Educational Sciences: Theory & Practice - Special Issue • Autumn • 3259-3272

www.edam.com.tr/estp

Environmental Education in 2002 and 2006 Early Childhood Curriculum*

Mehmet ERDOĞAN[a]
Akdeniz University

Mehmet BAHAR
Abant İzzet Baysal University

Ruhan ÖZEL
Kocaeli University

Eda ERDAŞ
Kastamonu University

Muhammet UŞAK
Dumlupınar University

Abstract

The aim of the study is to analyze comparatively 2002 (previous) and 2006 (current) Early Childhood Curricula with regard to concepts and attainments associated with environmental education (EE). 2002 and 2006 preschool curricula were firstly retrieved from the web-site of Board of Education and then subjected to content analysis across 41 sub-components of environmental literacy (EL) which is the ultimate aim of EE. This comparative analysis of both curricula showed how much 2002 and 2006 curricula paid attention to environmental related concepts and attainments. The attainments related with knowledge were given more emphasis in both curricula compared with the attainments addressing to skills, affect and behavior. There is observable shift from knowledge to skills and behavior over 2002 to 2006. At the end of the study, suggestions are provided to curriculum developers and pre-service teachers for achieving the aims of EE.

Key Words

Early Childhood Curriculum, Environmental Education, Environmental Literacy.

* This paper was revised after being presented at the International Conference on Global Issues of Early Childhood Education and Children's Rights, Gaziantep, Turkey, 27-29 April 2012.

a **Mehmet ERDOGAN, Ph.D.,** is an assistant professor in the Department of Educational Sciences at Akdeniz University, Antalya, Turkey. He is running courses on research methods in education, educational statistics, and curriculum & instruction. His main research areas are predictors of responsible environmental behavior, environmental literacy, test construction and curriculum development, analysis and evaluation. Correspondence: Assist. Prof. Mehmet ERDOGAN, Akdeniz University, Faculty of Education, Department of Curriculum and Instruction, Campus, Antalya, E-mail: mmerdogan@gmail.com Tel: +905054935045.

Development in science and technology, industrialization, changes in life habits and routines have recently resulted in destroy in natural areas and played roles in occurrence of environmental pollutions. Even though science and technology have improved the quality of life, the dual relationship and mutual interaction between quality of life and the nature should be given importance. In this regard, the need for education to make people aware of their influences on the nature and the back-effect (the effect of nature on the quality of life) could only be realized through effective environmental education both in formal and non-formal settings. The literature on EE reveals that the ultimate aim of EE is to develope responsible environmental behaviors of individuals, and thus environmentally literate individuals (Disinger & Roth, 1992; Erdoğan, 2009; Stapp et al., 1969).

Along with the increase in environmental problems and issues, more emphasis started to be given on education for the environment in the late 1960s. Since then, conferences and workshops have undertaken and the topics related to education for the environment has started to be embedded into the school curricula. Tbilisi Conference, first intergovernmental conference on EE, has played crucially important roles in establishing the principles and the aims of EE (Ünal & Dımışkı, 1999). In the conference, the main aims of EE were grouped with regard to consciousness, knowledge, attitude, skills and participation. This initial attempt to establish bases for EE has triggered to emergence of research on EE and integration of environmental education into the school curricula. Parallel with the development of the field of EE in the World, research and curriculum studies associated with EE has started in Turkey, as well. However, much more emphasis has just recently started to be given on the field of EE in Turkey.

The courses related with the topics of the environment have observed from the establishment of Turkey, 1923, to the recent day. In 1992-93 academic year, the courses "Environment, Heath, Traffic and Reading" were appeared in all classes of elementary school (Alkış, 2002). However, this implementation removed from the school curricula by Ministry of National Education (MoNE) in 1997. Most recently, environmental-related topics and attainments have been more emphasized in recent school curricula; e.g. Life sciences (Bahar, Erdaş, & Özel, 2012), Science and Technology Course Curriculum (Erdoğan, Kostova, & Marcinkowski, 2009) and Biology Course Curriculum (Erdogan, Bahar, & Usak, 2012) compared with the previous curricula. For example, the dimension of the environment has been integrated into 4th to 8th grade Science and Technology Curriculum with 2005 reform studies in MoNE (Erdoğan, 2007). Considering the recent Early Childhood Curriculum, Gülay and Ekici (2010) reported EE related attainments and found the curriculum not sufficient to actualize the aims of EE. Akçay (2006) compared Early Childhood Curriculum with other developed countries and reported that EE in Turkish Early Childhood Curriculum is less emphasized when compared with the EE in developed countries; e.g. Germany.

Development of Early Childhood Curriculum in Turkey

Studies on developing early childhood curriculum were firstly observed in curriculum development studies in 1952. Later on, early childhood curriculum has been systematically developed in 1989, 1994, 2002 and lastly 2006. Curriculum studies on and reform attempts in early childhood curriculum has got impetus after 2000s with the main emphasis on general themes and concepts (Kandır, 2001; Temel, 2005). In 1989 early childhood curriculum, learning outcomes that 37-60 moth-children would supposed to attain were grouped into four categories; e.g. body and movement development, social and emotional development, intellectual development and language development (Alisinanoğlu & Bay, 2007). Different from the previous curricula, in 1994 early childhood curriculum, the programs were separately prepared, each for 0-36 month, 37-60 month and 61-72 month-children. The educational program for those in 0-36 month was prepared for health care, nourishment, physical and emotional development (Milli Eğitim Bakanlığı [MEB], 1994 as cited in Düşek, 2008). The education program for those in 37-60 month was prepared for rather than teaching the subjects, but for psychomotor development, development of self-care skills, social skills, cognitive skills, language skills, and also aesthetic and creativity development (Alisinanoğlu & Bay, 2007). The programs for 37-60 month-children and 61-72 month-children were prepared to be included tables designed for showing the objective-subject relationship. In addition to these tables, subject analysis table which was intended to guide teachers was included into the programs (MEB, 1994 as cited in Düşek, 2008).

2002 Early Childhood Curriculum was started to be developed in 2000. In this curriculum, 37-60 moth and 61-72 month curricula observed in 1994 Early Childhood Curriculum were combined to be 36-72 moth (Gürkan, 2003). In 2002 curriculum, children in 36-72 month were aimed to support with regard to cognitive, language, psychomotor, socio-emotional development and attain self-care skills. The objectives to be shown by the children were categorized into developmental areas / domain such as psychomotor, socio-emotional, cognitive, language, and also self-care skills. This curriculum aimed at not only gaining the knowledge but also guiding to have skills associated with search, investigation and try-out (MEB, 2002). In this curriculum, the objectives that would be aimed to be attained were placed in the center. For each development area, specific behaviors were also stated in the curriculum.

Most recent Early Childhood Curriculum has been started to be developed in 2005 by considering the critiques and comments taken from teachers, prin-

cipals, experts and academicians. Furthermore, the basic rationale to develop the current curriculum, still in function, was to establish a harmony with elementary school curriculum (MEB, 2006). The notion of the spiral curriculum was used during the development of the curriculum so that the link between the levels can be established. Considering all development areas of the children, 2006 curriculum put more emphasis on the attainments rather than the behavioral objectives. The attainments in the curriculum are in line with the attainments (associated with communication, problem solving, entrepreneurship, reasoning, decision making, responsibility, environmental consciousness and creativity) in the elementary school curriculum. To achieve the given attainments, leisure time, game and movement, Turkish, music, science and math, reading-writing preparation, drama, field trip and art activities are given emphasis in the curriculum. For example, in the activities related with science and math, the children are encouraged to make observation, investigation and inquiry, take a place in field trips etc.

Gaining basic skills and habits are the central of early childhood education. For that reason, the units are not emphasized, and the subjects are seen as tools rather than ultimate aims in 2006 curriculum. The curriculum is child-centered and designed in flexible manner so that it can be applied to the children with various developmental characteristics. The curriculum put more emphasis on process rather than product / outcome. Real life experiences and close environment are considered for educational purposes in the curriculum (MEB, 2006).

Environmental Literacy

Our values and the habits have started to be formed in the early ages. In this regard, for maximum impact, environmental education could be started in early childhood period (Gökler & Yılmaz, 1999) where the child start to understand their environment and several relationship within this environment (Russo, 2001). Furthermore, children's knowledge and attitudes regarding to the environment are shaped in these years which in turn environmental responsibility, consciousness (Erten 2004; Smith, 2001; Taşkın & Şahin, 2008) and responsible behaviors to protect the environment (Erdoğan 2009).

The conferences on EE (e.g. Tibilisi and Belgrad Workhop), published definitions and frameworks on EE (e.g. Disinger, 1983; Simmons, 1995) and content analysis of published EE research (e.g. Erdoğan, Marcinkowski, & Ok, 2009; Hines, Hungerford, & Tomera,1986/1987; Iozzi, 1981, 1984; Osbaldiston, 2004; Volk & McBeth, 2005) revealed that the ultimate aim of EE is perceived to develop "environmentally literate citizenry". Even though, several attempts have been undertaken to conceptualize EE (e.g. Hart, 1981), and thus environmental literacy (EL) (Harvey, 1977; Roth, 1992), no exact definition has not yet been published for EL. Harvey defined environmentally literate person as the "one who possesses basic skills, understandings, and feeling for the man-environment relationship (p. 67)". Despite the fact that this term literally refers to ability to write and read about EE, Roth believed in that EL is beyond the certain cognitive skills and literal meaning of EL. Similarly, Coppola (1999) maintains that EL should not be restricted only to cognitive terms. Stables (1998), in this regard, asserts that knowledge does not only refers to EL, but instead, knowledge is one of the main components of EL. Morrone, Mancl, and Carr (2001) further discussed that EL involves more than only knowledge on the environment and also involves values, attitudes, skills and action. Goldman, Yavets and Pe'er (2006) defined the environmentally literate person to possess affective characteristics (such as values and attitudes) and skills which make knowledge the possible to be converted into behavior. Aforementioned claims and the results of previously published studies on EL (Erdogan & Ok, 2011; Lee et al., 2003; McBeth, 2006; Negev, Sagy, Tal, Salzberg, & Garb, 2006) reveal that EL includes four main categories; e.g. knowledge, affect, skills and behavior (Hsu, 1997).

The recent and still working model for EL was developed by Simmons (1995) who synthesized 26 EE frameworks and reported seven main components of EL such as affect, ecological knowledge, socio-economic knowledge, knowledge of environmental issues, skills, additional determinants of environmentally responsible behaviors and environmentally responsible behaviors. These specific components were later divided into a total of 36 sub components in the correlation study between standards and EL framework (Babulski, Gannett, Myers, Peppel, & Williams, 1999). Erdogan and Marcinkowski (2007) later added more sub-components which in turned a total of 41 sub-components. Table 1 presents categories, components and sub-components of EL.

Review of the Literature

Table 1.
Categories, Components and Sub-components of EL

Categories	Components	Sub-components
Knowledge	Knowledge of Natural History and Ecology	Species and Population
		Environments and Habitats
		Communities and Interaction
		Abiotic Factors and Matter Cycles
		Ecosystem and Biomes
		Natural and Social System
		Physical and Biological History
	Knowledge of Environmental Problems and Issues	Risk, Toxicology and health*
		Bio-Physical Problems
		Causes of Problems
		Socio-Political Issues
		Causes of Issues
		Effects of Problems and Issues
		Natural Disaster*
		Alternatives Solutions and Actions
	Socio-Political-Economic Knowledge	Cultural Values and Activities
		Economic Values and Activities
		Societal and Social System
		Governmental and Political System
		Geographic Pattern
		Citizenship Participation
Skill	Cognitive Skills	Problems and Issue Investigation Skills
		Issue Analysis Skills
		Variable and Research Question Skills
		Data Collection Skills
		Data Analysis Skills
		Action Skills
Affect	Affect and Additional Determinants of Behavior**	Intention to Learn / Eagerness to Learn / Curiosity*
		Environmental Appreciation and Sensitivity
		Environmental Attitudes***
		Environmental Values***
		Ethical and Moral Reasoning
		Efficacy / Locus of Control
		Personal Responsibility
		Willingness/Motivation/Intention to Act
Behavior	Responsible of Environmental Behavior	Conservation and Eco-management
		Consumer and Economic Action
		Interpersonal and Public Persuasion
		Governmental and Political Action
		Legal Action and Law Enforcement
		Other forms of Citizen Action

* These sub-components were not used in the analysis before. They emerged from the literature review and the topics in the books examined by the researcher

** Affect and additional determinants of ERB were combined as one category, because of their similar nature.

*** In the early categorization of Babulski et al. (1999), attitude and values had been combined. However, they were separated and renamed as environmental attitudes and environmental values in the study of categorization by Erdogan and Marcinkowski (2007).

Research on EE with children aged-six and below revealed their increased gain with regard to environmental knowledge, perception and consciousness. For example, in the experimental study, the children in the group taken instruction with Green Classroom Model reported increased environmental perception on the nature and the environment when compared with those in traditional class-

room (Özdemir & Uzun, 2006). In another study, the children who took instruction on marine ecology reported increased knowledge and also consciousness to protect marine ecology (Akdağ & Erdiller, 2006). These previous studies indicated the significant impact of extra-curricular activities on children's gain on various attainments.

Gülay and Ekici (2010) analyzed the attainments and concepts in 2006 Early Childhood Curriculum across EE and found that no attainments were observed addressing to psychomotor aspects of EE, and the attainments associated with EE covered 15.5 % of all attainments in the curriculum. However, no research study has not yet been undertaken to present how much EE and its aims are embedded into 2002 and 2006 curriculum, and how 2002 curriculum is different from 2006 curriculum with regard to the aims of EE. In this regards, the present study will shed light on the literature and further curriculum studies on early childhood education.

Purpose

The aim of the study is to analyze comparatively 2002 (previous) and 2006 (current) Early Childhood Curriculum with regard to concepts and attainments associated with EE. Following research questions shaped the overall study.

1. To what extend were the components and subcomponents of EL embedded into 2002 Early Childhood Curriculum?

2. To what extend are the components and subcomponents of EL embedded into 2006 Early Childhood Curriculum?

3. How much are the 2006 curriculum different from 2002 curriculum with regard to the components and sub-components of EL?

Method

Design

In the present study, 2002 and 2006 Early Childhood Curricula were comparatively analyzed using content analysis technique. This technique enables to go into selected phenomenon and help examine what is inside the visual and written document (Patton, 2002).

Sampled Curricula

2002 and 2006 early childhood curricula were sampled for the present study. Both curricula were downloaded from the web page of Board of Education (see www.ttkb.gov.tr).

Conceptual Framework for Content Analysis of Curriculum

The attainments were subjected to content analysis across categories, components and sub-components of EL given in Table 1. This framework were already used in other content analysis of books (Erdogan, Coşkun, & Uşak, 2011), selected publication on EE (Erdogan, Marcinkowski et al., 2009), 4th to 8th grade science and technology course curriculum (Erdogan, Kostova, & Marcinkowski, 2009) and 9th to 12th grade biology course curriculum (Erdogan et al., 2012).

Steps Followed in the Analysis

An analysis of selected curricula was undertaken in four steps. In the first step, the guideline / framework (given in Table1) was diminished into four general themes, e.g. knowledge, skills, affect and behavior. These themes and further 41 sub-components were considered for the analysis rather than seven main components. In the second step, the attainments and the concepts addressing to accomplish the aims of EE were extracted from the curricula and written down in a separate sheet. In the third step, the extracted attainments were content analyzed across 41 sub-components of EL and later tabulated for further comparison of 2002 and 2006 curricula. In the last step, the attainments in both curricula were discussed with regard to similarities and differences considering the components of EL.

Results

The objectives in 2002 curriculum and attainments in 2006 curriculum were carefully analyzed across the components of EL and the analysis was cross-checked by the expert on early childhood curriculum. However, some of the objectives / attainments could not be undertood and/or categorized under any components of El. For example, an objectives "Aldığı sorumluluğu yerine getirme [fulfilling the taken responsbility]" may seem to be in line with and indirectly related to the subcomponents of "Environmental Responsibiliry", but this objective was not categorized under the this sub-component since it is hard to decide without observing the activity in which this objectives are aimed to be attained. Thus, such similar objectives / attainments were not taken into con-

sideration for the analysis.

The numbers given in the tables (e.g. 5.1., 10.2, 12.1. etc) are the numbers given in the curriculum guide book. These original numbers were not changed, and were directly taken from the curriculum guide book.

Association of Attainments with the Components of EL in 2002 Early Childhood Curriculum

Objectives related to cognitive, language, psychomotor, socio-emotional development and self-care skills were aimed to be achieved by those in 36-72 month. In the curriculum, the subjects and units were taken out and the objectives were placed in the center. Teachers were encouraged to observe the children during the education and take notes to reflect children developments in certain behaviors (MEB, 2002). Objectives and the behaviors to be achieved were grouped under five categories; e.g. psychomotor domain, socio-emotional domain, cognitive domain, language domain, and self-care skills. The distribution of the objectives and behaviors across the domains are given in Table 2. The results of the analysis of the objectives across EL were reported under these categories.

Table 2.
Distribution of Objectives and Behaviors across the Domains

Domain	Objectives	Behaviors
Psychomotor	6	38
Social-Emotional	13	46
Cognitive and Language	19	66
Self-care	5	19

Psychomotor Domain

This domain consisted of 6 objectives and further 38 behaviors. However, none of the objectives and behaviors was found to be related with any components of EL.

Social-Emotional Domain

This domain consisted of 13 objectives and further 46 behaviors. Of the behaviors, 6 were found to be closely related with any components of EL. Table 3 illustrates the match between the behaviors and associated EL components.

Two of the objectives were related to the component of knowledge, more specifically to alternative solutions and actions. In two objectives (numbered 5.1. and 10.1.), children were aimed to be aware of their environment in terms of pollution etc. and to develop sensitivity toward other living organisms. In other two objectives, childrens' conservation and eco-management types of behavior were aimed to be developed. Children were supposed to use the natural resources efficiently and take care of living organisims. No behaviors were found to be related with the component of "Skills".

Cognitive and Language Domains

This domain consisted of 19 objectives and further 66 behaviors. Of the behaviors, 13 were found to be related with any components of EL. Table 4 illustrates the match between the behaviors and associated EL components.

As presented in Table 4, the behaviors were mostly associated with the components of "Knowledge" and "Skills", but no behaviors were found to be related with the components of "Affect" and "Be-

Table 3.
Distribution of the Objectives in Social-Emotional Domain across the Components of EL (2002)

Components of EL	Match between behaviors and sub-components of EL
Knowledge	**10.2.** Çevresinde gördüğü rahatsız edici durumları kendi estetik görüşüne uygun olarak değiştirme [*Alternative solutions and actions*]
	10.3. Çevresini düzenlemede farklı yolları deneme [*Alternative solutions and actions*]
Affect	**5.1.** Canlıların yaşama hakkına özen gösterme [*Environmental appreciation and sensitivity*]
	10.1. Çevresinde gördüğü rahatsız edici durumları (kirlilik, düzensizlik, dağınıklık vb.) fark etme [*Intention to learn*]
Behavior	**13.1.** Yaşamın sürdürülebilmesi için gerekli olan kaynakları verimli kullanma [*Conservation and eco-management*]
	13.3. Canlıların bakımını üstlenme ve koruma [*Conservation and eco-management*]

Table 4.
Distribution Of The Objectives In Cognitive And Language Domains Across The Components Of EL (2002)

Components of EL	Match between behaviors and sub-components of EL
Knowledge	**5.4.**Verilen durum, olay ve canlıları oluşum ya da büyüme aşamalarına göre sıralama [*Species and population*]
	17.1. Verilen sesin kaynağını söyleme (sesin ait olduğu nesne, varlık, olay vb.) [*Abiotic factors and Matter Cycles*]
	11.1. Verilen bir olayın olası nedenlerini söyleme. [*Causes of problems*]
	11.2. Verilen bir olayın olası sonuçlarını söyleme. [*Effects of problems*]
	12.1. Problemin ne olduğunu söyleme [*Bio-physical problem*]
	12.2. Probleme çeşitli çözüm yolları söyleme [*Alternatif çözüm yolları ve eylemler*]
Skills	**1.1.** Değişik durumlarda gözlemlediklerini söyleme (boyut, renk, biçim, işlev, koku, ses, tat vb.) [*Data collection skills*]
	1.2. Gözlenen durumlarla ilgili sonuçları söyleme (benzerlikler, farklılıklar, farklı gruplamalar vb.) [*Data analysis skills*]
	12.1. Problemin ne olduğunu söyleme [*Problem and issue investigation skills*]
	12.3. Çözüm yolları içinden en uygunlarını seçme [*Action skills*]
	12.4. Seçilen çözüm yollarını deneme *(*[*Action skills*]
	12.5. Denenen çözüm yollarının geçerli ve geçersiz yanlarını söyleme [*Action skills*]
	12.6. En uygun çözüm yoluna gerekçeleriyle karar verme. [*Action skills*]

havior". Two of the behaviors are associated with the knowledge of the levels of events and classifications of the living things, and also the knowledge of a-biotic factors (e.g. source of noise). In other four behaviors, the behaviors are related with the knowledge of environmental problems and issues. In this domain, seven behaviors were dedicated to develop cognitive skills such as problem investigation, data collection, data analysis and action skills.

Self-Care Skills

In this part of the curriculum, there were 5 objectives and further 19 behaviors. Of the behaviors, 8 were found to be related with any components of EL. Table 5 illustrates the match between the behaviors and associated EL components.

Of the behaviors, five were related to components of Knowledge, more specifically to "*Risk, toxicology and health*". With these five behaviors, children were aimed to take care of their health through eating healty foods, using the cleaning materials, being careful on the cleaness of the foods, developing toilet habits and washing appropriate parts of their own body. Two behaviors were related to component of Skills, more specifically to "*Action skill*". Children were supposed to develop action skills and ask for help from adults when they faced

Table 5.
Distribution of the Objectives in Self-Care Skills across the Components of EL (2002)

Components of EL	Match between behaviors and sub-components of EL
Knowledge	**2.3.** Sağlığı olumsuz etkileyen yiyecekleri yemekten kaçınma. [*Risk, toxicology and health*]
	3.1. Gerektiğinde, el yüz ve vücudun diğer kısımlarını uygun biçimde yıkama. [*Risk, toxicology and health*]
	3.2. Tuvalet gereksiniminin giderilmesine yönelik uygun işleri yapma. [*Risk, toxicology and health*]
	3.3. Temizlikle ilgili malzemeleri doğru kullanma. [*Risk, toxicology and health*]
	3.4. Yiyeceklerin temizliğine dikkat etme. [*Risk, toxicology and health*]
Skills	**5.2.** Tehlikeli olan durumlardan ve kazalardan kaçınma [*Action skills*]
	5.3. Herhangi bir tehlike anında yetişkinlerden yardım isteme [*Action skills*]
Behavior	**3.5.** İçinde bulunduğu çevreyi temiz tutma. [*Conservation and Eco-management*]

with dangereous events. One behavior was related to components of Behavior, more specifically to "*Conservation and eco-management*". When the children attain this behavior, they would keep their environment clean. On the other hand, there was no behavior related to the components of Affect.

There were several concepts aimed to be introduced to early childhood curriculum. Only very few of them were seemed to be directly related to the environment; e.g. clean - dirty, good - bad, living - non living, moving – motionless. There are some emotional concepts which are associated with the component of Affect; e.g. happy, sad, anger, fear and like. There are several other concepts which are considered to be indirectly related with the environment; e.g. crowded – deserted, hot-cold-warm etc.

In 2002 curriculum, 21 days or weeks were identified as specific days and weeks. Only six of them were seemd to be closely associated with the environment. They were named as "Animal Protection Day", "Saving, Investment and Turkish Goods Week", "Energy Saving Day", "Forest Day", "Museums Week" and "Environmental Protection Day".

Association of Attainments with the Components of EL in 2006 Early Childhood Curriculum

2006 Early Childhood Curriculum is developed mostly by considering the developing areas and main aims of 2002 Early Childhood Curriculum, but the concept of "objectives and expected learning objectives" in 2002 curriculum are replaced with the concepts of "aims and attainments". The curriculum is more child-centered curriculum. In the curriculum, problem solving skills, responsibility, research, entrepreneurship, conscious consumer behavior, environmental consciousness, creativity and such skills are aimed to be achieved by the children though constructing the knowledge by active participation in plays. In 2006, there are no units any more. Achieving the basic behaviors and habits by the children is the central part of the curriculum. Real-life experiences and close environment of the students are much more emphasized. Similar to 2002 Early Childhood Curriculum, aims and attainments grouped under five categories; e.g. psychomotor domain, socio-emotional domain, cognitive domain, language domain, and self-care skills. The distribution of the aims and attainments across the domains are given in Table 6.

Table 6.
Distribution of Aims and Attainments across the Domains

Domain	Aims	Attainments
Psychomotor	5	46
Social-Emotional	15	58
Cognitive	21	97
Language	8	37
Self-care	5	26

Psychomotor Domain

Table 7.
Distribution of the Attainments in Social-Emotional Domain across the Components of EL (2006)

Components of EL	Match between attainments and sub-components of EL
Knowledge	**9.5.** Yaşamda diğer canlılarla paylaştıklarını açıklar. [*Communities and Interaction*]
	12.1. Çevredeki güzelliklerin korunma nedenlerini söyler. [*Bio-Physical Problems, and Effects of Problems and Issues*]
	12.2. Çevredeki güzellikleri korumak için yapılması gerekenleri açıklar [*Alternatives Solutions and Actions*]
	13.2. Çevre sorunları ile ilgili kendi yapabileceklerine örnek verir. [*Alternatives Solutions and Actions*]
	13.3. Çevresini farklı biçimlerde düzenler. [*Alternatives Solutions and Actions*]
Skills	**13.1.** Çevresinde gördüğü güzel / rahatsız edici durumları söyler. [*Problems and Issue Investigation Skills*]
Affect	**9.3.** Canlıların yaşama hakkına özen gösterir. [*Environmental Appreciation and Sensitivity*]
	12.3. Çevredeki güzellikleri korumada sorumluluk alır. [*Personal Responsibility*]
Behavior	**7.4.** Başkalarının hatalarını uygun yollarla ifade eder. [*Interpersonal and Public Persuasion*]
	9.1. Yaşamın sürdürülebilmesi için gerekli olan kaynakları verimli kullanır. [*Conservation and Eco-management*]
	9.4. Canlıların bakımını üstlenir ve korur. [*Conservation and Eco-management*]

This domain consisted of 5 aims and further 46 attainments. However, none of them was found to be related with any components of EL.

Social-Emotional Domain

This domain consisted of 15 aims and further 58 attainments. Four of the aims and 11 of the attainments were found to be closely related with any components of EL. Table 7 illustrates the match between the attainments and associated EL components.

Five of the attainments were closely related with the sub-components of knowledge. In this domain, the children are aimed to observe the interrelationship between themselves and other organisim, realize the beauty of the environment and propose alternatives to protect the beauty of the environment, and also indicate their ways of solving the problems and organize their environment in various ways. In one of the attainments, children are supposed to be aware of their environment and tell the nice and disturbed cases in the environment. In two attainments related with the sub-components of Affect, children are aimed to demonstrate sensitivity to other living organisms and take responsibility to protect the beauty of the environment. In other three objectives, children are supposed to demonstrate conservation and persuasion type of behaviors for environmental protection.

Language Domain

This domain consisted of 8 aims and further 37 attainments. However, none of them was found to be related with any components of EL.

Cognitive Domain

This domain consisted of 21 aims and further 97 attainments. Three of the aims and 10 of the attainments were found to be closely related with any components of EL. Table 8 illustrates the match between the attainments and associated EL components.

Table 8.
Distribution of the Attainments in Cognitive Domain across the Components of EL (2006)

Components of EL	Match between attainments and sub-components of EL
Knowledge	**2.1.** Olay ya da varlıkların özelliklerini söyler. [*Species and Population*]
	2.2. Olay ya da varlıkların özelliklerini karşılaştırır [*Species and Population*]
	16.1. Bir olayın olası nedenlerini söyler [*Causes of Problems*]
	16.2. Bir olayın olası sonuçlarını söyler [*Effects of Problems and Issues*]
Skills	**18.1.** Problemi söyler. [*Problems and Issue Investigation Skills*]
	18.2. Probleme çeşitli çözüm yolları önerir [*Action Skills*]
	18.3. Çözüm yolları içinden en uygun olanlarını seçer [*Action Skills*]
	18.4. Seçilen çözüm yollarını dener [*Action Skills*]
	18.5. En uygun çözüm yoluna karar verir [*Action Skills*]
	18.6. Karar verdiği çözüm yolunun gerekçelerini açıklar [*Action Skills*]

The aim entitled "observing the various fatures of the cases and beings" and corresponding two attainments (2.1 and 2.2.) are seemd to be indirectly related with the components of Knowledge. It would be better understood with observing the activities to achieve this aim and attainments. The other aim "Establishing cause-effect relationship in relation to specific case and events" and correspondin two attainments (16.1 and 16.2) are observed to be associated with cause and effects of environmental problems / issues. In pararllel with the previous aim, we still need to observe the activities to be done associated with this aim and attainments. The other aim "Solving the problem" and corresponding six attainments are more related to cognitive skills to solve a given problem or faced problem. With these attainmenst, the children are aimed to tell the problem and engage in the problem solving process, and at the end solve the problems using the best solution.

Self-Care Skills

This domain consisted of 5 aims and further 26 attainments. Three of the aims and 13 of the attainments were found to be closely related with any components of EL. Table 9 illustrates the match between the attainments and associated EL components.

The all attainments found to be associated with the components of Knowledge are more related with

Table 9.
Distribution of the Attainments in Self-Care Skills across the Components of EL (2006)

Components of EL	Match between attainments and sub-components of EL
Knowledge	**1.1.** Temizlikle ilgili malzemeleri doğru kullanır. [*Risk, Toxicology and health*]
	1.2. El, yüz ve vücudun diğer kısımlarını uygun biçimde yıkar. [*Risk, Toxicology and health*]
	1.4. Yiyecek ve içeceklerin temizliğine dikkat eder. [*Risk, Toxicology and health*]
	1.6. Beslenme için gerekli araç-gereçleri temizlik kurallarına uygun kullanır. [*Risk, Toxicology and health*]
	3.3. Yiyecekleri yerken sağlık ve görgü kurallarına özen gösterir. [*Risk, Toxicology and health*]
	3.4. Sağlığı olumsuz etkileyen yiyecekleri ve içecekleri yemekten / içmekten kaçınır [*Risk, Toxicology and health*]
	5.1. Tehlikeli olan durumları söyler. [*Risk, Toxicology and health*]
	5.4. Acil durumlarda başvurulabilecek telefon numaralarını söyler. [*Risk, Toxicology and health*]
Skills	**5.2.** Tehlikeli olan durumlardan uzak durur. [*Action Skills*]
	5.3. Herhangi bir tehlike anında yetişkinlerden yardım ister. [*Action Skills*]
Affect	**1.3.** Tuvalet gereksinimine yönelik işleri yardımsız yapar. [*Locus of Control*]
Behavior	1.1. Ev ve okuldaki eşyaları temiz ve düzenli kullanır. [*Conservation and Eco-management*]
	1.7. İçinde bulunduğu çevreyi temiz tutar [*Conservation and Eco-management*]

developing knowledge in relation to the subcomponent of risk, toxicology and health. Children are expexted to take care of cleaness of their body and be aware of the healtiness of the foods and drinks. In two attainments, children are expected to be careful about the dangerous cases and take precautions against these cases, and thus develop alterative actions to be in safe. Also, the children are expected to develop toilet habit without taking any help which entails children' sense of locus-of-control and efficacy. In other two attainments, children are expected to demonstrate physical type of behavior to live in clearn environment.

There are several concepts aimed to be introduced to 2006 early childhood curriculum. Only very few of them were seemed to be directly related with the environment; e.g. clean - dirty, beautiful – dirty, living - non living, moving – motionless etc. There are some emotional concepts which are associated with the component of Affect; e.g. happy, sad, angry, scared and confused. There are several other concepts which are considered to be indirectly related with the environment; e.g. crowded – deserted, hot-cold-warm, right-wrong, new-old etc.

In 2006 curriculum, 21 days or weeks are identified as specific days and weeks. Only five of them are seemd to be closely associated with the environment. They are named as "Animal Protection Day", "Energy Saving Day", "Forest Day", "Museums Week" and "Environmental Protection Day".

Conclusion

In the present study, 2002 and 2006 Early Childhood Curricula were analyzed across the components of EL. Analyzing both curricula comparatively reveals several changes observed over 2002 to 2006 curriculum with regard to the design of the curriculum and the intensity of the integration of the aims of EE. Behavioral implications were more observed in the 2002 curriculum whilst children-centered and constructivist implications are more observed in the recent (2006) curriculum. Construction of knowledge, spiral design of the content, and process-oriented assessment are more observable in the current curriculum, as well. Attainments in 2006 curriculum correspond to the behaviors in 2002 curriculum. Presented in Table 10, number of the attainments increased over the previous to current curriculum. In 2002 curriculum, 27 of 169 behaviors (%15) were found to be directly correlated with the components of EL. This result refers that only very few of the behaviors are aimed to attain the components of EL. Most of these behaviors were observed to be associated with the component of Knowledge, less with skills, little with affect and behaviors. In parallel with the current study, Tombul (2006) reported that EE in 2002 curriculum were aimed to be realized with two general objectives; e.g. "İnsanın sağlıklı yaşayabilmesi için temizlikle iligili işler yapabilme" [Doing things related to cleaning for one's living healthy] and "Çevresini güzelleştirme" [Beautifying his environment]. Considering the developmental areas, no behaviors related to EE was found in the domain of psychomotor. Of the 21 specific days and weeks offered in the curriculum, the con-

Table 10.
Number of the Behaviors / Attainments and EE Related Behaviors / Attainments in Both Curricula

Developmental Area	2002 Curriculum		2006 Curriculum	
	Total number of Behaviors	EE related Behaviors	Total number of Attainments	EE related Attainments
Psychomotor	38	-	46	-
Social-Emotional	46	6	58	11
Cognitive	66	13	97	10
Language			37	-
Self-care	19	8	26	13
Total	169	27 (%15)	264	34 (%13)

tent of six were found to be related with realizing the aims of EE.

Of the total of 264 attainments in 2006 curriculum, only 34 (%13) were found to be associated with any components of EL. Based on the table above, it is observed that compared with the 2002 curriculum, number of the attainments associated with the aims of EE increased in the 2006 curriculum, but the percentage was relatively decreased because of the fact the total number of the attainments in 2006 curriculum is too much increased. EE related attainments were increased in the development area of Social-Emotional Domain and Self-care Skills, but decreased in the development area of Cognitive and Language Domain. Similar to 2002 curriculum, no attainments related to EE were found in the domain of psychomotor; but different from the previous curriculum, no attainments were found in the domain of language in relation to any components of EL. In parallel with the findings in 2002 curriculum, most of the attainments were observed to be associated with the component of knowledge, less with skills, little with affect and behaviors. Compared with the previous curriculum (2002 curriculum), analysis of the attainments revealed an observable shift from the component of knowledge to skills and behavior. The number of the attainments corresponding to the component of knowledge is more or less same in both curriculum, but the attainments related to skills and behaviors are increased in number. Similar trends (more focus on the component of Knowledge) were also observed in other content analysis studies of 1st – 3rd grades Natural Sciences Curriculum (Bahar et al., 2012), of 4th - 8th grade Science and Technology Course Curriculum (Erdogan, Marcinkowski et al., 2009) and of 9th to 12th grade Biology Course Curriculum (Erdogan et al., 2012) across the components of EL. Knowledge is an important component, but itself not enough to understand the dynamics of the environment and develop the notion to protect the environment (Maleki & Karimzadeh, 2011). Thus, the components of EL should be thought together and integrated into the curriculum consistently.

Most of the concepts in the list given in both curricula were not apparently seems to be associated with the environment, but some of them (e.g. clean - dirty, living - non living, moving – motionless) were directly related with man-made and/or natural environment. These could only be understood when the teachers are observed while they are teaching such concepts. The series of observation will shed light on our understanding of which concepts are used in which condition and for what purposes.

Gülay and Ekici (2010) undertook a content analysis of 2006 Early Childhood Curriculum with regard to EE by taking the 23 experts' opinions. Even though their results were much more overlapping with the results of the current study, they also reported different and additional findings. They took experts' opinions on whether the attainments, concepts and specials days (offered in the curriculum) were related with EE. In addition to the findings of the current study, they reported 7 more attainments associated with EE. The experts in the study indicated that several concepts in the curriculum were about the environment. They also concluded that 2006 early childhood curriculum was not enough in terms of EE related concepts, attainments and special days-and-weeks. However, in the other study conducted to analyze selected countries' (Canada, The USA, Sweden, Germany, Japan and Turkey) early childhood curriculum across EE revealed that the curricula in the selected countries are flexible enough to integrate the EE activities (Akçay, 2006). Among the countries, Germany was observed to put the most emphasis on EE in Early childhood curriculum. Akçay's study also revealed that while Turkish early childhood curriculum included few aims and attainments, many environmental related activities were observed in the

yearly plan. Akçay posed the discussion about the possible gap between the formal curriculum and implemented curriculum. This could be an avenue for and a topic of further research studies.

The Turkish proverb says that "Ağaç yaşken eğilir (You cannot teach an old dog new tricks). This proverb actually emphasizes the importance of education in early ages. Life-long habits and values are started to be obtained in the early ages. Bearing this proverb in mind, EE, basically help understand the human and environment relationship and dual effects, should be started in early ages (Gökler & Yılmaz, 1999) due to the fact that the children start to understand their environment and to make various association in relation to the environment in early ages (Russo, 2001). These associations provide them an understanding to find meaning for many things within the environment. A child comes to the life with curiosities which lead s/he to explore and understand his/her environment. Then, EE in early ages will keep children curious about the environment and help them understand the man-environment relationship since the children try to understand their environment in early years. Furthermore, Wilson (1996) reported that environmental consciousness gained in early ages could affect children's environmental tendencies in later years. These all claims indicate the curicial importance of EE in early ages.

Suggestions

Several suggestions can be drawn from the results;

1. The curriculum development is a continuous and never-ended process (Ornstein & Hunkins, 1988). Taking this principle of curriculum development into account, various components of EL could be integrated into the curriculum during the revision studies. This is crucially important because children in early ages are more open to grasp environmental understanding. Even if the same attention could not or may not be paid to the all components of EL, a balance should be ensured among the components while integrating into the curriculum.

2. As maintained by Wilson (1994), EE in early childhood covers the development of a sense of wonder, appreciation to the beauty of the nature, the feeling of clones to the nature and the respect to the other creaturs in the natural worlds. Thus, this general goals does not only address to the component of knowledge (cognitive processes), but also reflect the emotional and behavioral aspects. Thus, the curriculum developers should take this notion into the consideration while embedding the principles of EE the early childhood curriculum.

3. In the current literature, school curriculum, school and teachers (Erdogan & Ok, 2011) are reported to be source of environmental related information for the students. However, these sources are not enough to help children grasp the environmental understanding, consciousness and awareness. Thus, other sources; e.g. informal settings, additional books, media and such should be utilized as an integral part of formal curriculum in the school.

4. There could be a gap between actual curriculum (written) and the implemented curriculum (in class). A video study or observation study is needed to understand to what extent the attainments of EE are integrated into the course curriculum and /or which components are more emphasized, ignored or never considered during the instruction.

5. Considering the content of Early Childhood Curriculum, children are supposed to have very basic knowledge, skills, attitudes and also behaviours in relation to EL. The analysis of written (actual) curriculum also indicated very basic information to us about the integration of EE into the curriculum. Analysing the implementation of the curriculum will provide complementary results to the present study. Thus, the researchers are suggested to undertake the research studies providing in-depth insights and understandings about how the EE is implemented into the early childhood settings.

References

Akçay, İ. (2006). *Farklı ülkelerde okul öncesi öğrencilerine yönelik çevre eğitimi.* Unpublished master's thesis, Uludağ University, Bursa.

Akdağ, Z., & Erdiller, Z. (2006, September). *Okul öncesi eğitim çağındaki çocuklara çevre bilincini kazandırmak için gönüllü kuruluşlar ile işbirliği yapmak*. Paper presnted at the 7. Ulusal Fen ve Matematik Eğitimi Kongresi, Ankara.

Alisinanoğlu, F., & Bay, N. (2007, September). *Okul öncesi eğitim programlarının tarihsel gelişimi.* Paper presented at the XVI. Ulusal Eğitim Bilimleri Kongresi, Tokat.

Alkış, S. (2002). *İlköğretimde tarihi çevre eğitimi*. Unpublished master's thesis, Uludağ University, Bursa.

Babulski, K., Gannett, C., Myers, K., Peppel, K., & Williams, R. (1999). *A white paper on the relationship between school reform and environmental education in Florida: Correlating Florida's Sunshine State Standards and an Environmental Literacy Framework.* Melbourne, FL: Unpublished research paper, Science Education Department, Florida Institute of Technology.

Bahar, M., Erdaş, E., & Özel, R. (2012, June). *İlköğretim hayat bilgisi programında çevre eğitimi.* Paper presented at the X. Ulusal Fen Bilimleri ve Matematik Eğitimi Kongresi, Niğde.

Coppola, N. W. (1999). Greening the technology curriculum: A model for environmental literacy. *The Journal of Technology Studies, 25* (2), 39-46.

Disinger, J. F. (1983). *Environmental education's definitional problem* (ERIC Information Bulletin #2). Columbus, OH: ERIC, SMEAC.

Disinger, J. F., & Roth, C. E. (1992). *Environmental literacy*. Columbus, Ohio: ERIC/SMEAC Information Reference Center (ERIC document Reproduction Service No: ED 351201).

Düşek, G. (2008). *2006 yılında uygulamaya konulan okul öncesi eğitim programı hakkında ilköğretim müfettişleri, okul öncesi eğitim veren kurum müdürleri ve okul öncesi öğretmenlerinin görüşlerinin incelenmesi (Ordu ili örneği).* Unpublished master's thesis, Selçuk University, Konya.

Erdogan, M. (2007). Yeni geliştirilen dördüncü ve beşinci sınıf fen ve teknoloji dersi öğretim programının analizi: Nitel bir çalışma. *Gazi Universitesi Türk Egitim Bilimleri Dergisi, 5* (1), 221-259.

Erdogan, M. (2009). *5. sınıf öğrencilerinin çevre okuryazarlığı ve bu öğrencilerin çevreye yönelik sorumlu davranışlarını etkileyen faktörler.* Unpublished doctoral dissertation, METU, Ankara.

Erdogan, M., & Marcinkowski, T. (2007, November). *Results of an analysis of K-8 environmental education research in Turkey, 1997-2007*. Paper presented at the (Research Symposium) 34th North American Association for Environmental Education Annual Conference and Research Symposium, Virginia Beach, USA.

Erdogan, M., & Ok, A. (2011). An assessment of Turkish young pupils' environmental literacy: Nationwide survey. *International Journal of Science Education, 33* (17), 2375–2406.

Erdogan, M., Bahar, M., & Uşak, M. (2012). 2007 yılında uygulanmaya başlanan Lise 9-12. Sınıf Biyoloji Dersi öğretim programlarında çevre eğitimi. *Kuram ve Uygulamada Eğitim Bilimleri, 12,* 2217-2225.

Erdogan, M., Coşkun, E., & Uşak, M. (2011). Developing children's environmental literacy through literature: An analysis of 100 basic literary works. *Eğitim Araştırmaları - Eurasian Journal of Educational Research, 42*, 45-62.

Erdogan, M., Kostova, Z., & Marcinkowski, T. (2009). Components of environmental literacy in elementary science education curriculum in Bulgaria and Turkey. *Eurasia Journal of Mathematics, Science and Technology Education, 5* (1), 15-26.

Erdogan, M., Marcinkowski, T., & Ok, A. (2009). Content analysis of selected features of K – 8 environmental education research studies in Turkey, 1997-2007. *Environmental Education Research, 15* (5), 525-548.

Erten, S. (2004). Çevre eğitimi ve çevre bilinci nedir, çevre eğitimi nasıl olmalıdır? *Çevre ve İnsan Dergisi*, *65/66*, 1-13.

Gökler, I., & Yılmaz, I. (1999). *Okul öncesi çevre eğitimi* (Çevre Koruma ve Araştırma Vakfı Kültür Serisi-6). Izmir: Emre Basımevi.

Goldman, D., Yavetz, B., & Pe'er, S. (2006). Environmental literacy in teacher training in Israel: Environmental behavior of new students. *The Journal of Environmental Education, 38* (1), 3-22.

Gülay, H., & Ekici, G. (2010). MEB Okul öncesi eğitim programının çevre eğitimi açısından analizi. *Türk Fen Eğitimi Dergisi*, *7* (1), 74-84.

Gürkan T. (2003). Okul Öncesi eğitim programinin temel özellikleri. In O. Ayla, G. Tanju, Z. Rengin & P. Unutkan Özgül (Eds.), *Okulöncesi Eğitim Programı Uygulama Rehberi Ne Yapıyorum Neden Yapıyorum Nasıl Yapmalıyım* (pp. 78-97). İstanbul: Ya-Pa Yayınları.

Hart, E. P. (1981). Identification of key characteristics of environmental education. *The Journal of Environmental Education, 13* (1), 12-16.

Harvey, G. (1977). A conceptualization of environmental education. In J. Aldrich, A. Balckburn, & G. Abel (Eds.), *A report on the North American regional seminar on environmental education* (pp. 66-77). Columbus, OH: ERIC / SMEAC.

Hines, J., Hungerford, H., & Tomera, A. (1986/87). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *The Journal of Environmental Education, 18* (2), 1-8.

Hsu, S. J. (1997). *An assessment of environmental literacy and analysis of predictors of responsible environmental behavior held by secondary teachers in haulien county of Taiwan.* Unpublished doctoral dissertion, Graduate School of the Ohio State University.

Iozzi, L. (ed.) (1984). *A summary of research in environmental education, 1971- 1982. The second report of the national commission on environmental education research.* (Monographs in Environmental Education and Environmental Studies, Vol. #2). Columbus, OH: ERIC/ SMEAC. [ED 259879]

Iozzi, L. (Ed.). (1981). *Research in environmental education, 1971-1980*. Columbus, OH: ERIC/SMEAC [ED 214 762].

Kandır, A. (2001). Çocuk gelişiminde okul öncesi eğitim kurumlarının yeri ve önemi. *Milli Eğitim Dergisi*, *151,* 102-104.

Lee, M., Kang, K., Shin, D., Zew, H., Lee, E., Noh, K. et al. (2003). *An assessment of Korean students' environmental literacy and an analysis of predictors of responsible environmental behavior; Final report.* (Korea Research Foundation Grant #BS1055). Dankook University, Seoul.

Maleki, A., & Karimzadeh, S. (2011). A survey of relationship between the environmental attitudes and environmental knowledge and energy consumption behavior among citizens of Urmia, West Azerbaijan, Iran. *International Journal of Social Sciences and Humanity Studies, 3* (1), 27-37.

McBeth, W. (Primary investigator–PI). (2006). *National environmental literacy assessment of middle school students in the U.S. (A Special Project Award to the North American Association for Environmental Education [Award no NAO6SEC4690009] by the National Oceanic and Atmospheric Administration, U.S. Department Commerce)*. Washington, D.C.: NAAEE.

Milli Eğitim Bakanlığı (MEB, 2002). *Okul Öncesi eğitim programı.* Ankara: Author.

Milli Eğitim Bakanlığı (MEB, 2006). Okul Öncesi Eğitim Programı. Ankara: Author.

Morrone, M., Mancl, K., & Carr, K. (2001). Development of a metric to test group differences in ecological knowledge as one component of environmental literacy. *The Journal of Environmental Education, 32* (4), 33-42.

Negev, M., Sagy, G., Tal, A., Salzberg, A., & Garb, Y. (2006, October). *Mapping environmental literacy in Israel.* A paper resented at 35th Annual NAAEE Conference: Building Environmental Education in Society, St. Paul, MN, The USA.

Ornstein, A. C., & Hunkins, F. P. (1988). *Curriculum: Foundations, principles and issues.* New Jersey: Prentice Hall.

Osbaldiston, R. (2004). *Meta-Analysis of the responsible environmental behavior literature.* Unpublished doctoral dissertation, University of Missouri- Columbia (UMI Number: 3144447).

Özdemir, O., & Uzun, N. (2006). Yeşil sınıf modeline göre yürütülen fen ve doğa etkinliklerinin ana sınıfı öğrencilerinin çevre algılarına etkisi. *Çocuk Gelişimi ve Eğitimi Dergisi, 1* (2), 12-20.

Patton, M. Q. (2002). *How to use qualitative methods in evaluation.* Beverly Hills, CA: Sage.

Roth, C. E. (1992). *Environmental literacy: Its roots, evolution and directions in the 1990s.* Retrieved 08.12.2011 from http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/24/44/47.pdf.

Russo, S. (2001). Promoting attitudes toward E.E. depends on early childhood education: What view do we hold? *Australian Science Teachers' Association, 17* (4), 34-36.

Simmons, D. (1995). Working paper # 2: Developing a framework for national environmental education standards. In papers on the *Development of Environmental Education Standards* (pp. 53-58). Troy, OH: NAAEE.

Smith, A. (2001). Early childhood- A Wonderful time for science learning. *Australian Primary & Junior Journal, 17* (2), 52–55.

Stables, A. (1998). Environmental literacy: Functional, cultural, critical. The case of the SCAA guidelines. *Environmental Education Research, 4* (2), 155-164.

Stapp. W. B., Bennett, D., Bryan, W., Fulton, J., Harlick, S., MacGregor, J. M. et al. (1969). The concept of environmental education. *The Journal of Environmental Education, 1* (1), 30-31.

Taşkın, Ö., & Şahin, B. (2008). Çevre kavramı ve altı yaş okul öncesi çocuklar. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, *1* (23), 1–14.

Temel, Z. F. (2005, Nisan). Okul öncesi eğitimde yeni yaklaşımlar. *Bilim ve Aklın Aydınlığında Eğitim Dergisi*, *6* (62).

Tombul, F. (2006). *Türkiye'de çevre eğitimine verilen önem.* Unpublished master's thesis, Ankara University, Ankara.

Ünal, S., & Dımışkı, E. (1999). UNESCO—UNEP Himayesinde Çevre Eğitiminin Gelişimi ve Türkiye'de Ortaöğretim Çevre Eğitimi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, *17*, 142-154.

Volk, T., & McBeth, W. (2005). Environmental literacy in the Unites States. In H. Hungerford, B. Bluhm, T. Volk, & J. Ramsey (Eds.), *Essential readings in environmental education* (pp. 75-80). Campaign, IL: Stipes Publishing Company.

Wilson, R. (1994). *Environmental education at the early childhood level.* Washington, D.C.: NAAEE.

Wilson, R. A. (1996). *Starting early: Environmental education during the early childhood years.* Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education, [ED 402147].