RESEARCH ARTICLE

An Assessment of Turkish Elementary Teachers in the Context of Education for Sustainable Development*

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Abstract

The purpose of the current study is to describe beliefs, perceived barriers and teaching strategy preference of elementary teachers with respect to education for sustainable development. The sample of research survey consisted of 211 elementary teachers who are also participant of projects on environmental education entitled Green Pack and Eco-schools. The data were collected by three different scale entitled "beliefs on education for sustainable development scale", "barriers towards education for sustainable development scale" and "techniques in education for sustainable development scale". Items of the scales were examined taking into account mean scores, standard deviation, frequencies and percentages. Results revealed that teachers perceive some of the condition such as curriculum, class size, and lack of instructional materials as barriers for education for sustainable development. Despite these barriers, teachers have favorable beliefs regarding education for sustainable development. These beliefs were in line with the standards portrayed by international reports. In addition, it was argued that teachers' beliefs may be shaped by the educational projects they participated in.

Keywords: Elementary teachers, Teaching beliefs on sustainable development, teaching techniques

Introduction

It has been declared that the earth is a unique planet in terms of life opportunities that it provides for every creature. More specifically, any other planet in the solar system does not have proper condition for vividness. However, the recent phenomenon such as floods, decreasing water quality, winter storms and tornados, wars and terrorism we face showed that living on the earth become also more challenging when compared to previous years.

Recent reports indicate that the number of the people suffered from poor water sources and insufficient sanitation are much greater than people exposed to wars and similar violence. According to World Health Organization (WHO), for instance, 11% of the world still could not access any types of water supply. In terms of sanitation, 36% of the world population could not reach these facilities. Inappropriate sanitation conditions, lack of hygiene, and unsafe water increase the number of the people suffered from infectious

diseases. These diseases unfortunately end up with death particularly in Africa and some part of South-East Asia (WHO, 2015). In addition to these problems, extinction of species; unfair distribution of wealth; air, soil and water pollution, and deforestation could be exemplified for the reasons of why life conditions on our planet have become so difficult.

It is revealed that these issues are generally linked to interactions among environmental, social and economic conditions. In this aspect, "sustainable development" has emerged as a comprehensive solution for challenges we face. The term sustainable development is gradually changing over time which causes an obstacle in clarifying the term. "Sustainable development" was primarily stated in the document World Conservation Strategy (IUCN, WWF, & UNEP, 1980) that demonstrated conservation as a way to attain development and serve especially for the goals of sustainable development, and wise usage of natural resources and ecosystems. "Sustainable development" has become a widely known concept since the World Commission on Environment and Development (WCED) reported about sustainability in 1987. Its report was titled with Our Common Future and it was stated that *"Sustainable development is development which meets the needs of the present without comprising the ability of future generations to meet their own needs"* (WCED, 1987, p.43). The brief definition of sustainable development by WCED implies that human needs are basic and essential. Furthermore, economic development accompanied by equity to share resources with poor nations should be maintained and the equity should be encouraged by effective citizen participation. In order to embrace sustainable development in our social and individual life, education has appeared as a key agent since it is a unique way to change human behavior, to develop reasoning and judgment abilities and to teach concepts. Therefore, Council for Environmental Education (1998) describes education for sustainable development (ESD) as a way to improve humans' knowledge, values, and skills in order to improve the life standards without damaging the planet.

ESD corresponds to more than knowledge of social, environment and economy issues. It also contains values, problem solving skills, critical thinking skills, and local and global viewpoints towards issues. Moreover, ESD focuses on the importance of democracy and participation of people in democratic societies. Sustainable development includes controversial issues and complex systems; therefore, teachers should be well equipped with the qualifications required for effective implementations of ESD (Bertschy, Künzli, & Lehmann, 2013).

Teachers' beliefs are among the significant qualifications, since teachers are regarded as an agent for supporting community participation to achieve the goals of sustainable development (Taylor, Nathan, & Coll, 2003). Considering this point of view, it was revealed that 'teacher beliefs' attracted the attention of many researchers from various disciplines though the definition of 'belief' construct is open to debate. The definition of this term which shaped the present study belongs to (Pehkonen & Törner, 1996, p.6). These authors claimed: *"Beliefs are composed of a relatively long-lasting subjective knowledge of certain objects as well as the attitudes linked to that knowledge. Beliefs can be conscious or unconscious, whereby the latter type are often distinguished by an affective character".* In general, beliefs have cognitive, affective and behavioral components; influence knowledge, acts and feelings (Johnson, 1999). According to Pajares (1992), all teachers have beliefs concerning teaching, students and their responsibilities. Moreover, previous studies emphasized that teachers' beliefs influence their classroom activities, learning and teaching process (Pajares, 1992; Richardson, 1996; Thompson, 1984).

Concerning the potential impact of beliefs on teachers' implementations, some studies (e.g., Boon, 2011; Corney & Reid, 2007; Summers, Corney, & Childs, 2003; Winter &

Firth, 2007; Zachariou & Valanides, 2006) were also conducted in order to reveal teachers' beliefs on ESD. These studies indicated that teachers do not have consensus with respect to different aspects of ESD. For instance, some teachers believed that local issues were more suitable to be included in the teaching practices regarding sustainability in that students could easily associate these issues with their daily life. On the other hand, some teachers held another point of view in that global issues were more interesting among students (Summers et al., 2003). However, teachers generally agreed that sustainable development is abstract and difficult to conceptualize (Winter & Firth, 2007; Zachariou & Valanides, 2006). It is stressed that some of the terms in the content of sustainable development such as democracy, equality, sustainability, and prosperity makes it more challenging to acquire proper understandings of sustainable development (Summers, Corney, & Childs, 2004).

Although teachers stressed that students had difficulty in conceptualizing sustainable development and its sub-components, they also emphasized that there were topic and subject specific teaching strategies which facilitate students' learning. For instance, ecological footprint activities contribute development of awareness towards equal and fair consumption (Corney & Reid, 2007); case studies including debatable issues contribute students' understanding of global and local issues (Corney & Reid, 2007); enhance critical thinking abilities, and enhance students' awareness to their own attitude and values (Summers et al., 2003). Although these strategies were suggested in the context of ESD, they did not guarantee students' learning since these strategies require active participation of students. Therefore, teachers should motivate their students for their active participation and improve their performance in these activities. However, teachers stressed that students generally have low expectation and not aware of their own potential performance (Corney, 2006; Summers et al., 2003).

Teachers do not have smilar belief regarding the implementations of ESD. To be more specific, the role of their own values and principles on implementations of ESD are among the controversial issues in this context. For instance, teachers are not sure whether or not they should share their own ideas about a specific sustainability-related issue and how their ideas might influence students' critical thinking skills and values (Corney, 2006; Summers et al., 2003; Winter & Firth, 2007). Some teachers believe that they should not express their thoughts and ideas. Rationale behind this idea is that students should develop their own ideas and values without dictate. On the one hand, some of them believe that explaining correct ideas and principles may be helpful for students learning (Summers et al., 2004).

In addition to teachers' different beliefs on ESD, they also face with different difficulties. The studies (e.g., Corney, 2006; Summers, Childs, & Corney, 2005) point out that teachers perceive lack of knowledge, lack of supports of the heads of the schools, inconsistency between teaching academic fields and sustainable development, and their personal characteristics as a barrier towards ESD. To overcome these barriers, teachers should be well equipped with necessary qualifications by means of professional support. Some of the non-governmental organizations, therefore, support teachers' professional repertoire with respect to ESD.

The project of the Eco-School arranged by Turkish Environmental Education Foundation and the Project of Green Pack arranged by The Regional Environmental Center (REC) are widespread projects trying to improve the quality of the ESD. The Green Pack Project provides a curriculum kit including educational materials for both teachers and students. This kit includes lesson plans, animations and short movies, teacher guide books, games and interactive educational tools. In addition, REC provided some training programs in order to enhance effective usage of these materials. Teachers were informed about how to use these documents and how to integrate them into their own lessons. On the one

hand, the content of the Eco-School project assures cooperation between teachers, students, school managers and also parents. The aim of the school is to obtain the Green Flag Award which refers sustainability of the school. In order to obtain this flag a coordinator teachers manage responsibilities of each teachers and students in a specific tasks. As a consequences of their work, they reports their progressions to official of the project.

In the current study, the research questions were determined to examine Green Pack and Eco-School coordinator teachers' beliefs with respect to education for sustainable development. The following research questions guided the current study;

1. What is the Turkish elementary teachers' beliefs on education for sustainable development?
2. Which strategies have been preferred by Turkish elementary teachers in the context of education for sustainable development?
3. Which contextual variables have been perceived as barriers by Turkish elementary teachers?

Methodology

Participants

The current study utilized a survey research method in order to describe elementary teachers' perspective towards ESD. A total of 211 elementary teachers from thirteen different teaching fields responded to the survey. Considering all elementary teachers do not have appropriate and sufficient understanding regarding education for sustainable development, the participant of the study was chosen from two environmental education projects entitled with the Green Pack and the Eco-School projects. There were 145 Green Pack teachers participating in the current study while the number of the Eco-School coordinator teachers were 96. It was revealed that 31 teachers were the members of both projects.

The convenience sampling method was preferred as sampling method in the present study. Measurement tool was converted to an online-survey and then sent to teachers as an email. As far as thirteen teaching fields were considered, percentages of Classroom Teachers with 44.5% (n= 94) and then, Science Teachers with 17.5 (n=37) were larger groups, while Special Education and Preschool were .5% (n=1).

Measurement tool

The measurement tool used in the present study consisted of three different scales. Data were collected using these parts namely, "beliefs on education for sustainable development scale", "techniques in education for sustainable development scale", "perceived barriers towards education for sustainable development scale". Beliefs on education for sustainable development scale was developed by Sağdıç and Şahin (2015), which is a five-point Likert type ranging from scores '1' to '5'. '1' corresponded to strongly disagree (SD), '2' corresponded to disagree (D), "3" corresponded to undecided (U), "4" corresponded to agree (A) and "5" corresponded to strongly agree (SA). The scale includes 32 items and three factors such "beliefs on implementation of sustainable development", "beliefs on limitation of sustainable development" and "beliefs on adequacy of education for sustainable development in Turkish education system". Confirmatory factor analysis ($X = 937,85$, df = 457, p = 0.000; CFI = 0.92, RMSEA = 0.71), discriminant and convergent validity analysis conducted by researchers indicate that beliefs on education for sustainable development scale is a valid scale to assess teachers' beliefs.

Another measurement tool is "barriers towards education for sustainable development scale" was developed to examine the barriers that the teachers have perceived during education for sustainable development in the formal education process. Ten items were adopted from the instrument entitled *"Teachers' Perceptions of Teaching Environmental Issues within the Science Curriculum: A Hong Kong Perspective* (Ko & Lee, 2003). Furthermore, other five were constituted considering findings of the study titled "*Education for Sustainability: An Approach to the Professional Development of Teachers"* (Gayford, 2001). The items were scored with seven point Likert-scales. Score "1" reflected that barrier was very eligible for me and score "7" reflected that barrier was not at all eligible for me.

Techniques in education for sustainable development scale was used to measure teachers' preference on teaching techniques utilized in ESD. Appropriate techniques for education for sustainable development were determined in the light of the book which titled "*Handbook on Methods Used in Environmental Education and Education for Sustainability"* (Scoullous & Malotidi, 2004) and the article which titled *"Teachers' Perceptions of Teaching Environmental Issues within the Science Curriculum: A Hong Kong Perspective* (Ko & Lee, 2003). Three options were presented for each technique as "have used", "have not used but would like to use" and "have not used because it is not appropriate for ESD".

Analysis

Teachers responses to scales of the current study were examined by means of an item based assessment. The mean scores, the standard deviations, frequencies and percentages of both items and sub-dimensions were taken into account in these analyses.

Results

Beliefs on education for sustainable development

Beliefs on implementation of education for sustainable development. Beliefs on implementations of education for sustainable development sub-dimension contain twenty-one items. These factors assess teachers' beliefs on education for sustainable development with respect to teaching methods, curriculum and potential benefits. The mean score of this sub-dimension was found as 4.43 over 5 with the standard deviation of .070 indicating that elementary teachers had favorable beliefs on implementation of education for sustainable development.

Table 1.

Percentage of elementary teachers' responses on beliefs on implementation of education for sustainable development dimension

	SD 1	D 2	U 3	A 4	SA 5
Education for sustainable development improves students' future decision-making skills.	1.5	.5	2.6	44.8	50.5
Teaching controversial environmental, economic and developmental issues improve students' critical thinking skills	1.5	-	1.5	42.6	54.2
Allocating time on sustainable development in their lesson enriches teachers' professional repertoire.	1.0	1.0	3.1	41.7	53.1
Students can develop their own understanding of the concept when teaching about sustainable development.	1.6	1.0	3.1	52.6	41.7
Participatory learning and group work can improve students' meaningful learning.	1.6	1.0	2.6	38.5	56.3
Education for sustainable development provides knowledge, skills and values which can be utilized in daily life.	1.6	0.5	1.6	43.2	53.2
Education for sustainable development should be integrated at all levels of education.	5.2	4.7	4.7	40.6	44.8
Teachers should choose teaching topics related to their students' daily life.	2.1	2.6	2.1	50.3	42.9
In education for sustainable development, teachers should use available teaching materials in their daily life.	1.6	2.6	1.0	49.5	45.3
Private sectors, public sectors and schools should collaborate in sustainable development.	2.1	2.1	1.6	37.5	56.8
The social and cultural backgrounds of my own country should be considered when establishing content of ESD.	2.1	2.1	2.1	47.6	46.1
Education for sustainable development should be placed among the goals of every academic course.	-	5.3	15.3	46.3	33.2
Education for sustainable development should be considered by all teachers.	1.6	1.6	1.6	43.2	52.1
Students should have the right to make suggestions and decisions on matters of ESD.	1.0	2.1	8.4	50.8	37.7
Teachers should encourage students to establish a connection between their personal lives, and global environment and development issues.	2.1	1.1	2.1	43.7	51.1
News in print and visual media should be shared with students for education for sustainable development.	2.1	1.1	-	45.8	51.1
Students should participate in various projects and global and local programs for sustainability.	2.1	1.6	0.5	39.3	56.5
Role-play and debates are useful methods while learning sustainable development.	2.6	1.0	1.6	46.4	48.4
Since the content of education for sustainable development are extensive, students should determine their own subject of study.	1.6	2.6	4.7	54.2	37.0
Permitting the students openly discuss the topics is a beneficial technique for ESD.	1.6	1.0	4.7	55.5	37.2
Teachers of all fields must be informed about how they can integrate sustainable development to their own courses.	2.1	1.0	2.6	31.9	62.3

As it seen in the Table 1, elementary teachers reported effectiveness of ESD so as to improve students' future decision making abilities (95%). In addition, they also stressed that ESD enhance critical thinking ability (97%) and contribute meaningful learning (94%). These teachers also declared that students can acquire skills knowledge and values which can be integrated into their daily life (96%).

Items regarding the implementation of the education for sustainable development provided some information about teachers' beliefs on teaching process. As seen in the Table 1, teachers believe that content of the courses should be chosen considering students' daily life. Similarly, they are of the opinion that student actively participate

decision making process (89%); discussion, role playing (94%), participation national and international project (96%) and utilizing news in visual and press media (97%) for teaching are effective ways for students learning.

Lastly, teachers' responses also reflects holistic aspect of the ESD. For instance, they are of the opinion that all academic courses should include objectives related to ESD (80%), which refers integration of sustainable development different disciplines. Moreover, it is stressed that this integration should cover all educational levels from primary schools to universities (85%). Teachers' perspectives on ESD cover formal education but also informal education. They argue that both public and private sectors have responsibilities regarding implementation of sustainable development (94%).

Beliefs on limitations of education for sustainable development. Elementary teachers' beliefs on limitation of education for sustainable development were assessed with six items. Question of this sub-dimension focus on difficulties originated from complex nature of ESD. The mean score of the sub-dimension was found as 1.71 out of 5 and the standard deviation of .53, which referred that the great majority of the elementary teachers disagree or strongly disagree with the items of this belief dimension as seen with sample item in Table 2.

Table 2.

Percentage of elementary teachers' responses on beliefs on limitation of education for sustainable development

	SD 1	D 2	U 3	A 4	SA 5
Education for sustainable development is an unrealistic educational approach.	63.9	30.4	2.1	2.1	1.6
The integration of sustainable development in elementary education curriculum decreases.	62.8	28.3	3.1	4.2	1.6
Teaching about sustainability is too controversial topic to be taught in elementary education.	50.0	38.0	7.8	3.1	1.0
Teachers' integration education for sustainable development in their lessons causes waste of time.	49.5	38.4	5.8	4.7	1.6
ESD issues are difficult for students to understand.	41.9	46.6	3.7	6.3	1.6
Implementation of ESD is difficult	37.7	44.5	6.8	9.9	1.0
It is difficult to integrate education for sustainable development in my own academic field.	45.3	39.6	5.7	5.7	3.6

As opposed to implementation of the education for sustainable development dimension, teachers responses concentrated on disagree and strongly disagree choices. More specifically, elementary teachers opposed to ideas that ESD is an unrealistic educational approach (93%), ESD issues are difficult for students to understand (87%) and teachers' integrating ESD in their lessons causes waste of time (87%). In addition, as provided in the Table 2, these teachers do not believe that integration of ESD in their own teaching field is challenging (85%).

Beliefs on adequacy of education for sustainable development in Turkish education system. Beliefs on adequacy of education for sustainable development in Turkish education system section includes four items measuring beliefs of elementary teachers on the sufficiency of textbook activities, curriculums and teacher trainings in terms of ESD. The mean score of 2.13 over 5 with the standard deviation of .68 shows that

elementary teachers did not believe adequacy of education for sustainable development in the Turkish education system.

Table 3.

Percentage of elementary teachers' responses on beliefs on adequacy of education for sustainable development in Turkish education system dimension

	SD 1	D 2	U 3	A 4	SA 5
Education in elementary schools are sufficient to improve students' awareness about sustainable development.	20.9	41.4	15.7	12.6	9.4
Elementary teachers are adequately informed about education for sustainable development.	30.7	46.0	12.7	7.4	3.2
Education curriculums involve education for sustainable development sufficiently.	26.7	52.4	13.1	6.3	1.6
Textbooks activities are sufficient for education for sustainable development.	30.2	49.5	12.5	5.2	2.6

As seen Table 3, the majority of the elementary teachers agreed that textbooks activities are not sufficient (80%). In addition other ideas are that education curriculums do not involve ESD sufficiently (79%) and elementary teachers are not adequately informed about ESD (77%). Furthermore, participants pointed out that current education in elementary schools is not sufficient to improve students' awareness about sustainable development (63%).

Perceived Barriers towards Education for Sustainable Development

Perceived barriers towards education for sustainable development were consisted of fourteen different statements that teachers may perceive as barriers. Their perceptions towards these barriers were measured via 1-7 Likert type scale. Point one reflects that teachers hardly ever perceive these statements as barriers, while point seven reflects intensity of their perceptions as barriers. The mean scores and standard deviations of elementary teachers' responses can be seen in Table 4.

Table 4.

Elementary teachers' responses on perceived barriers towards education for sustainable development

Items	Mean	SD
Lack of knowledge about teaching sustainable development	4.78	1.89
Lack of knowledge about sustainable development	4.67	1.97
Lack of instructional materials	4.40	2.09
Class size too large	4.28	2.18
Lack of principle support	4.23	2.19
Lack of funding	4.14	2.13
Lack of class time	3.87	2.05
Incompatibility with curriculum	3.73	2.01
No natural environment	3.63	2.08
Safety problems	3.59	2.02
Lack of preparation time	3.31	1.88
Inconsistency among sources	3.17	1.82
ESD is not relevant to what I teach	1.97	1.47
I am not interested in ESD	1.63	1.31

As it could be detected in Table 4, elementary teachers participating in the current study reported that their interest in ESD is not a barrier (M=1.63). Furthermore, consistency between their teaching fields and sustainable development (M=1.97) are also not perceived as an obstacle towards sustainable development comparing with other items. Furthermore, the mean scores of other twelve items are very close to each other and their mean scores cluster between 3.17 and 4.78. Nevertheless, lack of the knowledge about sustainable development (M=4.67), lack of knowledge about teaching sustainable development (M=4.78) were relatively common obstacles for elementary teachers. On the other hand, it was revealed that the standard deviation of the items was relatively high, which meant teachers' responses were spread out over a large range of values. Accordingly, teachers generally had different perceptions about barriers.

Strategies towards Education for Sustainable Development

The scale consisted of teaching methods with three choices as "I have used", "I have not used" and "I have not used because it is not appropriate for ESD" were directed to explore elementary teachers' preference towards instructional strategies. As presented Table 5, relatively large percentage of the respondents declared that they have used these teaching strategies.

Table 5.

Teaching strategies towards education for sustainable development

Strategies	Percentages (%)		
	I prefer	I do not prefer	I do not prefer because…
Brainstorming	91.2	8.8	-
Case study	86.8	13.2	-
Independent or group projects	85.9	14.1	-
Lectures	81.8	2.0	16.3
Educational games	78.5	20.0	1.5
Computer-assisted learning activities	77.6	21.0	1.5
Role-playing	76.5	23.0	1.0
Problem-solving activities	72.1	25.9	2.0
Guided discovery	70.6	28.9	.8
Indoctrination	70.1	13.9	15.9
Field trips	68.7	28.4	.9
Simulations/ animation/ modeling	59.9	39.6	.5
Experiments	58.6	38.4	3.0

Brainstorming (91%), case study (87%) and group projects (86%) were more frequently preferred strategies teachers prefer. In addition these three, elementary teachers stressed that they have used lectures (82%), educational games (79%), computer-assisted learning activities (78%), and guided discovery (71%). On the other hand, experiment (59%) and simulation/ animation and modeling (60%) were have used less frequently. Moreover, more than fifteen percentages of the elementary teachers have not used lectures and indoctrination since these teaching methods were not appropriate for sustainable development.

Conclusions and Discussion

UNESCO (2005) clarified the characteristics of ESD such as; interdisciplinearity and holistic, values driven, critical-thinking and problem solving, multi method, participatory decision-making, applicability, and locally relevant. These characteristics are also criterions which describe a qualified teaching with respect to ESD. Considering the rationale declared by UNESCO (2005), the beliefs of Turkish elementary teachers were portrayed with respect to various characteristics of ESD.

As to interdisciplinarity and holistic perspective, ESD could be integrated into education programs from various disciplines instead of a single and specific subject. Therefore, all teachers are required to possess the responsibility to involve the issues pertinent to sustainable development in their teaching. Consultation and cooperative working among teachers and school managers are necessary. Taking into account beliefs of the elementary teachers, it is also reasonable to conclude that these teachers possess some beliefs supporting holistic perspective of ESD. In addition they did not regard ESD as inconsistent with their own teaching field. Although these teachers were teaching in different fields, they thought that they could integrate ESD into their teaching field. From another perspective, elementary teachers tend to cooperate with teachers from different discipline with respect to ESD. This situation may contribute improvement of quality of ESD in elementary schools, and, therefore, development of students' appropriate perspective towards sustainable development.

Teachers stressed that they perceived many factors such as lack of instructional materials, principle support, funding and incompatibility with curriculum as barriers for implementation of ESD. On the other hand, they believe that both implementation and integration of ESD is not difficult for them. To put other words, barriers teachers face do not obstruct their implementation of ESD. This situation indicates that teachers are able to manage and overcome these difficulties they face. Eco-school and Green Pack project may contribute teachers to cope with barriers of ESD.

Teachers' favorable beliefs on holistic and multidisciplinary nature of education for sustainable development were an unexpected considering the limitations of the Turkish education system regarding ESD. Research examining the elementary school programs, textbooks, and activities emphasized lack of appropriate perspective with respect to ESD (Kaya & Tomal, 2011; Tanriverdi, 2009; Yapıcı, 2003). That is to say, there is limited formal guidance in order to direct both teachers and students to cooperative and interdisciplinary works in the field of ESD. Thus, teachers' favorable beliefs on holistic perspective may be shaped by means of the Green Pack and Eco-School projects they participated in. For instance, considering the design of the Eco-School projects, all teachers are responsible for enhancing teaching standards with respect to ESD in a school environment. Therefore, these responsibilities may contribute to teachers' perspective towards holistic and interdisciplinary nature of ESD.

Interaction among teachers and managers in the context of ESD implementations has been considered a significant agent in integration of ESD into formal education. School managers could act as facilitators of many ESD implementations carried out in various disciplines. However, according to findings of a previous research study, one of the barriers elementary teachers faced with was the lack of support from the head of the school (Stradling, Noctor, & Baines, 1984; Winter & Firth, 2007). In the current study, it is revealed that number of the elementary teachers perceived lack of principle support as a barrier are almost equal to number of the elementary teachers did not perceive. These different perceptions may stem from the differences design of the projects elementary teachers attending. Accordingly, cooperation between teachers and manager of the school is a requirement for the Eco-School projects. Therefore, the supports of the head of the schools may not be barriers for the Eco-School coordinator teachers while it may be a barrier for the Green Pack teachers.

ESD concentrates on many values such as respect for nature, equality, tolerance, prosperity and others. It is a way to equipped students with these values and teachers should consider value aspect of the ESD while teaching. As a consequence of this process, students become aware of both their own and other people's values. Therefore, value education is important in order to grow an individual respectful to other people. In the current study, participants perceive ESD as a suitable way to improve students' value. In addition they stressed values as one of the consideration for determining content of the education for sustainable development. These beliefs indicate that teachers perceive values as both input and output of ESD. To put other words, teachers may take into account values while designing their courses, and one of the aims of their courses may be to improve students' values.

Critical thinking and problem solving skills are one of the important part of ESD. These skills contribute students' questions towards unsustainable issues and facilitate analyzing them. Therefore, Mogensen (1997) suggested exposing to students with to the issues of sustainable development in a social context in order to improve students' critical and reflective thinking abilities. Moreover, UNESCO (2005) stressed that ESD should address debates and challenges of sustainable development to improve critical thinking and problem solving abilities. Correspondingly, teachers participated in the current study believe that environmental, economic and developmental issues are useful

in order to develop student critical thinking abilities. This indicates that elementary teachers may be aware of importance of critical thinking skills and try to develop students' skills.

Considering the fact that education for sustainable development should include value-driven and interdisciplinary and holistic, there is a need for different kinds of teaching techniques and strategies in which students actively participate decision making process (UNESCO, 2005). Participatory Elementary teachers also confirmed effectiveness of participatory decision making process and active role of the students while determining topics. These beliefs described democratic classroom environments where students are active participants of the ESD. Therefore, students not only acquire knowledge but also possess skills and values, which help them become responsible citizens. However, elementary education programs are not flexible to change considering students' expectations and demands. There are fixed topics teachers should follow. Classrooms are also usually crowded in Turkey. Taking into account these factors, it is almost impossible to consider each students' opinion while designing the courses regarding ESD. Therefore, teachers' beliefs regarding the students' active participation may refer to their demand more than their actual classroom environment.

As to multi-method perspective, the common points is that strategies should be learner-centered and interactive, which help students improve their skills for sustainable development (Cotton & Winter, 2010). In a similar vein, teachers' participating the current study explained that they prefer different type of the teaching strategies and they believe that the strategies that they prefer to use are beneficial and useful with respect to students' learning. . However, all teaching techniques declared by elementary teachers did not refer to student-centered and interactive characteristics. For instance, they stressed that they prefer indoctrination and lecturing techniques which are common traditional teaching strategies. This situation may be supported that teachers tend to use different teaching strategies, they ignore role of the students in teaching process. ESD is learner-centered. Even the projects support teachers with teaching materials, it may not be sufficient for teachers to acquire appropriate perspectives on the role of learners in teaching process. Therefore, compressive and intensive programs which covers philosophy of ESD would be more effective for elementary teachers' understanding on ESD.

Elementary teacher stressed that they rarely prefer some of teaching strategies. Frequency of the experiment, modeling, simulation, animation and field trip activities are less than other techniques. Their less preference on these techniques may be a result of limited facilities in their school environment. For instance, they also stressed that they perceived lack of funding, natural environment and instructional materials as barriers for ESD. Because of these limitations, they may not utilize some of the teaching techniques which support students' effective learning. Considering this rationale, teacher should be supported with respect to materials and funding in order to extend their teaching activities on ESD.

One of the interesting point is that experimenting has the lowest percentage comparing with other teaching techniques. Experimenting is one of the effective teaching method in order to develop students' critical thinking and cognitive skills. Therefore, it is suggested as one of the effective teaching way for ESD. However, many of the participant declared that they did not utilize experiments in the context of ESD. This results may be a consequence of the teachers' views on experimenting. Experiments may be perceived with its laboratory environment or rigorous physics, chemistry or biology concepts. However, in the context of the ESD, experiments can be conducted with simple materials and content of the experiment is associated with issues students' face in their daily life. This situation indicated that elementary teachers' perception of experiment may not be

appropriate and projects and teacher training programs should help teachers' repertoire about teaching on ESD.

Although descriptive analysis of elementary teachers' responses presented useful information for ESD in the context of Turkey, the further research should shed light on the new questions. For instance, teachers' classroom activities should be observed in order to reveal whether teachers' favorable beliefs shapes their decision making in classroom environment. In addition, one of the critical question is how effective environmental education projects. Therefore, further research should manifest potential differences between teachers' beliefs considering whether or not they participate in any projects.

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İlköğretim Öğretmenlerinin Sürdürülebilir Kalkınma Eğitimi Bağlamında Değerlendirilmesi*

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Özet

Bu çalışmanın amacı ilköğretim öğretmenlerinin sürdürülebilir kalkınma eğitimi açısından inanç, engel algıları, öğretim tekniği tercihlerinin tanımlanmasıdır. Çalışmanın örneklemi aynı zamanda Yeşil Kutu ve Eko-okullar isimli projelerinn katılımcısı olan 211 ilköğretim öğretmeninden oluşmaktadır. Veriler, "sürdürülebilir kalkınma eğitimine yönelik inançlar ölçeği", "sürdürülebilir kalkınma eğitimine yönelik engeller ölçeği" ve "sürdürülebilir kalkınma eğitimindeki teknikler ölçeği" isimli üç farklı ölçekle toplanmıştır. Ölçeklerin maddeleri, ortalama puanlar, standart sapma, frekans ve yüzde değerleri dikkate alınarak incelenmiştir. Sonuçlar, öğretmenlerin müfredat, sınıf mevcudu ve öğretim materyali eksikliğini gibi unsurları sürdürülebilir kalkınma eğitimine yönelik engel olarak algıladıkları ortaya çıkarmıştır. Bu engellere rağmen, öğretmenler sürdürülebilir kalkınma eğitimine yönelik olarak olumlu inançlara sahiptirler. Bu inançlar uluslararası raporlarda işaret edilen standartlarla da uyum içindedir. Bunun yanı sıra öğretmenlerin sahip oldukları inançların katıldıkları projeler aracılığı ile şekillenmiş olabileceği düşünülmüştür.

Anahtar Kelimeler: İlköğretim öğretmenleri, Sürdürülebilir kalkınma üzerine öğretim inançları, Öğretim teknikleri

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