibi olduklarını, SK'ya karşı yüksek denilebilecek tutuma sahip olduklarını ve kabul edilebilir düzeyde SKE pratiği yapabildiklerini göstermiştir.

Çıkarımsal Analiz Bulguları

Hiyerarşik Doğrusal Modelleme (HLM) analizleri eko sertifikalı eğitim kurumlarında çalışan eğitimciler ve diğer eğitim kurumlarında çalışan eğitimciler olmak üzere iki grup için ayrı ayrı yapılmıştır.

HLM analizlerinde okulöncesi eğitimcilerin SKE pratikleri, onların SK hakkındaki bilgileri, SK'ya karşı tutumları, çocuklukta yaşadıkları yere, ev tipi, çevre veya SK ile ilgili bir STK'ya üye olup olmamaları ve geçmiş SKE deneyimleri tarafından tahmin edilmeye çalışılmıştır.

Buna göre eko olmayan eğitim kurumlarında çalışan okulöncesi eğitimcilerin SKE pratikleri, onların SK'ya karşı tutumları ve geçmiş SKE deneyimleri tarafından tahmin edilmiştir. Buna göre eğer bir eğitimciler SK'ya karşı yüksek bir tutuma sahipse daha fazla SKE pratiği yaptığını göstermektedir. Aynı şekilde daha önce SKE deneyimi var ise yine bu eğitimci daha fazla SKE pratiği yaptığını rapor etmiştir.

Eko sertifikalı eğitim kurumlarında çalışan eğitimcilerin SKE pratikleri ise onların SK'ya karşı tutumları ve çevre veya SK ile ilgili bir STK'ya üye olup olmamaları tarafından tahmin edilmiştir. Bir diğer deyişle, bu eğitim kurumlarında çalışan okulöncesi eğitimciler, SK'ya karşı yüksek bir tutuma sahiplerse, SKE pratiklerinin daha yüksek olduğu görülüyor. Diğer taraftan, bu eğitimciler çevre veya SK ile ilgili bir STK'ya üye iseler, yine SKE pratiklerinin yüksek olduğu görülmektedir.

Tartışma ve Öneriler

Okulöncesi eğitimcilerden toplanan verilerin analizine göre, okulöncesi eğitimcilerin çok büyük bir kısmı okulöncesi eğitimde sürdürülebilir kalkınma eğitimini gerekli görmektedirler. Bu oranlar eko sertifikalı eğitim kurumlarında çalışan eğitimciler için %91.89, eko olmayan eğitim kurumlarında çalışan eğitimciler için ise %93.55'tir. Bu sonuçlar gerek eko eğitim kurumlarında gerek olmayan eğitim kurumlarında çalışan eğitimcilerin erken çocukluk eğitiminde SKE'nin önemine inandıklarını göstermektedir. UNESCO SKE'ne yaşamın erken yıllarında başlanması gerektiğini birçok kez vurgulamıştır.

Kendilerine, okulöncesi dönemde sürdürülebilir kalkınma eğitiminin amacı sorulduğunda ise her iki grupta da (1) SK ile SKE konuları hakkındaki farkındalığın yükseltilmesi, (2) problem çözme ve karar vermede yaratıcı ve bütüncül düşünme yeteneğini artırılması ve son olarak (3) sürdürülebilir bir yaşam tarzı için davranışlar sergilenmesi seçenekleri ön plana çıkmıştır. Bu sonuçlar her iki tür erken çocukluk eğitimi kurumunda çalışan eğitimcilerin SKE'ne yönelik görüşlerinin aynı olduğunu

göstermektedir. İlgili alan yazın incelendiğinde bu çalışmanın sonuçlarının Arlemalm-Hagser ve Sandberg (2011)'in İsveçli eğitimcilerle yaptığı çalışmanın sonuçlarını desteklediği görülmektedir.

Önceki SKE deneyimleri sorulduğunda, eko sertifikalı eğitim kurumlarındaki eğitimcilerin %94.8'i, diğer eğitim kurumlarındaki eğitimcilerin ise %36.6'sı daha önceden SKE etkinlikleri uyguladıklarını belirtmişlerdir. En çok uygulanan öğretim metotlarında ise doğa gezileri, drama, gözlem, kitap okuma her iki grup içinde ön plana çıkmaktadır. Bu sonuçlar incelendiğinde hem eko hem de eko olmayan erken çocukluk eğitimi kurumlarında uygulanan erken çocukluk eğitimi programının önerdiği öğretim metotlarının SKE için uygun olduğu anlaşılmıştır.

Okulöncesi eğitimcilere SKE programı/etkinliği uygulamanın zorlukları sorulduğunda, çok az farklılıklar olsa da eko sertifikalı eğitim kurumlarında çalışanlar ile diğer eğitim kurumlarında çalışan eğitimciler genelde aynı seçenekleri öne sürmüşlerdir. Buna göre SKE'nin uygulanması için gerekli eğitim-öğretim materyallerinin eksikliği ve eğitimcilerin SKE'ne dönük formal eğitim eksiklikleri en çok işaretlenen seçenekler olarak dikkat çekmektedir. SKE programının aktif edilebilmesi için en önemli gereklilikler arasında ise her iki grup için de eğitimcilerin SKE eğitimlerinin genişletilmesi ve SKE'nin eğitim öğretim programına eklenmesi/uygulanması gösterilmiştir. Erken çocukluk eğitimcilerinin ilgili sorulara verdiği yanıtlar incelendiğinde bu bulgu, gerek eko sertifikalı eğitim kurumlarında gerek eko olmayan eğitim kurumlarında görev yapan erken çocukluk eğitimcilerinin SKE ile ilgili kendilerini yetersiz gördüğünü göstermiştir. Bu nedenle hem hizmet öncesi hem hizmet içi süreçte SK ile ilgili teorik ve uygulamalı mesleki gelişim etkinlikleri (kurs, seminer, atölye çalışması) ihtiyaçlarını oryaya koymuştur.

Öte yandan demografik bilgiler incelendiğinde ise her iki gruptaki okulöncesi eğitimcilerin büyük kısmının şehirde ve apartman dairesinde bir çocukluk geçirdiklerini ve çevre veya SK ile ilgili herhangi bir STK'ya üye olmadıklarını göstermiştir. Genel olarak analiz sonuçları, okulöncesi eğitimcilerin SK ile ilgili bilgi sahibi olduklarını, SK'ya karşı yüksek denilebilecek tutuma sahip olduklarını ve

kabul edilebilir düzeyde SKE pratiđi yapabildiklerini göstermiřtir. Bu sonu bu arařtırmaya katılan bütn eđitimcilerin SK hakkında bilgili ve olumlu tutumlara sahip olduklarını iřaret etmektedir. Erken ocukluk eđitimcilerinin uygulama dzeyleri karřılařtırıldıđında ise eko sertifikalı eđitim kurumlarında grev yapan eđitimcilerin biraz daha fazla uygulama yaptığı grlmektedir. Bu bulgu eko sertifikalı eđitim kurumları iin tavsiye edilen eđitimci modeli ile eliřkiye dřmektedir.

Eko sertifikalı eđitim kurumlarının amacı sadece đrencilerin deđil eđitimciden mdre btn personelin SK ve SKE ile ilgili bilgi tutum ve uygulamalarını iyileřtirmektir.

alıřmanın ıkarımsal sonularını tartıřmak gerekirse, Hiyerarřik Dođrusal Modelleme (HLM) analizlerinde okulncesi eđitimcilerin SKE pratikleri, onların SK hakkındaki bilgileri, SK'ya karřı tutumları, ocuklukta yařadıkları yere, ev tipi, evre veya SK ile ilgili bir STK'ya ye olup olmamaları ve gemiř SKE deneyimleri tarafından tahmin edilmeye alıřılmıřtır. Buna gre eko olan ve olmayan erken ocukluk eđitimi kurumlarında alıřan erken ocukluk eđitimcilerinin SKE pratikleri, onların SK'ya karřı tutumları ve gemiř SKE deneyimleri tarafından tahmin edilmiřtir. Buna gre eđer bir eđitimci SK'ya karřı yksek bir tutuma sahipse daha fazla SKE pratiđi yaptığını gstermektedir. İlgili literatr incelendiđinde eđitimcilerin tutumlarının sınıf ii uygulamaları ile iliřki olduđunu rapor eden alıřmalara rastlanmıřtır. Bu nedenle evresel, sosyal kltrel ve ekonomik konularla ilgili olumlu tutumlara sahip eđitimcilerin alıřtıkları kurumun eko olup olmaması fark etmeksizin SKE eđitimi uygulamalarının artacađı dřnmektedir. Bir diđer taraftan, her iki kurumda alıřan erken ocukluk eđitimcilerinin SK bilgileri ile uygulamaları arasında bir iliřki bulunamamıřtır. Bu iliřki ilgili alan yazında da farklı sonular vermiřtir. Yapılan bazı arařtırmalarda bilgi uygulamanın yordayıcısı olmakla beraber bazılarında deđildir.

Bu alıřmaya dahi edilen demografik deđiřkenler incelendiđinde ise hem eko eđitim kurumlarında alıřan hem de eko olmayan eđitim kurumlarında alıřan eđitimcilerin

çocukken yaşadığı yer (köy- şehir) ve yaşadığı konut tipinin (müstakil ev- apartman), onların SKE uygulamalarını tahmin etmediği görülmektedir. İlgili alan yazın incelendiğinde bu bulguların özellikle çevre eğitimi alanında yapılan çalışmalarla ters düştüğü saptanmıştır. Çevre eğitimi alanında sıklıkla yapılan nitel çalışmalar incelendiğinde şehir yerine köyde büyümenin ya da çocukluğunda apartman yerine müstakil evde yaşamının bireylerin çevreye yönelik eylemlerine olumlu yansıtacağı rapor edilmiştir. Ancak öte taraftan Palmer bu değişkenlerin başka kültür ve ortamlarda farklı sonuçlar verebileceğini ifade etmiştir. Özetle bu araştırmaya katılan erken çocukluk eğitimcileri için çocukken köyde ve veya müstakil evde yaşamaları onların SKE uygulamalarını yordamamaktadır.

Bu araştırmanın bir diğer yordayıcı değişkeni olarak erken çocukluk eğitimcilerinin daha önce SKE uygulaması deneyimi olup olmadığı belirlenmiştir. Sonuçlar incelendiğinde eko olmayan eğitim kurumlarında görev yapan eğitimciler eğer daha önce SKE deneyimine sahipse şu anki uygulamalarının daha yüksek olduğu tespit edilmiştir. Ancak bu durum eko eğitim kurumlarında görev yapan erken çocukluk eğitimcileri için geçerli değildir.

Eko sertifikalı eğitim kurumlarında çalışan eğitimcinin SKE pratikleri ise onların SK'ya karşı tutumları ve çevre veya SK ile ilgili bir STK'ya üye olup olmamaları tarafından tahmin edilmiştir. Bir diğer deyişle, bu eğitim kurumlarında çalışan okulöncesi eğitimciler, SK'ya karşı yüksek bir tutuma sahiplerse, SKE pratiklerinin daha yüksek olduğu görülüyor. Diğer taraftan, bu eğitimciler çevre veya SK ile ilgili bir STK'ya üye iseler, yine SKE pratiklerinin yüksek olduğu görülmektedir.

Çalışmanın Eğitimsel Çıkarımları

Önceki bölümlerde yer verilen ve tartışılan bulgular ışığında bu çalışmanın erken çocukluk döneminde sürdürülebilir kalkınma eğitimi araştırma alanına, bu alanda çalışan akademisyenlere, eğitimcilere, okul yöneticilerine eğitim plan ve programcılara fikir vereceği düşünülmektedir.

Eğitimcilerin sürdürülebilir kalkınma eğitimi hakkındaki düşünceleri ilgili alan yazında kısmen yer verilen bir konudur. Bu bağlamda gerek UNESCO nun yayınladığı raporlar ve yapılan bilimsel araştırmaların ışığında, eğitimcilerin özellikle okul öncesi eğitimcilerinin sürdürülebilir kalkınma eğitimi ile ilgili düşüncelerinin çok önemli olduğu vurgulanmıştır. Erken çocukluk eğitimcisinin bu süreçteki rolünü göz önünde bulundurarak, eko eğitim kurumlarında ve eko olmayan eğitim kurumlarında, sürdürülebilir kalkınma eğitiminin erken çocukluk eğitimcileri tarafından nasıl algılandığını araştırmak ve karşılaştırmak, eko eğitim kurumlarında da rolünü ortaya koymak suretiyle alana katkı sağlayacaktır. Sonuçlar hem eko hem de eko olmayan eğitim kurumlarında çalışan erken çocukluk eğitimcilerinin sürdürülebilir kalkınma eğitiminin erken çocukluk yıllarında önemli olduğunu düşündüklerini ve sürdürülebilir kalkınma eğitimine okul öncesi yıllarda başlanması gerektiğini düşündüklerini göstermektedir.

Çalışmanın Sınırlılıkları ve Sonraki Çalışmalar için Öneriler

Bu çalışmanın barındırdığı bazı sınırlılıklar şu şekildedir. Öncelikle, çalışmanın kuramsal çerçevesi incelendiğinde, bu çalışmada ele alınan değişkenler dışında, eğitimcilerin sürdürülebilir kalkınma uygulamalarını yordayabilecek başka değişkenler de incelenmelidir. Aynı zamanda, bu çalışmada kategorik değişkenler olarak test edilen ve özellikle doğa ile ilişkiyi test eden maddeler, kategorik yerine süreli değişkenler seçeneği ile test edilebilir.

Bu çalışmanın bir diğer sınırlılığı da geniş örnekleme rağmen Türkiye'nin bütün bölgelerinden veri toplanmamasıdır. Bunun çalışmanın genellenebilirliği ile ilgili sınırlılık yaratacağı düşünüldüğünden, sonraki çalışmaların örneklem seçerken bu olgu dikkate almaları önerilmektedir.

Bu çalışma karşılaştırmalı betimsel bir çalışma olduğundan dolayı sebep sonuç ilişkilerini açıklamada yetersiz kalmaktadır. Bu bağlamda okul öncesi eğitimcilerin

sürdürülebilir kalkınma eğitimi deneyimlerini tahmin eden yordayıcıların ve benzerlerinin deneysel desen de test edilebileceği düşünülmektedir. Bu bağlamda gözlem ve derinlemesine görüşmeler yapmak da konuyu aydınlatabilir.

Bu çalışmanın en önemli sınırlılığı katılımcıların kendi rapor ettikleri yanıtlarla sınırlı kalmasıdır. Eğitimcilerin özellikle deneyimlerinin gözlem yapılarak değerlendirilmesi ve rapor edilmesi gerekmektedir.

Son olarak sürdürülebilir kalkınma eğitimi okulöncesi dönemdeki çocukların eğitimi ve geleceği için çok önemlidir. Bu bağlamda bu alanda yapılacak çok fazla çalışmaya gereksinim duyulmaktadır.

Appendix D:

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Kahrıman, Deniz

Nationality: Turkish (TC)

Date and Place of Birth: November 14, 1982, Ankara

Phone: +90 312 210 4059

Fax: +90 312 210 7984

e-mail: denizkahrıman@gmail.com

EDUCATION

Degree	Institution	Year of Graduation
MS	Middle East Technical University, Early Childhood Education	2010
BS	Ankara University, Early Childhood Education	2005
High School	Tınaztepe Yabancı Dil Ağırlıklı Lisesi	2000

CERTIFICATE

2005	Ankara University, Faculty of Education	Teaching Certificate
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WORK EXPERIENCE

2007-Present	METU, Department of Elementary Education	Research Assistant
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2005-2007	MEB, Papatya Anaokulu	Teacher
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PUBLICATIONS

1. Kahriman-Ozturk, D., Olgan, R., & Tuncer, G. (2012). A qualitative study on Turkish preschool children's environmental attitudes through ecocentrism and anthropocentrism. *International Journal of Science Education*, 34(4) 629–650.
2. Ozturk-Kahriman, D., Olgan, R., Guler, T. (2012). Preschool Children's Ideas on Sustainable Development: How Preschool Children Perceive Three Pillars of Sustainability with the Regard to 7R. *Educational Sciences: Theory & Practice*, SI, 2987-2995.
3. Olgan, R. & Kahriman-Ozturk, D. (2011). An Investigation in the Playgrounds of Public and Private Preschools in Ankara. *Education and Science*, 36(161), 84-96.

PRESENTATIONS

1. Cengizođlu, S., Ozturk- Kahrman, D., Olgan, R., (2012). Early Childhood Education for Sustainable Development Experiences in the Workshop "Education for Sustainable Development Experiences for Elementary Inservice Teachers". Teksöz, G., Yılmaz- Tüzün Ö. *Applied Education Congress (APED)*, 13-15, September, Ankara, Turkey.
2. Ozturk-Kahrman, D., Olgan, R., Guler, T. (2012). Preschool Children's Ideas on Sustainable Development. Paper Presented in *International Conference on Global Issues of Early Childhood Education and Children's Rights Conference*, 27- 29, April, Gaziantep, Turkey.
3. Cengizođlu, S., Ozturk- Kahrman, D., Olgan, R., Teksöz, G. (2012) Early Childhood Education for Sustainable Development: Experiences in Sweden and Inferences for Turkey. Paper Presented in *Applied Education Congress (APED)*, 13-15, September, Ankara, Turkey.
4. Olgan, R. & Kahrman-Ozturk, D. (2010, August). Preservice and Inservice Preschool Teachers' Perceptions about Science Teaching and Learning in Preschool Years. Paper presented at *European Conference on Educational Research (ECER)*, August, 23-27 2010, Helsinki, Finland.
5. Olgan, R. & Kahrman-Ozturk, D. (2010, August). Expectations, Perceptions and Reflections of Preservice Preschool Teachers on Community Service Training. Paper presented at *European Conference on Educational Research (ECER)*, August, 23-27 2010, Helsinki, Finland.
6. Kahrman Ozturk D., Karaarslan G., "Effect of a Short Term Intervention on Preschool Children's Attitudes towards Recycling and Reusing." *European*

Conference on Educational Research (ECER), 2010, August, 23-27 2010, Helsinki, Finland.

7. Kahriman-Ozturk, D., Olgan, R. & Teksöz, G. (2010, August). How Do Preschool Children See their Environment: Attitudes towards Environmental Issues. Paper presented at *26th OMEP World Congress*, Sweden.

8. Olgan, R. & Kahriman-Ozturk, D. (2009, November). The Current Status of Public and Private Preschool Playgrounds in Ankara. Paper presented at *The Annual Meeting of the International Congress Architecture and Children (ARCHILD)*, Ankara, Turkey.

9. Ak I., Ozturk- Kahriman D., "Preservice Preschool Teachers Attitudes Towards Integration of Children with Special Needs" 20. *National Special Education Congress*, October 21-23 2010, Gaziantep, Turkey.

BOOKS

TEMA (2014). *Minik Tema: Okul Öncesi Dönemdeki Çocuklar için Çevre Eğitim Programı*, TEMA Yayınları, İstanbul.

OMEP (2015) (Basıma Hazırlanıyor). Kitap Bölümü, *Erken Çocukluk Eğitiminde Sürdürülebilir Gelişim*. (Haktanir, G., Guler, T., Kahriman Ozturk-D). Springer, London.

FOREIGN LANGUAGES

English

COMPUTER PROGRAMS

MS Office Tools, SPSS, HLM, LISREL, İteman.

Appendix E:

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü

Sosyal Bilimler Enstitüsü

Uygulamalı Matematik Enstitüsü

Enformatik Enstitüsü

Deniz Bilimleri Enstitüsü

YAZARIN

Soyadı : Kahrıman

Adı : Deniz

Bölümü : İlköğretim

TEZİN ADI: Comparison of Early Childhood Education Educators' Education for Sustainable Development Practices Across Eco versus Ordinary Preschools

TEZİN TÜRÜ : Yüksek Lisans Doktora

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir.

2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir.

3. Tezimden bir bir (1) yıl süreyle fotokopi alınmaz.

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: