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Assessing preschools using the Eco-Schools program in terms of educating for sustainable development in early childhood education

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ABSTRACT

This study assesses the practices and environmental properties of preschools implementing the Eco-Schools program, targeting education for sustainable development (ESD) in terms of the program's environmental, sociocultural, and economic pillars. Qualitative and quantitative methods were used. The sample group, determined through criterion sampling, comprised four private and four public preschools in Ankara. A school observation form was used to examine the schools' environmental properties, and a teacher scale was devised to determine teachers' ESD practices. One-on-one interviews were conducted with 16 teachers. Private schools were found to have more elements within all three ESD pillars than public schools. A statistically significant relationship was found between the scores of teachers working at public versus private preschools and between their scores for the environmental and economic pillars. It is suggested that educators, children, and their families be informed about ESD practices and that Eco-Schools programs be made widespread in early childhood.

KEYWORDS

Sustainability; education for sustainable development; early childhood; Eco-Schools

Introduction

Sustainability is a complex concept with social, environmental, and economic dimensions. Sustainable development (SD) emphasizes the use and power of human talent in all three dimensions (Organization for Economic Co-operation and Development [OECD] 2001). Sustainability includes current and future concerns of SD, such as poverty, population increase, consumption, gender equality, human rights, peace, community life, human health and safety, and climate change, along with issues regarding the natural resources of the world (Davis 2015; Davis and Elliott 2014). While sustainability is everyone's concern, the responsibility of educators is particularly great (Davis 2010). Educators' guidance plays a significant role in shaping sustainable thinking and philosophy (Pramling Samuelsson 2011).

Education for sustainable development (ESD) supports an educational perspective that balances both economic welfare and respect for the environment and cultural values.

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Economic, sociocultural, and environmental dimensions are integrated and should therefore be evaluated together (UNESCO 2005, 2008b). Minimizing problems within these three dimensions is possible through education (Engdahl 2015). ESD has the potential to integrate and implement several curricula, for example 'futures education, citizenship, peace education, multi-cultural and gender education, health education, environmental education and media literacy' (Siraj-Blatchford, Smith, and Pramling Samuelsson 2010).

As is the case with SD itself, concepts of ESD are understood differently by governments, researchers and societies, and even regions and nations. These competing views give rise to the many different approaches used in ESD, which are, for example, holistic, experiential, critically-reflective, collaborative, problem-based, systemic, and participatory. Davis and Elliott (2014) state that there is no one correct approach in ESD, and that the variety of historical and sociocultural contexts affects ESD practices. Therefore, for the construction of sustainable societies, the application of transformative approaches such as encouraging participation, problem-solving, critical thinking, and 'making a difference' is required in education (Berglund and Gericke 2016; Davis 2015; Inoue, O'Gorman, and Davis 2016; Summers and Childs 2007).

Today's children often encounter environmental problems; gradually worsening economic and social conditions can cause further problems, to which young children may be exposed for the long term. Considering that in the last decade even very young children have gained skills for thinking about environmental and social issues, it is advocated that ESD be a part of early childhood education (ECE). When ECE institutions combine sustainability with their management, programs and daily activities, they offer children concrete opportunities, related to their daily lives, to develop sustainability skills (Davis 2008). The UNESCO (2012) report emphasizes that ESD should be integrated at all education levels, starting from early childhood. In this way ideas, attitudes, beliefs, and behaviors are obtained that assure thinking and living in a sustainable way.

Although in early childhood ESD is mostly approached in environmental terms, it is also possible to address sociocultural and economic issues. For example, because children both discover nature and talk about their environment, they can perform activities with the idea of SD in mind; they learn to respect differences and develop compassion through empathy formation skills. By internalizing the concepts of equality and justice, they increase their mutual commitment (Siraj-Blatchford, Smith, and Pramling Samuelsson 2010; UNESCO 2008a).

The Eco-Schools in 56 countries, including Turkey, aim to increase children's awareness of SD. Each country has a national operator responsible for the application and dissemination of the Eco-Schools program. In 1995, Turkey became a member of Eco-Schools Program Project, which is funded by the Foundation for Environmental Education in Europe. The national operator in Turkey is the Turkey Foundation for Environmental Education (TURCEV). The coordinator teacher, who manages the program, and the executives of the schools must apply to TURCEV once they have decided to implement the program in their schools (Eco-Schools 2013).

Since Turkey became a member, several Turkish private or public preschools, primary schools, middle schools, and rehab centers have implemented an Eco-Schools program that address issues such as SD, environmental awareness, and environmental management. Children become involved in solving environmental problems at the local level, and families and local administrations develop environmental awareness (Kolukısa and Uğurlu 2010).

Eco-Schools offers students educational opportunities that support SD both in and out of school; it also allows children and teachers to use their environmental knowledge and SD skills in their daily lives (Bajd and Lescanec 2011). Children become individuals who continually develop high-level cognitive skills while becoming conscious consumers and learning to protect natural resources (Eco-Schools 2013). Since habits acquired at an early age are often permanent, raising young people to be sensitive to the environment is a key part of the environmental dimension of the program (Ajzen 2001; Pramling Samuelsson and Kaga 2008).

Despite these crucial points, the application of ESD practices in early childhood has advanced slowly, and the number of studies on ESD, both in Turkey and worldwide, is limited (Davis 2009; UNESCO 2008a). Even so, the goal of the internationally accepted Eco-Schools program is innate sustainable development, and the program includes an environmental dimension, which aims to: raise environmentally conscious individuals (Cincera et al. 2015); a sociocultural dimension, because its activities require continuous communication with parents and other community members; and an economic dimension of sustainability, since the program emphasizes conscious consumption and conservation by focusing on subjects such as energy, water, and recycling (Kadji-Beltran 2002).

Aim of the research

In a study by Haktanır et al. (2010a), it was found that the concepts of sustainability and SD were not well known among preschool teachers and teacher candidates. Further, it was frequently found that Turkish preschool teachers' practices were not examined from the perspective of ESD (Davis 2010; Haktanır 2012; Haktanır et al. 2010b; Kahriman-Öztürk, Olgan, and Güler 2012; Norddahl 2008).

The goal of this study was to comparatively determine the current state of Eco-School preschools in terms of ESD. Public and private schools were compared because the application in schools differs depending on the efforts and commitments of Eco-School coordinators and all others taking part in the project (Kadji-Beltran 2002); further, the resources and setting of public and private schools may vary.

This study responded to one main question: What are the attributes of public and private preschools with Eco-Schools status in the city of Ankara in terms of the environmental, sociocultural, and economic pillars of ESD?

Three sub-questions were addressed:

(1) What are the physical environmental attributes of schools in the sample group according to the environmental, sociocultural, and economic pillars of ESD?
(2) Are there differences within the sample group between the ESD practices included in the educational activities of public preschool teachers, and those of private preschool teachers?
(3) What do public and private preschool teachers of the sample group think about ESD?

Methods

The present study was designed with a mixed method, using qualitative and quantitative data-gathering tools together.

Participants

The sample group of the study was determined by criterion sampling, which is a purposeful sampling method. The observation units in a study where criterion sampling is used can be people, objects, or events with certain attributes (Büyüköztürk et al. 2012). In the present study, the criterion was that Eco-Schools had the Green Flag Prize, an international prize given to Eco-Schools that have successfully completed the seven steps of the program and have applied it for at least two academic years. Four public and four private preschools were randomly selected among the 29 eligible preschools in the city of Ankara. The study group was composed of eight preschool education institutions and all preschool teachers working in these institutions ($n = 40$). Additionally, 16 teachers in total were identified randomly as two teachers from each school, and one-on-one interviews were conducted with these teachers.

Data-gathering instruments

In order to evaluate the physical environmental attributes of public and private preschools with Eco-Schools status, a school observation form was used; to determine the ESD practices of teachers working at these schools, a teacher scale of ESD practices was used.

School observation form

While the format and content of the school observation form were composed, the related literature was reviewed (Davis et al. 2009; Eco-Schools 2013; Eco-Schools 2011; Gelincik Kindergarten 2012; Haktanır 2012; Kahriman-Öztürk, Olgan, and Güler 2012; Ministry of National Education [MoNE] 2013) and a pool of 62 items formed. In order to determine whether these items were designed to measure the environmental, sociocultural or economic characteristics of sustainability, four field experts in sustainability in preschool education were consulted. Corrections were made by examining the experts' statements for consistency; some items were removed and three sub-dimensions of the observation form were created. The input of a Turkish language expert and a scale development expert were incorporated. The final form was checked again by the experts. A pilot study was conducted in a school before the main application in order to gain experience in using the form and to determine its suitability. The environmental, sociocultural, and economic dimensions of the form contained 18, 10, and 27 items respectively.

Teacher scale of ESD practices

In order to create the draft form of the scale, studies related to scale development (Davis 2010; Davis and Elliott 2014; Eco-Schools 2011; Eco-Schools 2013; Haktanır 2012; Haktanır, Dağlıoğlu, and Güler 2010; MoNE 2013; Norddahl 2008) were examined, and national and international coordinators of Eco-Schools programs were contacted. A pool of 80 items was made and 67 items selected in accordance with the pillars of sustainability.

A table of indicators was designed to assess the validity of the scale. A Turkish language expert, four experts from the field, and a scale development expert were consulted; seven items were removed from the scale while three items were added. Upon the experts' approval, a pilot study was conducted with preschool teachers at 21 preschools with the Green Flag Prize in Ankara, schools not included in the sample group of the study.

Structural validity

In order to determine the structural validity of the Teacher Scale of ESD Practices, an exploratory factor analysis (EFA) was conducted. The scale was found to comprise three sub-dimensions; that is, it was found to be a three-factor scale. It is advised that total variance explained by factors in EFA be over 50% (Streiner 1994); therefore, the limit value for the total variance ratio explained by the factors was taken as 50%. The first factor explained 38.54% of the total variance of the scale, the second 9.48%, and the third 52.04%. Following factor rotation, it was seen that the first factor of the scale was made of 32 items, the second factor of 21 items, and the third of 10 items. Factors were named considering the item contents: the first factor was named sustainability in the environmental dimension, the second sustainability in the economic dimension, and the third sustainability in the sociocultural dimension.

Reliability

The teacher scale of ESD practices used in the present study was designed as a three-point Likert-type scale (always, sometimes, never) and contained 63 items before the pilot study. The context validity of the scale was provided by field experts and evaluation and measurement experts. Necessary corrections were made in line with their written comments, and the latest form of the scale was completed. The scale was then applied in another group that had similar attributes to the study group to determine whether the items were comprehensible. At the end of the pilot study, Cronbach alpha reliability coefficients were found to be .94. For the purpose of examining to what extent the items in the scale distinguished the ESD practices of teachers, the corrected item-total correlation was calculated for each item. In general, the corrected item-total correlation varied between 0.31 and 0.71, and item validity was quite high. Accordingly, only items with values of corrected item-total correlation higher than 0.30 were included in the scale. For the final version of the scale, Cronbach alpha values were calculated as in Table 1.

In total, the teacher scale of ESD practices was composed of 61 items, with 32 items in the environmental dimension, 20 items in the economic dimension, and nine items in the sociocultural dimension. Preschool teachers indicated the extent to which they included the ESD practices stated in the scale by marking the related statements.

Teacher interview form

In order to obtain more detailed information about teachers' ESD practices, semi-structured interviews were conducted with 16 teachers. Questions included in the interview form were based on the literature and expert opinions. Alternative questions were also prepared.

Table 1. Cronbach alpha values of corrected item-total correlations.

Factors	Cronbach alpha value	No. of items
Environmental dimension	0.92	32
Economic dimension	0.89	20
Sociocultural dimension	0.84	9
Total	0.95	61

Ethic

Ethical approval was obtained from the researchers' university. Moreover, necessary permission was acquired from MoNE to administer the scale to teachers, conduct the interviews, and observe at schools. The scale was administered to 40 teachers who responded positively to the voluntary participation form; one-on-one interviews were conducted with 16 teachers.

Procedure

A school observation form was used to determine the current status of four public and four private preschools in terms of environment and materials. Researchers toured the schools with a school employee assigned by the school principal. Information was acquired from the employee during and at the end of the tour about the materials indicated in the observation form. The time needed to fill in the observation form (45–80 minutes) varied depending on school size and the number and variety of materials inside and outside of the school.

Forty preschool teachers working at the schools in the sample group were given the teacher scale of ESD practices. At the beginning of interviews, participants were informed about the purpose of the interview and about how and where the obtained data would be used. Interviews started with preparation and warm-up questions. Short answers were aimed to be detailed by using probes. Interviews lasted for 15–45 minutes, and the researchers took notes throughout the interviews.

Data analysis

The Mann–Whitney U test, a non-parametric test, was used in data analysis to find out whether scores that teachers at Eco-Schools obtained from the teacher scale of ESD practices and its sub-dimensions differed in terms of school type. Data were analyzed using SPSS 11.5. The level of significance was determined as $p < 0.05$.

Descriptive analysis, a qualitative analysis technique, was used in analyzing data obtained from school observations and interviews. Initially, a framework was formed in order to analyze the interview questions according to ESD. Data obtained were examined by two researchers individually and separately; they were then combined in a logical way according to the three pillars of ESD and listed based on the research questions. Data obtained from interviews were defined and teachers' opinions on ESD directly quoted. Teachers' answers to interview questions were presented as frequency values. Since the questions were answered with more than one statement, frequency totals were higher than the number of teachers interviewed. In order to report data more meaningfully, participants were coded as TPUB1, TPUB2, … at public schools and as TP1, TP2, … at private schools.

Findings

Findings of the present study, conducted in order to compare Eco-School preschools' current situations in terms of ESD and teacher practices, were organized according to the questions of the study as presented below.

Table 2. Physical environmental attributes within the environmental dimension of public and private preschools.

Environmental dimension	School type	
	Public (*n*)	Private (*n*)
Plants at school	3	4
Rainwater harvesting system	1	1
A place where children can sit and chat and do activities outside	–	4
Opportunities for children to taste vegetables and fruits they have grown at school	1	4
Information boards about the environment at school	3	3
Posters or photos presenting Turkey's natural beauty	1	2
A space where natural materials are displayed	1	3
Published environmental materials at school	2	3
Visuals showing animals' life cycles	–	1
Visuals about endangered animal species	1	2
Spaces at school where solar energy is used	–	2
Materials at school for research and examination	4	4
Total	17	33

Findings regarding the first sub-problem

It is seen that frequency values of physical environmental attributes and materials pertaining to sustainability in the environmental dimension were higher at private preschools (Table 2). Plants and materials for research and discovery were present at both school types. Displays about endangered animals were found in the science classrooms of two private preschools and in the hallways of one public preschool.

Trees as well as fruits and vegetables grown by children were found at all of the private preschools in the study group; an apple and an apricot tree were found at only one of the public schools.

According to school type, physical environmental attributes and materials within the sociocultural dimension of ESD were compared (Table 3). Artwork as well as displays about sports, nutrition, and dental health predominated at both school types.

Physical environmental attributes and materials within the economic dimension of ESD were examined comparatively based on school type: private schools were found to be sufficient in that regard (Table 4). At all of the preschools in the study group, there were recycling bins for plastic, metal, and paper, as well as battery disposal bins.

It was determined that visual displays about preventing unnecessary use of water and electricity were not present at public preschools but were present at all of the private schools (over light switches and the sinks in the bathrooms). Private schools cautioned

Table 3. Physical environmental attributes of private and public preschools within the sociocultural dimension.

Sociocultural dimension	School type	
	Public (*n*)	Private (*n*)
Displays regarding the society's national holidays	–	–
Displays regarding the society's religious holidays	–	–
Various artworks	2	3
Costumes from different cultures	1	4
İntroductory posters about different cultures	1	2
Visual displays about dental health	1	1
Visual displays about vaccinations	–	–
Visual displays about sports and nutrition	2	2
Total	7	14

Table 4. Physical environmental attributes of private and public preschools within the economic dimension.

	School type	
Economic dimension	Public (*n*)	Private (*n*)
Displays about unnecessary use of electricity	–	4
Displays about unnecessary use of water	–	4
Aprons for children's use during activities	1	3
Two-stage flushing for the toilets	1	2
Plastic recycling bins	4	4
Metal recycling bins	4	4
Paper recycling bins	4	4
Using both sides of paper	2	4
A bag/box for recycling batteries	4	4
Automatic external doors	1	4
Insulated school doors	1	4
Insulated school windows	1	4
Plugged-in, unused electronic devices	3	3
Total	26	49

more often to use less water. Both sides of paper were used at all of the private preschools and two of the public preschools.

There were plugged-in, unused electronic devices (CD player, computer, tea machine, printer, phone charger, coffee machine, and microwave) at three public and three private schools. All of the private schools and one of the public schools in the study group had window and door insulation, and the external doors of these schools could close automatically.

Findings regarding the second sub-problem

When Table 5 was examined, a positively significant difference was found in the environmental and economic dimensions of the scale, and the whole scale in general, between teachers working at public and private preschools ($U = 85.00$, 84.50, 75.00; $p < 0.05$). Teachers' practices within the environmental dimension of sustainability are given in Table 6.

When practices in the economic dimension were examined, public school teachers reported applying studied practices 'always' less often than the private school teachers (Table 7).

Practices that teachers in the sample group apply within the sociocultural dimension of sustainability are given in Table 8.

Table 5. Results of Mann–Whitney U test regarding the dimensions of teacher scale of ESD practices.

Teacher Scale of ESD Practices	School type	N	Rank averages	Rank total	U	*p*
Environmental dimension	Public	12	13.58	163.00	85.00	0.01*
	Private	28	23.46	657.00		
Economic dimension	Public	12	13.54	162.50	84.50	0.01*
	Private	28	23.48	657.50		
Sociocultural Ddimension	Public	12	15.54	186.50	108.50	0.07
	Private	28	22.62	633.50		
Total	Public	12	12.75	153.00	75.00	0.01*
	Private	28	23.82	667.00		

*$p < 0.05$

Table 6. Distribution of practices that teachers include within the environmental dimension.

	School type					
	Public school ($n = 8$)			Private school ($n = 8$)		
Items	Always (n)	Sometimes (n)	Never (n)	Always (n)	Sometimes (n)	Never (n)
I stimulate children's interest in protecting the environment we live in	12	–	–	28	–	–
I provide opportunities for children to talk about international environmental news	–	9	3	–	4	24
I make use of visuals showing animals' life cycles during my activities	10	2	–	20	8	–
I try to have natural materials in the classroom setting	9	3	–	21	7	–
I take children on field trips to natural areas	–	3	9	21	7	–
I include activities in the curriculum about animal protection	10	2	–	23	5	–
I do activities with children about water protection and using water economically	9	3	–	21	7	–
I direct children in activities about protecting plants	10	2	–	21	7	–
I show children that I record the numbers on the water meter	–	–	12	–	4	24

It is seen that most of the teachers working at both public and private schools offered activities in which the children could defend their own rights and the rights of others.

Findings regarding the third sub-problem

Interviews were conducted with teachers to gain more detailed information about how they covered goals and concepts of SD. Six of the teachers working at public schools and eight of the teachers working at private schools stated that they did activities focused on the goals and concepts of SD.

Table 7. Distribution of practices that teachers include within the economic dimension.

	School type					
	Public school ($n = 8$)			Private school ($n = 8$)		
Items	Always (n)	Sometimes (n)	Never (n)	Always (n)	Sometimes (n)	Never (n)
I write notes to parents about the children saving money	–	2	10	–	9	19
I give children opportunities to play with money banks or toy safes	–	2	10	–	21	7
I draw children's attention to local economic issues	–	–	12	–	7	21
I organize recycling events with children	–	–	12	24	4	–
I encourage children to make suggestions about reusing paper	9	3	–	26	2	-
I encourage children to make suggestions about decreasing water consumption	10	2	–	27	1	–
I use recycled paper	–	–	12	22	6	–
I invite parents to participate in school projects about decreasing water consumption	–	–	12	21	7	–
I invite parents to participate in school projects about decreasing electricity consumption	–	–	12	21	7	–

Table 8. Distribution of practices that teachers include within the sociocultural dimension.

	School type					
	Public school ($n = 8$)			Private school ($n = 8$)		
Items	Always (n)	Sometimes (n)	Never (n)	Always (n)	Sometimes (n)	Never (n)
I tell children stories about cooperation/ helping others	10	2	–	21	7	–
I draw children's attention to ethnic diversity	–	6	6	–	11	17
I don't label children based on gender	10	2	–	26	2	–
I don't label children based on religion	10	2	–	26	2	–
I don't label children based on ethnic origins	10	2	–	26	2	–
I offer activity opportunities where children can defend their rights	8	4	–	26	2	–
I offer activity opportunities where children can defend others' rights	11	1	–	25	3	–

Goals and concepts of the environmental pillar were most commonly included in the teachers' practices, followed by the sociocultural and economic pillars. Four teachers working at public schools and five teachers working at private schools stated that they did science activities. They also mentioned that they talked about ESD practices during math, art, and Turkish activities:

> Art, science, and math activities. We prepare these activities based on the action plan topics of the Eco-School program. (TP8)

> In our educational practices, we often write them into our eco-plan as Turkish, art, and science activities, and nature studies (field trips, compost area, planting). (TPUB1)

When teachers' statements were examined, it was seen that they made use of Eco-Schools action plans in various activities and implemented developmentally appropriate Eco-Schools practices. Topics covered by teachers in their educational activities regarding SD are listed in Table 9.

Teachers of both public and private preschools stated that their ESD practices contribute most to children's learning about environmental awareness. They also reported that the children demonstrated cooperative behaviors, care about recycling, and respect for animals (Table 10).

Discussion

In parallel with the literature, the findings of the study showed that the environmental pillar of ESD was dominant at both public and private schools compared to the economic and sociocultural pillars.

Observations made at the preschools in the sample group revealed that environmental attributes and materials pertaining to sustainability in the environmental dimension were more prevalent at the private preschools (Table 3). Renewable energy resources were being used in one of the public and one of the private schools. A rainwater harvesting system, used for watering the garden, was found at only one school of each type. Two of the private preschools used skylights and put solar panels on school walls to make use of sunlight and solar energy. The public schools did not use solar energy. It is thought that this is

Table 9. Topics covered by public and private preschool teachers in educational activities about SD.

	School type	
Topics	Public (*n*)	Private (*n*)
Money	–	3
Water	4	3
Forests	–	1
Nature protection	1	1
Animal protection	–	2
Environmentalism	–	2
Electricity	–	2
Energy	6	2
Recycling	2	5
Soil	4	2
Respect for nature	–	2
Garbage and waste	4	–
Endangered animals	2	–

a result of the standards determined by the MoNE for school buildings. It can also be said that public schools' budgets are not sufficient for renewable energy sources (Biehl 2011). However, the main purpose of the Eco-Schools program is to minimize the negative effects of schools on the environment and to create nature-friendly schools (Eco-Schools 2013). In line with this purpose, systems for using rainwater should be increased at schools and the areas of use extended. School buildings should be built in such a way that they receive a maximum amount of solar energy.

All of the private schoolyards had areas built of natural materials where children could do activities or sit and chat; however, no such settings were seen at the public preschools. In a nationwide study by Haktanır, Dağlıoğlu, and Güler (2010) in Turkey, it was found that, in general, outdoor materials and environments at public preschools were insufficient, in parallel with the findings of the present study. In several other studies it was found that, especially in kindergartens located within elementary school facilities, yards were paved with asphalt and covered with materials not suitable for the age and developmental properties of young children (Gülden 2007; Haktanır, Dağlıoğlu, and Güler 2010; Yılmazer 2003). According to a state analysis report on quality standards of ECE in Turkey, a high level of deficiency in the physical environment and a lack of materials were detected: sound insulation, security, yard play areas, and the availability of educational materials were shown to be the major deficiencies (Biehl 2011).

Considering schools' published materials about the natural environment, private schools were found to have more than public schools. At private preschools, these

Table 10. Teachers' views of ESD practices' contributions to children.

	School type	
Views	Public (*n*)	Private (*n*)
Their environmental awareness has increased	9	6
They save more	4	4
They care about recycling	1	7
They respect animals	1	2
They cooperate	1	1
They respect nature	–	3
They respect themselves	–	1
They respect others	–	1

publications were located in places where children could easily see and reach them (i.e. inside the classrooms and on bookshelves in the hallways); they were found inside closets in the public preschools. The study by Gülden (2007) supports this finding, concluding that materials, books, and toys at public preschools are insufficient and kept inside closets.

When environmental properties and materials pertaining to sustainability in the sociocultural dimension were examined, it was seen that artwork and displays about sports and diet were the most common at both types of schools. Artwork plays an important role in children's visual perception development, and they need to gain knowledge about aesthetic values in order to protect and care for their surroundings. In order for children to reach these goals, photos, paintings, and posters showing natural beauty as well as artwork from various fields of art should be present within the school setting. Educators should enable children to interact with these materials through different educational activities (MoNE 2013). Visual displays about dental health examined within the same scope were found at one of both school types, while no displays about vaccinations were found at any of the schools.

Costumes from different cultures were found in four private preschools but in only one public preschool. At one of the public schools and at two of the private schools, there were flags, coins, photos, and maps from different cultures. Displays of different cultures were found to be insufficient at both types of schools. However, the 2013 MoNE ECE Program states that, initially, attributes of children's own culture, such as the flag, food, clothes, music, toys, dance, and money, should be dealt with in order to support social and emotional development; following that, the same attributes from other cultures should be emphasized (MoNE 2013). Thus, children learn to respect and tolerate differences within their own cultures as well as others.

No displays were found regarding religious or national holidays, but this could be because the schools were not visited at a time coinciding with any religious or national holidays. The fact that there were no pictures or books reflecting social sexism at the schools can be seen as a positive attribute in terms of sociocultural sustainability.

When environmental attributes and materials were examined with regard to the dimension of sustainability in economic terms, private schools were again found to be stronger. All of the public and private schools had recycling boxes for paper and metals and bags/boxes to collect used batteries. Within the scope of Eco-Schools, there should be recycling boxes for distinguishing waste from trash (Eco-Schools 2013). Kayıhan and Tönük (2012) examined the trash and waste policies of primary schools in Istanbul with Eco-Schools status. It was seen that paper and plastic recycling boxes as well as battery bags/boxes were present at all 37 Eco-Schools included in the study. In a study by Kahriman-Öztürk (2010), it was concluded that recycling boxes in school environments affect children's environmental awareness. The findings of that study and the present study demonstrate that recycling boxes are commonly used at schools. In particular, it can be said that the use of battery collection boxes has increased at schools since 2004 owing to the projects of the Mobile Battery Manufacturers' Foundation (TAP 2004). Thanks to the projects of local administrations and non-governmental organizations (NGOs), such as the Foundation of Environmental Protection and Reusing Package Waste (ÇEVKO) and the Foundation of Environment, Ecology, and Recycling, recycling boxes are commonly found at schools. It is thought that because of both local administrations' and NGOs' initiatives,

the intense activities of recycling within the scope of Eco-Schools programs have increased the rate of recycling materials such as paper, metal, and plastic at all schools in the sample group.

Private preschools were more attentive than public ones to children wearing aprons to avoid staining clothes and to using both sides of paper. Children should be given the opportunity to take such precautions in their daily activities in order to create awareness about using water and paper economically.

Visuals about use of water and electricity were not present at the public preschools, but were seen at all of the private preschools. The purpose of these visuals is to create awareness in all individuals associated with an Eco-School (students, teachers, personnel, managers, and family) and to reduce the greenhouse gas emitted by the school (Eco-Schools 2013). The Croydon Council Report (2012) states that the practice of 'Turn off the light if not needed!' decreased Eco-Schools' electricity consumption by 5%. It was observed that, at both types of schools, there were electronic devices plugged in all the time. It can be said that there was not enough awareness at either type of school that these unused devices still consume a small amount of electricity while plugged in.

All of the private schools in the sample group had door and window insulation. External doors at all four private schools were automatic. No door or window insulation or automatic doors were found at the three public preschools. Similarly, Örs (2013) indicated that most of the elementary school buildings of the MoNE were lacking insulation for humidity, heat, and sound. In another study, 87.5% of elementary schools' walls and ceilings were not insulated for humidity, heat, or sound (Aydoğdu 2007).

When total frequency scores of environmental, sociocultural, and economic dimensions from the observation form were examined, it was seen that private schools exceeded public schools in every category. There are several studies examining the quality of Turkish preschools in various dimensions: Feyman (2006) examined public and private preschools in terms of their environment and materials, and it was found that the quality of public preschools lagged behind that of private preschools. Similarly, Solak (2007) indicated that private preschools had materials and furniture of higher quality than public preschools. Because the environmental and material attributes of the schools within the sample group of this study turned out to be parallel with those of other studies (Feyman 2006; Haktanır, Dağlıoğlu, and Güler 2010; Solak 2007), it can be concluded that the conditions of environment and materials at public preschools are insufficient compared to private preschools, even when both have Eco-Schools status.

Private preschool teachers' scores from the teacher scale of ESD practices were higher than those of public school teachers. A significant difference was found among the teachers' practices within the scale's environmental and economic pillars. Private preschools also had better conditions in terms of the environment and materials. This shows consistency between the findings obtained from the teacher scale of ESD practices, individual interviews, and those obtained through observation.

Twenty-one teachers working at private preschools and three teachers working at public preschools organized frequent field trips in nature as activities within the framework of the Eco-Schools programs. These teachers also included classroom activities that focused on the protection of animals and plants, and they stated in interviews that

children were respectful toward animals. Activities related to the natural world are essential for children to develop empathy. Haktanır (2007) emphasized that human beings protect what they love, which makes it important to teach children to love plants and animals through school activities. Also Kahriman-Öztürk, Olgan, and Güler (2012) found that young children had a high level of respect towards plants and animals.

Activities related to the environmental pillar of sustainability were more common at both types of schools than activities within the other pillars. In individual interviews, teachers stated that activities for ESD mainly contributed to children learning environmental awareness, which is an indication that the environmental pillar was covered more than the other pillars. This is perhaps because environmental education activities have long been a part of ECE, and because it is a field that can easily be made concrete. Davis and Elliott (2014) state that while ESD has supplanted environmental education worldwide, teachers give more room to activities in the environmental pillar. The fact that private school teachers' scores within the environmental dimension of the scale were higher can also be an indicator that environmental education activities in Eco-Schools programs are regularly implemented at these schools. A study by Bajd and Lescanec (2011), which compared Eco-Schools and Healthy School Projects, found that the environmental awareness and responsibility of the students of Eco-Schools were higher than those of students of Healthy Schools. Similarly, in another study it was found that Eco-School programs increased students' knowledge and awareness of the environment and sustainable living (Özsoy, Ertepınar, and Sağlam 2012).

While there was no significant difference among schools in practices related to the sociocultural pillar of sustainability, the average scores of private school teachers were higher than those of public school teachers. It was found that most of the teachers working at public and private schools offered activity opportunities for children to defend both their own rights and others'. It is emphasized both in UNICEF policies on children's rights and the MoNE 2013 ECE Program that practices based on rights should be included in all activities (MoNE 2013; UNICEF 1998).

It was found that the majority of teachers did not organize any activities with children regarding ethnic diversity. It was also revealed during school observations that no displays of different cultures supported the sociocultural pillar. This finding supports the conclusion that teachers did not integrate teachings about ethnic or cultural differences.

In the economic pillar of sustainability, the number of practices that public school teachers stated as performing 'always' was found to be lower that of private school teachers. Private school teachers included 'reduce, reuse, rethink, and recycle' themes, which are within the scope of the sustainability theme of 'the seven Rs', in their practices related to the economic pillar (Engdahl 2015). It was stated in the interviews that children cared about recycling. It is known that such practices in early childhood shape children's behaviors. It is also known that schools implementing Eco-School programs include topics such as energy, recycling, water, biological diversity, and soil more often than others (Keep Britain Tidy 2013). Kahriman-Öztürk, Olgan, and Güler (2012) found as a result of their study of preschool children's views on the three pillars of ESD that children expressed opinions about reducing, reusing, respecting, and recycling. Similarly, in another study, it was confirmed that boxes and signs for recycling had a positive effect on children's understanding of the importance of recycling and of behaving accordingly (Kahriman-Öztürk 2010).

Conclusions

In this study, ESD, in which environmental, sociocultural, and economic pillars are approached holistically, was examined comparatively at public and private Eco-Schools, and it was found that private preschools had more positive environmental properties according to the environmental, sociocultural, and economic pillars of ESD and other relevant materials.

Statistically significant differences were found between the ESD practices of teachers working at public and private institutions. Particularly within the environmental and economic pillars, private school teachers were found to be more competent; within the sociocultural pillar, there was no significant difference.

Teachers stated that they included issues such as water, energy, soil, recycling, waste, and money in the activities they organized within the scope of the Eco-Schools program. They stated that children mostly gained an understanding of environmental awareness and economic savings.

When the results of this study are generally examined, it is seen that environmental attributes and materials related to ESD were present at the preschools where Eco-Schools programs were implemented, even if not at the desired level. This can be an indicator that the teachers' inclusion of ESD topics in their curricula is effective for implementing and spreading ESD practices. It is essential that the ESD philosophy, which must be acquired at an early age and sustained for a lifetime, be a part of the program not only at Eco-Schools but also at all other ECE institutions. Therefore, early childhood educators should model practices applied within the scope of the Eco-Schools program. The educators, children, and their families would then be informed about ESD and acquire the necessary attitudes and behaviors.

Disclosure statement

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