

## Teacher Practices and Preschool Physical Environment for Education for Sustainable Development: Eco Vs Ordinary Preschools

### Sürdürülebilir Gelişim için Eğitimde Öğretmen Uygulamaları ve Okul Öncesi Kurumların Fiziksel Çevreleri: Eko ve Eko Olmayan Okulların Karşılaştırılması

Deniz KAHRİMAN-PAMUK\*, Refika OLGAN\*\*

**Abstract:** This study aimed to determine the frequency of and time allocation for education for sustainable development (ESD) practices of preschools teachers and examine the ESD indicators in the physical environment of eco and ordinary schools. The results indicate that the frequency of and time allocated for the ESD practices of eco preschool teachers were significantly higher than those of teachers in ordinary preschools but only with a small effect size. The results also demonstrate that there are more facilities to support ESD in eco-preschools compared to ordinary preschools. In conclusion, the eco-school approach may promote ESD indicators in preschools; however, the small effect size and similar mean scores of teachers in both schools emphasize the necessity of further investigating the issue. On the other hand, the significant differences between eco and ordinary preschools in terms of the physical environment demonstrate the unequal conditions of preschools in terms of ESD.

**Keywords:** Education for sustainable development, eco preschools, education for sustainable development indicators, preschool physical environment

**Öz:** Bu araştırmanın amacı eko ve eko olmayan okul öncesi eğitim kurumlarının fiziksel özelliklerini ve okul öncesi öğretmenlerin uygulamalarının SGE (Sürdürülebilir Gelişim için Eğitim) açısından değerlendirmektir. Çalışmanın sonuçlarına göre eko okullarda çalışan okul öncesi öğretmenlerin SGE uygulamalarına ayırdıkları zaman ve sıklık düzeyi eko olmayan okullarda çalışan öğretmenlerle karşılaştırıldığında etkisi küçük olsa da anlamlı derecede yüksek bulunmuştur. Ayrıca SGE’yi destekleyen fiziksel çevre uyaranları açısından eko okulların daha önde olduğu sonucuna ulaşılmıştır. Sonuç olarak eko okul yaklaşımı okul öncesi kurumların SGE açısından fiziksel özelliklerinin iyileştirilmesini sağlayabilir ancak her iki okul tipinde çalışan öğretmenlerin SGE uygulamaları açısından beklenen kadar yüksek farka sahip olmaması, bu konu ile ilgili yeni çalışmalara ihtiyaç duyulduğunu göstermiştir.

**Anahtar Kelimeler:** Sürdürülebilir gelişme için eğitim, eko-okul öncesi eğitim kurumları, sürdürülebilir gelişme için eğitim göstergeleri, fiziksel çevre özellikleri

#### Introduction

2030 Agenda for Sustainable Development declared by the United Nations reaffirmed the central vision of this century as giving everyone the opportunity to transform the world by learning the values and behaviors required for a sustainable lifestyle (UNESCO, 2017). The 17 Sustainable Development Goals and 169 targets which were announced realized the integrated and indivisible balance among the three dimensions of sustainable development: the economic, social and environmental. In this regard, Education for Sustainable Development (ESD) aims to transform the world in collaboration with all grades, and guide and motivate people from all

\* Dr. Öğr. Üyesi, Mersin Üniversitesi, Eğitim Fakültesi, Mersin-Türkiye, ORCID: 0000-0002-7028-6097, e-posta: denizkahrman@mersin.edu.tr

\*\* Doç. Dr., Orta Doğu Teknik Üniversitesi, Eğitim Fakültesi, Ankara-Türkiye, ORCID: 0000-0003-1953-7484, e-posta: rolgan@metu.edu.tr

ages to become responsible citizens of the planet (UNESCO, 1997). It emphasizes the inter-relationship between environment, economy, and society to help people develop attitudes, skills, and knowledge to make informed decisions for the benefit of themselves and others, now and in the future, and to act upon these decisions (UNESCO, 2002). Furthermore, the Tbilisi Declaration (UNESCO, 1977), Agenda 21, the earth summit strategy to save planet (Agenda 21, 1992), and the Dakar Framework for Action (UNESCO, 2000) are considered important international documents and commitments with the aim of moving the education sector to ESD starting from the early years of life (Drexhage & Murphy, 2010; UNESCO, 2005; 2012). At this point Early Childhood Education for Sustainable Development (ECESD) is highlighted and it is a transformative education process that strengthens children's problem-seeking and solving skills as well as valuing their contributions to changing their environment (Daries, Engdahl, Otieno, Pramling-Samuelson, Siraj-Blatchford, an, & Vallabh, 2009; UNESCO, 2012). In other words, ECESD is about empowering children to think and act in a way that values sustainable living to save the future (Siraj-Blatchford, Smith, & Pramling Samuelsson, 2010).

The United Nations Conference on Environment and Development emphasized the importance of ESD in the early years and proposed integrating ESD into educational curricula starting from early childhood (UNESCO, 2002). In this document, it is underlined that individuals' views and attitudes begin to take shape in early childhood, and the pre-school period plays an important role in the acquisition of a sustainable way of life in the following years (Didonet, 2008). The role played by ECESD is one of the most recent topics of discussion in the related literature. For example, Hedefalk, Almqvist and Östman (2015) reviewed studies conducted from 1996 to 2013 on ESD and Early Childhood Education. One of the key results of their analysis of the scientific publications was that ECESD was not about teaching children environmental, social-economic or cultural phenomena. On the contrary, ESD in the pre-school period encourages children to be well-educated individuals who can make a difference in the world and make right decisions for themselves and in situations concerning other people (McNaughton, 2012).

Concerning the development of ESD in preschools around the Europe, many developed countries that have taken the lead in ESD practices such as Sweden did not necessarily achieve this by changing their existing early childhood curriculum (Gadotti, 2010; Sterling, 2001). For instance, the Swedish national early childhood education curriculum does not contain the objective of teaching Sustainable Development (SD) as a concept. Rather, this country exhibit an integrated approach as proposed by UNESCO (2005) incorporating the content related to ESD into its education program. For example, most of the long-term ESD practices in early childhood education including democracy, global warming, cultural diversity, and environmental-friendly production have been integrated into the national education curriculum of Sweden (Breiting & Wickenberg, 2010; Kultti, Larsson, Arlemalm-Hagser & Pramling-Samuelsson, 2016; Sweden Environmental Protection Agency, 2000). Also, in Norway, philosophy of early childhood education rooted on sustainability related context in terms of respect for human and nature, democracy, environmentally friendly development, etc. (Heggen, 2016). Referring key importance of children's participation as a citizen and forest schools, English national preschool curriculum implicitly integrates the environmental, economic and social-cultural dimensions of ESD (Siraj-Blatchford, 2016). Similarly, in Portugal, focus of ECESD practices is paying attention to children' voices for a democratic society referring indirectly dimensions of ESD (Folque & Oliveira, 2016).

In the context of Turkey, the national early childhood education program (Milli Eğitim Bakanlığı, 2013) places an emphasis on an integrated approach supporting children' cognitive, language, social-emotional, and motor development. When the program is analyzed in relation to ESD, it is seen that many implicit objectives and indicators are also appropriate for the ESD content. For example, "respect for diversity", "reflect on different cultural features", "and maintain aesthetic values". In other words, the national early childhood education program emphasizes the ESD content in an implicit manner and the objectives and indicators in the national early childhood education program as well as its content-appropriate for preschool

teaching practices related to ESD. Therefore, ESD practices can be undertaken simply through the current objectives and indicators of the curriculum without the need for a supplementary ESD program (Alici, 2013; Cengizoglu, 2013; Korkmaz & Guler-Yıldız, 2017).

In brief, there is a worldwide attempt to reorient their curriculum towards sustainable development encompassing environmental education in a broader context of socio-cultural factors and economic development (Sterling & Huckle, 2014). In this regard, it is important how schools perceive education and learning for sustainable development and need to incorporate a vision that is environmentally, socially, and economically sustainable. As suggested by Scoot (2011), schools are places in which students, from preschool years to adulthood education, can develop their own idea of a sustainable lifestyle. At this point, sustainable development should be integrated into every aspect of school curriculum in terms of school culture, teaching and learning process, teaching practices, organization, administration and physical environment of the school (Henderson & Tilbury, 2004).

### **Eco-schools and education for sustainable development**

The Eco-Schools Program is the largest sustainable schools program in the world and run by the Foundation for Environmental Education (FEE). As of the 2016- 2017 academic year, the eco schools program is being implemented in 62 countries. More than 49,000 schools, 13,000,000 students and 1,170,000 teachers have been enrolled in eco school system. There are seven steps named as “forming an eco-committee, carrying out an environmental review, making an action plan, monitoring & evaluating, linking to curriculum, informing & involving, and producing an eco-code” which a school must follow to be eco-certificated (FEE, 2017)

Eco-preschools can be considered a good model promoting Education for Sustainable Development that was originated in Agenda 21 with Chapter 25 explicitly referring to children and the youth being active agents of environmental protection and social-economical promotion (Agenda 21, 1992; UNESCO, 2003). Eco-preschool programs provide a variety of indoor and outdoor educational opportunities for preschool children and preschool teachers to support the goals of ESD (Bajd & Lescanec, 2011). The framework and standards delivered by eco schools help teachers integrate sustainable development throughout their schools offering the methodological tools and environmental modifications for settings. In other words, the existing curricula is re-orientated around sustainable development themes. In this regard, eco-preschools might be the main vehicle supporting ESD indicators in terms of teaching practices and the school physical environment (FEE, 2004).

Here, teaching practices are used in a broad sense including in-class and outdoor teaching activities run by preschool teachers that aim at promoting sustainable development. Examples of preschool teachers' teaching practices related to ESD include issues about collecting paper for recycling, use of natural materials in school events, cooperating with schools in underdeveloped countries and respecting social-cultural differences (Engdahl & Årlemalm-Hagsér, 2008). In this context, preschool teachers' teaching practices about ESD during the early childhood period can build a bridge between today and a sustainable future. Hence, it is important to understand how many times they run teaching practices related to ESD and how much time they allocate in ECE settings. However, the available literature on ESD is lack of information about ESD teaching practices. The known literature has only partially discussed the teachers' understanding of sustainable development (Björneloo, 2007; Borg et al., 2012; McNaughton, 2012; Öhman, 2004). Pre-school teachers are responsible for not only exploring and learning with children and supporting them, rather than delivering didactic lectures, but also for creating a learning environment, in which children can exchange ideas about a sustainable life (Davis, 2010; Didonet, 2008). On the other hand, there is also research on ESD that has explored teachers' perceived barriers to ESD (Bursjö, 2011; Oulton, Dillon & Grace, 2004; Winter & Firth, 2007). According to teachers, these barriers may arise from the inadequacy of physical environment features such as facilities, materials and equipment in the school and the characteristics of the school yard, which all affect how the school community from the administrators to teachers and children feel, think, and behave (Kalaitzidis, 2012).

In particular, it is crucial to emphasize that a preschool physical environment, which is appropriate for ESD, can help children stimulate their cognition and senses for a sustainable future (Henderson & Tilbury, 2004). Although the preschool environment differs significantly in each country and from preschool to preschool, here, ESD related preschool physical environment is used in a broad sense including outdoor farming area, wooded area, animal shelter, co recycling bin, waste battery box, composting area, visual stimulants, books, toys, costume and puppets related to sustainable development. The availability of these materials and appropriately structured preschool facilities may encourage preschool teachers to implement particular types of ESD practice. To illustrate, in the Carbon Print Report of Croydon Council (Croydon Council, 2010), it is mentioned that a printed notice stating ‘switch off the light when it is not necessary’ facilitates good teacher practice and reduces electricity consumption. Hence, it can be concluded that the physical environment of preschools has a significant effect on the perception, attitude, and practices of school community concerning sustainable development. Therefore, for a sustainable future, the physical environment is one of the key elements assisting teachers’ teaching practices (Gough, 2005; Henderson & Tilbury, 2004).

Turkey is one of the participant countries of Eco-school project. Preschools participated to this international project adapt the eco-schools program into national preschool education program that is prepared by the Ministry of Education and awarded by eco-school certificate. Eco-schools project is pursued by TÜRÇEV in Turkey with the cooperation of Foundation of Environmental Education (FEE). On the other hand, ordinary preschools are referred in this study as the preschools which are also operated by Ministry of National Education but not participants of eco- school project.

Although the eco-preschool program has been the subject of many studies, most have only evaluated it from the perspective of the outcomes for the learner (Boeve-de Pauw & Van Petegem, 2011; Hallfreðsdóttir, 2011; Krnel & Naglič, 2009; Ozsoy, 2012). To the best of our knowledge, the accessible literature does not contain any studies assessing the preschool teachers’ teaching practice or the preschool physical environment in eco and ordinary preschools from the lens of ESD practices. In this regard, the current study aimed to determine ESD related teaching practices of preschool teachers and physical environment features in eco and ordinary preschools. In addition, the differences between eco and ordinary preschools were investigated in terms of these factors. The following research questions were formulated to fill the gap in the relevant literature.

1. What is the most and least referred ESD-related content in the teaching practices of preschool teachers in eco and ordinary preschools?
2. How much time do preschool teachers allocate for ESD-related content in their teaching practice?
3. Is there a difference between eco and ordinary preschools regarding the frequency of and time allocation for teaching practice of preschool teachers related to ESD?
4. What are the ESD indicators in eco and ordinary preschools in terms of physical environment features?

## **Method**

### **Design of the study**

This study was designed as quantitative research based on both participants’ self-reports about their practices and the observers’ rating on ESD indicators in preschools. The study was conducted in four big cities of Turkey, namely İstanbul, Ankara, Antalya, and Eskişehir, using a survey research method (Fraenkel & Wallen, 2012). Data was analyzed through descriptive and inferential analyses.

### **Data collection process**

Necessary permissions were taken from the Turkish Ministry of National Education to administer the scales to the participant teachers. A pilot study was conducted with 125

preschool teachers in 25 preschools located in Ankara, the capital of Turkey. After finalizing the instruments based on the results of the pilot study, the main study was undertaken during the spring semester of the 2015-2016 school year, and the preschools were evaluated in terms of ESD indicators. The responses of the teachers were kept confidential and only used for research purposes.

### **Population and sample**

The target population of the study was identified as all the public preschools and preschool teachers in Turkey. However, due to the difficulty of reaching the large target population, the accessible sample was defined as public eco and ordinary preschools and preschool teachers in the metropolitan cities of Ankara, Istanbul, Antalya, and Eskisehir. These cities were selected for having the largest number of preschools with an eco-school certificate (FEE, 2017). First, 48 eco-preschools were selected from the four cities mentioned above. Then, for comparison purposes, 63 ordinary schools were randomly selected from the same districts of the same cities. In the second stage, 838 preschool teachers were randomly selected from the participant schools to complete the survey on their practices to determine the frequency of and time allocation for ESD-related content. Of these teachers, 349 were from eco-preschools and 489 were from ordinary preschools.

### **Data collection instruments**

The following instruments were developed by the researchers to collect data: the *Scale on the Frequency of and Time Allocation for ESD Practices of Pre-school Teachers* and the *Checklist of ESD Indicators in Preschool Physical Environment*. In the process of developing these instruments, three eco-preschools (one public and two private) which are considered to be good examples of ESD in terms of adopting the whole-school approach were visited. In addition to the researchers' observations during these visits, interviews were conducted with the principal and two teachers from each school to elicit their views on how preschools support SD. After a detailed literature survey, the researchers constructed an item pool based on the related literature using the information from their observation and interviews reports. Then, the items were examined by three academicians, specializing in statistics and research methods, ESD research and early childhood education, respectively. The items were revised according to the evaluations and suggestions of these experts to obtain the final versions of the scales.

The ESD frequency and time allocation scale contained 29 items under different headings to determine how often (1 = Never, 2 = Daily, 3 = 3-4 times a week, 4 = 1-2 times a week, 5 = 1-2 times per month) and for how long (1 = not applicable, 2 = 1-30 min, 3 = 31-60 min, 4 = 61-90 min, 5 = more than 90 min) the pre-school teachers implemented ESD practices. In the analysis of consistency, Cronbach's alpha was found to be .96 for the frequency part of the scale and .97 for the items related to time allocation.

The second tool filled by the researchers was a checklist for physical environment features supporting ESD, which comprised 25 items related to the facilities in the preschools. The respondents were asked to tick the 'YES' box if the facility was available in their school and the 'NO' box if not. Cronbach's alpha for this scale was calculated as .82 for the pilot study and .86 for the main study.

### **Results**

Concerning the frequency of and time allocated for ESD-related activities (Table 1), eco and ordinary schools had similar scores. In general, in both types of preschool, the teachers undertook ESD activities once or twice a month with the time allocated for each activity being less than 30 minutes.

More specifically, 35.8% of the preschool teachers in eco-schools and 36.8% in the ordinary schools stated that they never implemented activities related to the importance of using domestic goods whereas 39.4% of teachers in eco-schools and 42.9% of teachers in ordinary schools stated that they engaged in these activities once or twice a month.

Moreover, Table 1 shows that some topics, for instance the importance of democracy, maintaining social justice in Turkey and the world, sustaining equality in Turkey and the world, respect for differences, were substantially reported as content that was implemented at least once or twice a month or more in teachers' practices in eco and ordinary preschools.

In the current study, in the eco preschools, the participants' daily practices of maintaining equality in Turkey and the world and respect for differences were higher than other topics at 41.8% and 42.1%, respectively. In the ordinary preschools, the results for the above-mentioned topics were 32.2% and 32.7%, respectively. The teachers reported that they spent more than 90 minutes on the topic of maintaining equality in Turkey and the world with scores of only 7.5% in the eco schools and 5.5% in the ordinary preschools, and the topic respect for differences scored only 5.7% in the eco schools and 5.2% in ordinary preschools.

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Table 1.  
The Percentages of Frequency of and Time allocation for ESD-Related Content in Preschool Teachers' Practices.

	Practice Frequency										Time Allocation									
	ECO Preschools					Ordinary Preschools					ECO Preschools					Ordinary Preschools				
	Never	Once or twice a month	1-2 times a week	3-4 times a week	Daily	Never	Once or twice a month	1-2 times a week	3-4 times a week	Daily	Never	1-30 minutes	31-60 minutes	61-90 minutes	More than 90 minutes	Never	1-30 minutes	31-60 minutes	61-90 minutes	More than 90 minutes
Poverty reduction	10.9	67.0	8.7	6.8	6.6	9.1	65.1	11.7	7.3	6.7	11.3	71.7	13.7	2.0	1.3	9.0	73.1	12.3	3.4	2.2
Importance of democracy	1.5	32.6	31.1	16.8	18.0	2.1	33.8	31.8	14.8	17.5	3.2	73.2	16.4	4.8	2.4	2.5	79.3	11.4	4.0	2.8
Solidarity and aid	11.6	59.6	16.7	8.0	4.0	24.0	52.4	11.1	8.4	4.2	12.6	69.0	12.8	4.0	1.5	22.8	65.0	7.2	3.4	1.6
Importance of right to participate	3.6	47.4	26.6	13.6	8.8	4.1	54.7	23.7	9.5	8.0	4.7	70.3	18.8	3.8	2.4	4.0	81.4	8.4	4.3	1.9
Gender equality	22.5	52.0	14.1	6.9	4.5	31.4	49.1	11.2	5.3	3.0	23.7	60.4	11.0	3.4	1.6	30.7	58.6	7.8	1.3	1.6
Importance of children's rights	4.9	47.0	20.1	15.5	12.5	6.8	53.9	20.2	11.3	7.7	5.5	74.8	13.3	4.0	2.4	7.4	74.4	11.4	4.3	2.5
Importance of human rights	6.6	50.1	22.8	11.4	9.1	8.3	60.2	15.3	10.6	5.6	6.9	73.3	13.1	4.4	2.2	8.6	75.9	10.2	3.4	1.9
Maintaining peace and security in Turkey and the world	8.2	48.8	16.8	12.0	14.1	15.1	50.4	13.1	10.7	10.7	8.9	70.7	12.2	3.8	4.4	16.0	67.9	10.8	3.1	2.2
Maintaining social justice in Turkey and the world	2.5	24.6	20.0	18.0	34.8	2.1	31.0	19.1	18.5	29.3	3.5	69.4	16.5	5.7	4.8	2.8	78.6	11.5	3.7	3.4
Maintaining equality in Turkey and the world	2.1	21.9	17.9	16.2	41.8	1.5	28.0	21.5	16.8	32.2	2.6	70.3	14.5	5.1	7.5	2.1	79.1	8.9	4.3	5.5
Respect for differences	2.1	20.7	17.4	17.8	42.1	.9	31.3	17.1	18.0	32.7	2.6	68.6	16.9	6.1	5.7	1.8	79.7	9.2	4.0	5.2
Cultural diversity	2.8	29.1	16.7	15.6	35.8	4.4	33.0	19.8	15.0	27.7	4.7	72.2	12.7	6.2	4.2	5.5	75.8	8.3	5.8	4.6
Biodiversity	19.9	52.7	14.1	5.4	7.9	28.4	47.9	7.2	9.9	6.6	20.2	64.5	9.5	4.0	1.8	28.1	59.3	9.1	1.6	1.9
Climate change	19.0	53.2	14.5	6.6	6.6	31.6	48.7	10.3	4.7	4.7	19.8	65.3	9.9	3.7	1.3	33.2	55.2	7.5	2.5	1.6
Natural disasters	10.4	65.5	13.7	5.7	4.7	12.8	68.5	9.8	5.3	3.6	13.9	73.1	9.7	2.4	.9	14.3	71.3	9.3	4.0	.9
Use of alternative energy sources	17.8	56.8	11.2	8.6	5.6	23.2	53.9	12.5	5.1	5.4	18.9	66.7	9.0	4.0	1.3	23.6	62.6	11.0	1.6	1.3
Importance of public transport	22.2	52.9	12.5	5.8	6.5	35.8	44.5	9.4	6.7	3.6	23.5	62.9	9.2	3.6	.9	32.2	59.9	5.4	1.9	.6
Reduction of power consumption	11.7	59.8	14.5	6.6	7.4	16.1	56.4	11.5	10.9	5.2	12.8	69.9	11.7	3.8	1.8	15.7	70.8	9.1	3.8	.6
Recycling	3.6	45.2	20.5	12.8	17.9	5.7	43.6	21.5	12.2	17.0	4.9	75.6	11.6	4.9	2.9	7.8	73.9	11.2	5.9	1.2
Reduction of water consumption	20.4	45.6	14.2	10.0	9.8	22.8	45.9	12.3	8.7	10.2	21.1	62.5	9.7	3.8	2.9	23.9	60.7	9.1	5.3	.9
Reduction of paper consumption	26.4	43.2	13.0	7.9	9.6	29.6	43.1	9.6	8.7	9.0	26.2	59.3	8.1	2.9	3.4	29.4	57.6	7.9	3.5	1.6
Decrease of energy sources	11.1	52.7	15.1	10.3	10.7	14.7	53.3	13.5	8.1	10.5	11.7	71.0	10.8	3.4	3.1	15.0	70.7	8.4	3.7	2.2
Air pollution	6.0	51.2	14.3	13.4	15.1	6.5	51.8	14.2	9.8	17.8	7.3	74.4	10.9	3.3	4.0	6.5	76.1	9.9	3.7	3.7
Protection of natural sources	4.0	48.3	16.6	12.8	18.3	6.6	47.1	18.4	11.5	16.3	5.1	72.8	14.2	3.1	4.9	6.9	73.7	11.9	3.4	4.1
Melting of the glaciers	10.3	41.9	18.4	10.9	18.6	12.2	43.6	15.7	12.8	15.7	11.7	49.9	10.8	3.8	3.8	13.4	66.3	12.5	4.7	3.1
Protection of forests	18.2	39.7	16.9	9.5	15.6	22.5	40.5	12.6	11.7	12.6	18.5	65.0	9.0	4.1	3.4	22.7	61.8	7.9	3.2	4.4
Endangered plants and animals	2.7	37.2	19.5	11.8	28.8	4.8	35.2	14.6	17.9	27.5	4.0	70.0	16.1	4.9	5.1	5.3	72.6	11.5	6.2	4.4
Protection of plants and animals	13.8	44.3	14.4	11.4	16.1	17.7	44.9	11.7	12.3	13.5	15.6	66.0	12.0	4.7	1.8	18.3	65.6	10.7	3.8	1.6
Importance of using domestic goods	35.8	39.4	9.3	7.5	8.0	36.8	42.9	6.1	7.3	7.0	34.9	52.1	7.5	3.0	2.5	36.9	51.5	5.8	1.9	3.9

In the second stage of the analysis, the ESD practices of preschool teachers in eco and ordinary preschools were compared in terms of frequency and allocated time. The independent sample t-test revealed that the mean frequency scores of the teachers from eco-preschools ( $M=2.73$ ,  $SD=.77$ ) were significantly higher compared to the teachers from ordinary preschools ( $M=2.60$ ,  $SD=.77$ ) [ $t(829)=2.249$ ,  $p<.05$ ]. The effect size was calculated and indicated a small effect ( $d=.267$ ). Similarly, the mean scores of eco-preschool teachers concerning time allocated for ESD activities ( $M=2.17$ ,  $SD=.58$ ) were significantly higher than those of the teachers from ordinary preschools ( $M=2.09$ ,  $SD=.54$ ) [ $t(798)=1.913$ ,  $p<.05$ ] with the effect size being small ( $d=.213$ ). In other words, the teachers working in eco-preschools included more ESD-related content in their practice and allocated more time for this content compared to the teachers from ordinary preschools but with a small effect (Table 2), which can be interpreted as the statistical significance having resulted from the large sample size.

Table 2.  
Independent Sample t-test Results Regarding the Frequency of and Time Allocation for ESD Practice of Teachers in Eco and Ordinary Preschools

		<i>M</i>	<i>SD</i>	<i>df</i>	<i>t-test score</i>	<i>p</i>
Frequency of the ESD Practice	<i>Eco</i>	2.73	.77	829	2.249	.025*
	Ordinary	2.60	.77			
Time allocated for ESD-Practice	<i>Eco</i>	2.17	.58	798	1.913	.048*
	Ordinary	2.09	.54			

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

In order to answer the fourth research question, ESD indicators in the physical environment of both eco and ordinary preschools were examined. According to the results, eco-schools had more ESD indicators than ordinary schools. For instance, most eco-schools included a farming area, an animal shelter, a composting area and bowls for feeding animals and used visual stimulants, books, toys, costume and puppets related to endangered animals and plants and ice melting; however, only a few ordinary schools had these facilities and materials (Table 3).

Among the ESD indicators in the physical environment, both eco and ordinary schools were found to have a recycle bin (100% and 95.2%, respectively), outdoor play facilities (100% and 95.2%, respectively) and visual stimulants, books, toys, costumes and puppets related to respecting differences (87.5% and 84.1%, respectively). However, regarding some other indicators, eco and ordinary preschools presented differences. For instance, the percentage of having a farming area was 83.3 in eco-preschools whereas it was only 39.7 in ordinary preschools. Similarly, there was an animal shelter in 64.6% of eco-schools but only in 30.2% of ordinary schools. Other important differences between the two types of school in terms of ESD indicators were the availability of visual stimulants, books, toys, costume and puppets related to endangered animals and plants (81.3% for eco and 25.4% for ordinary), ice melting (77.1% for eco and 9.5% for ordinary) and decreasing plastic use (95.8% for eco and 19.0% for ordinary). Furthermore, the results indicated that most of the eco and ordinary preschools did not have a composting area as an indicator of sustainable development (25.0% for eco and 3.2% for ordinary).

\* Dr. Öğr. Üyesi, Mersin Üniversitesi, Eğitim Fakültesi, Mersin-Türkiye, ORCID: 0000-0002-7028-6097, e-posta: denizkahrman@mersin.edu.tr

\*\* Doç. Dr., Orta Doğu Teknik Üniversitesi, Eğitim Fakültesi, Ankara-Türkiye, ORCID: 0000-0003-1953-7484, e-posta: rolgan@metu.edu.tr

Table 3.  
Sustainable Development Indicators in Preschool Physical Environments of Eco and Ordinary Preschools.

Sustainable development indicators in the physical environment of preschools:	Eco Preschools (n=48)		Ordinary preschools (n=63)	
	f	%	f	%
Farming area	40	83.3	25	39.7
Wooded area	48	100.0	48	76.2
Visual stimulants, books, toys, costume and puppets related to keeping the environment clean	48	100.0	51	81.0
Animal shelter	31	64.6	19	30.2
Visual stimulants, books, toys, costume and puppets related to animal and plant protection	48	100.0	49	77.8
Visual stimulants, books, toys, costume and puppets related to electricity saving	48	100.0	46	73.0
Visual stimulants, books, toys, costume and puppets related to water saving	48	100.0	50	79.4
Recycling bin	48	100.0	60	95.2
Waste battery box	47	97.9	56	88.9
Outdoor play facilities	48	100.0	60	95.2
Visual stimulants, books, toys, costume and puppets related to endangered animals and plants	39	81.3	16	25.4
Visual stimulants, books, toys, costume and puppets related to polar ice melting	37	77.1	6	9.5
Facilities to use alternative energy	9	18.8	4	6.3
Composting Area	12	25.0	2	3.2
Visual stimulants, books, toys, costume and puppets related to decreasing plastic use	46	95.8	12	19.0
Visual stimulants, books, toys, costume and puppets related to decreasing paper use	48	100.0	44	69.8
Storage for collecting junk materials and old toys	47	97.9	41	65.1
Bowls for feeding animals	36	75.0	23	36.5
Visual stimulants, books, toys, costume and puppets related to gender stereotypes	33	68.8	32	50.8
Visual stimulants, books, toys, costume and puppets related to respect for differences	42	87.5	53	84.1
Visual stimulants, books, toys, costume and puppets related to cultural differences	46	95.8	54	85.7
Visual stimulants, books, toys, costume and puppets related to equity	44	91.7	43	68.3
Visual stimulants, books, toys, costume and puppets related to human rights	44	91.7	39	61.9
Visual stimulants, books, toys, costume and puppets related to social justice	36	75.0	28	44.4
Visual stimulants, books, toys, costume and puppets related to world peace	43	89.6	36	57.1
Visual stimulants, books, toys, costume and puppets related to democracy	40	83.3	34	54.0

### Discussion and Conclusion

The current study attempted to determine the ESD practice in eco and ordinary preschools in terms of the frequency of and time allocation for ESD implementations and the availability of physical environment features supporting ESD. The two types of schools were also compared to reveal the differences.

The results indicated that both eco and ordinary preschools had similar percentages of frequency in terms of utilizing ESD-related content. For example, some of the preschool

teachers working in eco or ordinary preschools did not implement any activities about the importance of using domestic goods; however, some others reported that they included using domestic goods as an ESD activity one or two times per month. Moreover, the time allocated for each activity was less than 30 minutes. In addition, the importance of democracy, maintaining social justice in Turkey and the world, maintaining equality in Turkey and the world, respecting differences were the topics that were addressed by the teachers in both eco and ordinary schools at least once or twice a month. From these results, it can be inferred that preschool teachers working in eco and ordinary preschools do not differ in terms of the frequency of and allocated time for ESD practices. When the educational program of the eco and ordinary preschools is examined, the similar results obtained from this study can be attributed to similar time for ESD-related content being allocated in the curriculum (FEE, 2017; Milli Eğitim Bakanlığı, 2013). This means that preschool teachers working in both types of school are encouraged to implement similar ESD activities for the same duration.

When the implementations of eco and ordinary preschool teachers were compared, a statistically significant difference was found in terms of the frequency of and time allocated for teachers' ESD practices. This statistically significant difference was not surprising; however, the small effect size indicated an impractical significance despite the statistical difference. We initially expected to obtain a higher level of significance since eco-school teachers often attend in-service courses aiming to integrate ESD issues into emerging curriculum, and previous research (Feriver, Teksöz, Olgan & Reid, 2016; Guler, 2009) has shown that training related to ESD results in positive outcomes affecting teachers' awareness, attitudes and practices about environmental, social-cultural and economic issues. However, the results of the present study demonstrate that the content of these training programs may require further consideration. Hence, the similar results obtained from eco and ordinary schools concerning the frequency of and allocated time for ESD practices as well as the small effect size, we may arrive at the conclusion that these schools should be further examined in a more systematic way to assess the school environment, teacher, and student performance to have a better idea about the practical differences in terms of ESD. As stated by UNESCO (2005), ESD is a holistic approach and as underlined by Scoot (2011), schools should adopt a whole-school perspective when integrating ESD into their settings.

The data on the ESD indicators in the physical environments of eco and ordinary preschools showed that the former had better and more suitable physical conditions, and presented a variety of physical opportunities for ESD practices compared to the latter. In this regard, despite being beyond the scope of the current study, it may be concluded that the physical environment features of eco-preschools may serve as a facilitator of teachers' ESD-related practices. For example, availability of physical facilitators; e.g., recycle bin, books related to cultural differences, pretend money and cash point, can stimulate teachers' cognition and senses encouraging them to undertake more ESD-related practices. In other words, the physical environment provides opportunities for facilitating the ESD practices of preschool teachers (Kalaitzidis, 2012). Kalaitzidis (2012) and Henderson and Tilbury (2004) also underlined that the physical environment of schools affects how teachers think and practice. Therefore, improving the physical environment not only enhances the quality and type of activities implemented in classrooms but also encourages teachers to integrate ESD into their teaching.

To conclude, the eco-school program has been the subject of many studies; however, most have only evaluated it from the perspective of the outcomes for the learner (Boeve-de Pauw & Van Petegem, 2011; Hallfreðsdóttir, 2011; Krnel & Naglič, 2009; Ozsoy, 2012). To the best of our knowledge, the accessible literature does not contain any studies assessing the preschool teachers' ESD practice or the preschool physical environment in eco and ordinary preschools from the lens of ESD practices.

The overall findings of this study revealed that eco preschools have the benefits of having sustainable development indicators in their physical environment but the small effect size raises a question about the practical significance of the preschool teachers' ESD practices in

eco preschools when compared with ordinary preschools. At this point, we should consider that the Eco-Schools International Program developed by Foundation for Environmental Education in Europe (FEE) has a significant role in reorienting preschool education towards ESD. The rationality for this assumption is that when a school enters this program, it is expected to put an emphasis on environmental, social-cultural and economic matters not only in theory but also in practice (FEE, 2017).

The present study has drawn attention to ESD in preschools in terms of teacher practices and the features of the physical environment. However, there remains a need for stakeholders, curriculum developers and teachers to more fully consider the integration of ESD across all the dimensions of the school community from the school culture to the teaching and learning process and from organization and administration to relations with a wider community (Huckle, 2012). At this point, it should be noted that findings of the existing study were based only on the preschool teachers' self-reports and the researchers' observations about the physical environments of the preschools. Further research should be conducted to examine other aspects of the whole-school approach such as school governance, pedagogical approach, curriculum and resources utilizing different research methods including in-depth interviews and long-term observations.

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## Uzun Öz Giriş

Sürdürülebilir Gelişme, Dünya Çevre ve Kalkınma Komisyonu tarafından Brundtland Raporu ile "Bugünün ihtiyaçlarını, gelecek nesillerin gereksinimlerini karşılama yeteneğinden ödün vermeden karşılama" olarak tanımlanmıştır (WCED, 1987) ve 30 yılı aşkın süredir eğitimden ekonomiye birçok alanda kullanılmaktadır. Sürdürülebilir Gelişme için Eğitim (SGE) ise,

dünyanın ihtiyaçları doğrultusunda ortaya çıkan, gelişmekte olan dinamik bir olgudur. SGE, her yaşta insanı, yaşadıkları toplumda sorumluluk alarak, sürdürülebilir bir gelecek için öncü olmaya davet eder. SGE, günümüzde, birçok gelişmiş ve gelişmekte olan ülkede, eğitim sisteminin en önemli unsurlarından biri olmuştur. Birleşmiş Milletler Çevre ve Kalkınma Konferansı tarafından yayınlanan Gündem 21’de SGE’nin önemi vurgulanmış ve erken çocukluktan başlanarak eğitim programlarına kaynaştırılması önerilmiştir. Son olarak 25-27 Eylül 2015 tarihlerinde gerçekleştirilen Birleşmiş Milletler Sürdürülebilir Gelişme Zirvesi’nde 2030 Sürdürülebilir Gelişme Hedefleri” kabul edilirken, bu hedeflerin gerçekleştirilmesinde erken çocukluk eğitiminin rolü vurgulanmıştır. Dünyadaki erken çocukluk döneminde SGE uygulamaları incelendiğinde, İsveç’ten Avustralya’ya birçok ülkenin, bağımsız bir eğitim programı geliştirmek yerine, var olan ulusal eğitim programlarına sürdürülebilirliğin felsefesini bütünleştirdikleri görülmüştür. Türkiye’deki durum incelendiğinde ise ayrı bir SGE programı olmadığı gibi, Ulusal Okul Öncesi Eğitim Programında da (2013), SGE ile ilgili doğrudan bir kazanım ve gösterge bulunmadığı ancak mevcut olan kazanım ve göstergeler kullanılarak farklı etkinlikler düzenlenebileceği çalışmalarla ortaya konmuştur. Öte yandan, çocuklarda sürdürülebilir gelişmeye dair farkındalık kazandırmayı amaçlayan ve dünya çapında faaliyet gösteren eko-okullar bulunmaktadır. Eko- okul öncesi eğitim kurumlarında fiziksel çevredeki düzenlemelerin (her sınıfta geri dönüşüm kutusu bulunması, sürdürülebilir gelişim içeriği ile ilgili kitaplar ve oyuncaklar olması, vb.) yanı sıra, uygulanan eğitim programı ile eğitimciden öğrenciye okul ortamındaki bütün bireylerin sürdürülebilir bir yaşam için olumlu tutum ve davranışlar geliştirmeleri amaçlanmaktadır. Gerek eko okul öncesi eğitim kurumlarında gerek eko olmayanlarda, SGE’nin işlevsel bir şekilde yürütülebilmesinde, okul öncesi eğitim kurumlarının fiziksel çevre koşulları ve okul öncesi öğretmenin uygulamaları önem arz etmektedir. İlgili alan yazında eko ya da eko olmayan okul öncesi eğitim kurumlarının fiziksel çevre koşullarının ve öğretmenin uygulamalarının sürdürülebilir gelişim için eğitim açısından değerlendiren çalışmalara gereksinim olduğu düşünülmektedir. Bu bağlamda bu araştırmanın amacı eko ve eko olmayan okul öncesi eğitim kurumlarının fiziksel özelliklerini ve okul öncesi öğretmenlerin uygulamalarının SGE açısından değerlendirmektir. Araştırma soruları:

1. Eko ve eko olmayan okul öncesi eğitim kurumlarında, okul öncesi öğretmenlerin uygulamalarında, SGE ile ilgili en çok ve en az yer verdikleri konular nelerdir?
2. Eko ve eko olmayan okul öncesi eğitim kurumlarında, okul öncesi öğretmenler uygulamalarında SGE ile ilgili konulara ne kadar yer verirler?
3. Eko ve eko olmayan okul öncesi eğitim kurumları arasında, okul öncesi öğretmenlerin SGE için eğitim uygulamalarının sıklığı açısından bir fark bulunmakta mıdır?
4. Eko ve eko olmayan okul öncesi eğitim kurumlarının fiziksel özellikleri SGE ile ilgili hangi özelliklere sahiptir?

### **Yöntem**

Türkiye’de eko okul sayısının en çok olduğu dört büyük şehirden (İstanbul, Ankara, Antalya ve Eskişehir) toplanan veriler üzerinde nicel analiz yöntemleri kullanılmıştır. Milli Eğitim Bakanlıđından alınan izinlerden sonra Ankara’da yer alan 25 anaokulundan 125 öğretmen ile bir pilot çalışma yapılmıştır. Alınan dönütlerle son hali verilen ölçekler 2015-2016 bahar döneminde 48 eko ve 63 eko olmayan anaokulunda uygulanmıştır. Çalışmaya 349’u eko okullardan, 489’u ise eko olmayan okullardan toplam 838 okul öncesi öğretmeni katılmıştır. Çalışmada okul öncesi öğretmenlerin SGE uygulamalarının sıklığını ve süresini belirlemeyi amaçlayan, 29 maddelik bir ölçek ( $r=0.97$ ) ve okulların fiziksel yapısını SGE açısından değerlendiren 25 maddelik bir ölçek ( $r=0.86$ ) kullanılmıştır. İlk ölçek öğretmenler tarafından, ikinci ölçek ise araştırmacılar tarafından doldurulmuştur.

### **Bulgular ve Tartışma/Sonuç**

Eko ve eko olmayan anaokullarından toplanan verilerin analiz sonuçlarına göre SGE ile ilgili içeriğin derslerde kullanımı açısından benzer yüzdelerle ulaşılmıştır. Örneğin, okul öncesi öğretmenlerin belirli bir kısmı yerli malı ile ilgili herhangi bir aktivite uygulamadığını

belirtmiştir. Diğer kısmı ise yerli malları ile ilgili aktiviteleri, 30 dakikadan çok olmamak kaydı ile ancak ayda 1-2 kez uyguladıklarını belirtmişlerdir. Buna ek olarak demokrasinin önemi, dünyada ve Türkiye’de sosyal adaletin sürdürülmesi, eşitliğin sürdürülmesi ve farklılıklara saygı gibi konulara ise ayda en az 1-2 kez değinildiği ortaya çıkmıştır. Bu sonuçlara göre eko veya eko olmayan okullarda çalışan öğretmenlerin günlük etkinlik içeriklerinin konu, sıklık ve süre açısından çok farklı olmadığını göstermiştir. Program incelendiğinde, SGE ile ilgili içeriğin hem eko okullarda hem de eko olmayan okullarda benzer yapıya ve sürelerle sahip olduğu görülmektedir (FEE, 2015; MEB, 2013). Bu durumda her iki okul tipinde çalışan okul öncesi öğretmenlerin SGE ile ilgili aktivitelere daha çok yer vermeleri konusunda teşvik edilmeleri gerekmektedir.

Eko ve eko olmayan okullardaki öğretmenlerin uygulamaları toplam olarak bir t-test ile incelendiğinde ise öğretmenlerin SGE uygulamalarında sıklık ve ayrılan zaman açısından anlamlı farklılıklar bulunmuştur. Ancak düşük etki değeri nedeniyle pratikte çok büyük bir farklılık olmadığı ortaya çıkmıştır. Diğer taraftan, eko okullarda öğretmenlerin katıldıkları seminerler ve bu seminerlerin farkındalık, tutum ve uygulama açısından olumlu sonuçları olduğunu gösteren geçmiş çalışmalar (Feriver, Teksöz, Olğan ve Reid, 2016; Guler, 2009; Korkmaz ve Güler- Yıldız, 2017) bulunmaktadır.

Okulların çevresel koşulları incelendiğinde ise, eko okul öncesi eğitim kurumlarının, SGE ile ilgili etkinlikler uygulanması açısından daha uygun bir fiziksel yapıya sahip olduğu anlaşılmıştır. SGE göstergeleri açısından zengin bir okulun, öğretmenlerin SGE uygulamaları konusunda kolaylaştırıcı bir yönü olduğu düşünülebilir. Örneğin, geri dönüşüm kutusu, kültürel farklılıklarla ilgili kitaplar gibi fiziksel kolaylaştırıcılar öğretmenleri, bu tür etkinlikler uygulanması konusunda uyarabilir. Kalaitzidis (2012) ve Hendsen ve Tilbury (2004), fiziksel ortamın SGE aktivitelerinin uygulanması konusunda kolaylaştırıcı olanaklar sağlayacağını belirtmişlerdir. Benzer göstergelerin artırılması hem aktivitelerin kalitesini artıracak hem de öğretmenleri SGE etkinlikleri uygulama konusunda daha da teşvik edecektir.

Sonuç olarak, bu çalışma eko okulların SGE uygulamalarını destekleyecek daha fazla fiziksel olanağa sahip olduğunu ve SGE ile ilgili konuların eko okul öncesi eğitim kurumlarında çalışan okul öncesi öğretmenler tarafından etkinliklere daha fazla dâhil edildiğini ortaya koymaktadır. Eko-Okullar Uluslararası Eğitim Programı, ülkemizde SGE uygulamalarının erken çocukluk döneminden başlayarak uygulanmasında önemli role sahiptir. Farklı araştırma metodlarının kullanıldığı, daha derinlemesine görüşmelerin ve gözlemlerin yapıldığı çalışmaların, eko okul öncesi eğitim kurumları ve SGE uygulamaları konusunda daha çok fikir vereceği düşünülmektedir.