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THE ROLE OF TEACHING METHODS IN PROMOTING ENVIRONMENTAL
EDUCATION IN KINDERGARTEN: A COMPARATIVE ANALYSIS OF TURKEY AND
NORWAY

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FOREWORD

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ABSTRACT:

Environmental education (EE) has a pivotal role in promoting environmental protection and awareness in society. This paper claims that in order to achieve developments in EE, in kindergartens, teaching methods are the key. It also highlights the significant role of culture in promoting children's positive attitudes towards the environment. Regarding the limited amount of literature and research on how teaching methods affect environmental education in kindergartens, this paper will contribute to the relevant research area by presenting what kinds of teaching methods seem to have positive effects on children's understanding of the environment and their attitude towards it. Turkey and Norway have been chosen for the analysis in order to see what causes possible differences between these two in the implementation of EE in kindergartens. A Qualitative research strategy has been applied in this thesis. Along with the literature review, in-depth interviews with kindergarten teachers and educational administrators from Turkey and Norway have been carried out. With this aim, a semi-structured interview guide has been prepared by the researcher. Findings of this study indicate that there is a close relationship between education and sustainable development (SD). It was also found that there seem to be four main teaching methods that have been used and/or recommended by kindergarten teachers from Norway and Turkey; (1) exposure to the natural environment (2) learning by experience (3) project method (4) visuals: images and videos. Based on this, it was revealed that the kindergarten teachers from Norway seem to focus more on "education *in* and *for* the environment" mostly by providing children regular exposure to the natural environment, while the kindergarten teachers from Turkey seem to focus more on "education *about* the environment" usually by promoting indoor environmental education with the use of visuals such as images and videos. The findings also seem to reveal that culture has a significant role in shaping children's understanding of the environment and their attitude towards it. Lastly, the results of this study point out that teachers are role models for children in developing positive attitudes towards the environment and, there is a need for environmental education for teachers, as well.

Keywords: environmental education, sustainability, kindergarten, teaching methods, Norway and Turkey

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CHAPTER I: INTRODUCTION:

1.1. Background

Increasing demand for energy and recklessness towards environmental problems such as global warming, climate change, and pollution are serious threats to the well-being of humans, all other species, and the whole planet. Human actions are considered as the major cause of these environmental problems (UNESCO, 1978). Therefore, urgent actions must be taken to control irreversible human impacts on the planet. Several scholars such as Schultz and Oskamp (1996) and Mansaray and Ajiboye (1998) suggest that the quality of the environment is remarkably dependent on the level of knowledge, attitudes, values, and practices of the individuals (Mat Said and Paim, 2010). Hence, environmental education can be a way of increasing this level and handling environmental problems and challenges by raising well-informed and responsible individuals who can contribute to creating a more sustainable society.

The modern definition of environmental education is suggested as follows: “*organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behaviour and ecosystems in order to live sustainably*” (Karama, 2016). With this respect, the main aim of EE is to bring up informed and responsible individuals who know the consequences of their actions and show positive attitudes towards the environment and the natural world. This study understands the importance of this and will explore the hypothesis that “in order to achieve developments in EE, teaching methods are the key”. If we know fruitful methods and activities that seem to have more positive impacts on children’s understandings about and attitudes towards the environment, we can bring up more conscious and responsible generations who care for the environment and the natural world.

The concept of environmental education goes hand in hand with the concept of sustainable development which is defined as “*the development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (World Commission on Environment and Development, 1987). Thus, the earlier we start EE the more opportunities we have to foster the idea of sustainable development and to increase more sustainable human actions. When young children get environmental education, they become capable of informing their environment, loving their environment, and developing conscious attitudes to protect their environment (Gülay, 2011). Thus, the target group of this thesis is children in the early childhood period since acquiring and adopting certain values and attitudes are easier at early ages than during adolescence (Erten, 2005) and those attitudes and values form the basis of

future behaviours. Hence, environmental education in kindergartens should and must be improved so as to encourage long-lasting sustainable attitudes towards the environment. Along with support from families, teachers can contribute to enhancing children' positive attitudes towards the environment by increasing their environmental awareness with proper and innovative methods and activities. As Nazlıoğlu (1991) and Stevenson (2007) emphasize, in order for children to understand environment- related topics and to develop close attachments to it, appropriate and effective methods must be implemented according to the level of children. In this regard, analyzing the role of teaching methods in promoting environmental education in kindergarten arises as an important issue to be elaborated on.

Norway and Turkey are two countries that have different approaches and histories regarding the EE. Kindergarten children in these countries have been taught about the concepts of environment and sustainability with different teaching methods and activities. There are reasons behind these differences which will be discussed deeply in other sections. Norway has a long history regarding the environmental education in kindergartens. According to the Ministry of Education and Research (2017) in Norway, teaching ecological sustainability to young children has been based on the idea that children should learn to love nature which will help them develop environmental connectedness. The concept of “sustainable development” has been emphasized to be a core value in the Norwegian National Curriculum which is called as “The Framework plan for the content and tasks of kindergartens” (Ministry of Education and Research, 2017). In this document, it is suggested that children should get a beginning understanding of the importance of sustainable development which includes love of nature and understanding the human-nature interactions.

On the other hand, Turkey does not have a long history of EE; however, recently, it has made considerable progress. Tuncer and Erol (2019) claim that the Turkish Education system does not provide interactive learning environments for children since it has been stable and based on memorization instead of research and exploration. Similarly, Öztürk-Kahriman, Olgan, and Tuncer (2012) emphasize the need for extension and development of the kindergarten curriculum in Turkey, in particular, outdoor activities in natural settings in order to enable children to gain more eco-centric understanding and manners. Thus, analyzing the differences of teaching methods in EE in these countries will enable the reader to gain new knowledge about the importance of methods and activities used in EE in kindergartens and, to get inspiration to apply innovative, effective and appropriate methods to teach children about the environment and sustainability. Also, the results of this study may encourage all kindergarten

teachers in the world or anyone interested in this topic to improve their point of view regarding EE. Ogelman and Güngör (2015) analyzed the studies published between 2000 and 2014 on environmental education in kindergartens in Turkey. Final results of their study suggested that there are insufficient numbers of articles and dissertations on this topic; hence, they recommended more doctoral and master dissertations and articles on environmental education in kindergartens are needed to be conducted. Therefore, this study holds a significant place in the field of environmental education.

Within the scope of this thesis, in addition to the literature review, semi-structured interviews have been conducted with kindergarten teachers and educational administrators in kindergartens in Norway and Turkey. In this study, environmental education does not only refer to teaching individuals about environmental issues, as it is generally considered, but it also involves promoting sustainable development. The current study uses these two concepts (EE and SD) interchangeably.

1.2. Why kindergarten children as the target group and why Norway and Turkey?

Children at early ages can acquire and adopt knowledge, skills, values, and attitudes more easily than adults. It is during the childhood period that the first bases of an individual's personality are formed (Young, 2002; Daries et al., 2009 & Bissoli, 2014). Although basic sensation and perception systems are completely developed as of children reach kindergarten period, other systems such as those involved in memory, decision making, social behaviour, and emotion are constructed in the early years of age and are strongly influenced by experiences during early childhood (Tierney & Nelson III, 2009). Thus, education in this period holds an invaluable place in individuals' life. Since experiences that occur in the early childhood period are long-lasting and are more likely to shape attitudes and characteristics of individuals, the environment that children are surrounded by is crucial. At this point, kindergartens have a great role and responsibility that will possibly affect the development of each child. Kindergarten teachers can contribute to enhancing children's positive experiences in this period with fruitful and authentic teaching methods that will benefit children's physical, cognitive, emotional, and social development.

On the other hand, the reason why Norway and Turkey has been chosen is twofold.

1- Turkey is a newly involved country regarding environmental education; thus, it is important to see why it is late for it and what are the consequences of being late in terms of EE. Norway, on the other hand, has been involved in environmental education for decades and it has been making good progress so far. Thus, by comparing these two countries' teaching methods in EE and, by discovering differences between these two countries' approaches, the reader will get immense knowledge and ideas about the relationship between education and sustainable development, the importance of teaching methods in EE, and, and how to improve EE in kindergartens.

2-Turkey is my home country, and I was born and raised in Turkey; therefore, I know the education system and methods used in teaching there. On the other hand, Norway is the country that I have been living for two years. Since I am a master student in Norway and also highly interested in educational issues, I have been following updates in the Norwegian education system, as well. Thus, I am quite familiar with the Norwegian way of teaching, too, which enables me to compare these two countries' approach to and implementation of EE in kindergartens.

1.1. Significance of the study

It is a well-known fact that most of the environmental issues such as global warming, climate change, pollution, biodiversity loss, etc., are caused by human actions. Thus, there is an urgent need to change this situation that has been continuously deteriorating our planet and the lives on it. In this study, it is claimed that one of the ways to change this predicament is providing quality and effective environmental education which also includes terms such as environmental awareness, sustainable development, education for sustainable development and early childhood education for sustainability. This research builds upon the hypothesis that teaching methods are the key to improve EE and foster the idea of sustainable development in kindergartens. Regarding the limited research on this issue, this study provides an insight both to kindergarten teachers and anyone interested in this field about different and innovative ways of implementing EE in kindergartens. This research will also present ideas about how to improve environmental education in kindergartens.

Analyzing the role of teaching methods in promoting environmental education in kindergartens is a very significant issue to be elaborated on since education is an essential tool for achieving sustainable development and to create a more just and sustainable world both for present and

also for future generations (UNESCO, 2017). Also, unraveling what kinds of teaching methods and activities seem to stimulate children's eco-centric attitudes towards the environment can help to enhance more effective and innovative teaching methods and activities to be used in kindergarten. The study provides authentic, appropriate and innovative ways of teaching children about the environment and sustainability. Therefore, this thesis will contribute to improving the implementation of EE in kindergartens in Turkey and Norway, which can inspire other countries' implementation and vision of the concept of EE. Except for the points mentioned above, the other reason to study this topic is a personal interest, as well. Having a background in educational studies and being interested in environmental issues and sustainability, I wanted to combine these two interconnected fields by choosing such a topic. Writing a thesis might be a stressful and tough process, hence, I believe that choosing an enjoyable and interesting topic that motivates the researcher can help to ease this challenging process.

1.4. Aim and research questions

The aim of the current study is to explore, identify and discuss the role of various teaching methods in promoting environmental education in kindergartens. With this respect, Norway and Turkey are chosen to be analyzed. By uncovering the differences between these two countries' teaching approaches and methods in the implementation of EE, it is aimed to discover and promote the development of fruitful, innovative and sustainably-friendly methods, approaches and activities in order to foster children within sustainable development in kindergartens. The role of culture regarding the implementation of EE in Norway and Turkey will also be discussed. The other objective of this study is to understand the relationship between education and sustainable development in order to promote changes in knowledge, competencies, values and attitudes to create a more sustainable and equal society.

So as to meet the abovementioned objectives, this research will answer the following main research question:

“How can teaching methods facilitate developing environmental education and education for sustainability in kindergartens?”

In order to answer this main research question, the following sub- questions will be addressed:

1. What is the relationship between education and sustainable development?

2. What kinds of teaching methods/activities are being used in kindergartens in Norway and Turkey regarding EE and sustainable development? What are the differences between these two countries' approaches?
3. What possible influence of culture regarding the implementation of environmental education and sustainable development can be identified?

1.5. Disposition

This research has been structured as follows:

- Chapter 1 presents why the topic in this research is relevant and significant to study right now, why kindergarten children as target group and why Norway and Turkey have been chosen to be investigated, and lastly, it presents the research questions to be answered in this study.
- Chapter 2 aims to review the literature on the chosen topic.
- Chapter 3 provides theoretical choices, terms and concepts that are used in this study.
- Chapter 4 explains the methods and research design used in this research. It also presents the data collection and analysis processes as well as the validity of the study.
- Chapter 5 demonstrates the results of the study and presents discussion.
- And lastly, Chapter 6 presents conclusion including limitations of the research and recommendations for future research.

CHAPTER 2: CONTEXTUAL BACKGROUND

2.1. The relationship between education and sustainable development

“A fundamental change is needed in the way we think about education’s role in global development, because it has a catalytic impact on the well-being of individuals and the future of our planet. ... Now, more than ever, education has a responsibility to be in gear with 21st-century challenges and aspirations, and foster the right types of values and skills that will lead to sustainable and inclusive growth, and peaceful living together. “

Irina Bokova, Director-General of UNESCO (UNESCO, 2017).

To be able to analyze the relationship between education and sustainable development (SD), first, we need to understand what sustainable development is. Defining the concept of sustainable development is not an easy task since it is still an evolving concept. However, one of the classical definitions of sustainable development was adopted in the Brundtland Commission as follows: “*Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (World Commission on Environment and Development, 1987). In 2015, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development were adopted by the United Nations General Assembly to lead humanity towards a more sustainable, equal and peaceful life on earth both for present and future generations (United Nations, 2015). Education is an essential part of sustainable development and it is crucial to achieving the SDGs. In this respect, UNESCO (The United Nations Educational, Scientific and Cultural Organization) conducts the Education 2030 Agenda which is part of a global action to promote a sustainable life through 17 Sustainable Development Goals by 2030 (UNESCO, 2017). Quality education is one of the SDGs (Goal 4) that aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.” This shows that education has been given high priority to achieve SDGs. Thus, The Education 2030 Framework for Action can be seen as guidance for implementing this ambitious goal and commitment (UNESCO, 2017).

Sustainable development is an integrative concept that comprises three principal dimensions; environmental, social, and economic. These three dimensions of SD have also been mentioned in several UN documents such as UNCED 1992 and UNESCO 2005. The environmental pillar is about the protection of ecosystems and their biological diversities; the social pillar includes justice, equality and a democratic approach; and the economic pillar is concerned about a financial approach to resources where economic development affects humans and/or the environment in a positive way (Hedefalk, Almqvist, & Östman, 2015). Overall, we can understand that these three dimensions demonstrate the connection between individuals’ attitudes, natural environment and society which are all dependent on each other. In order to achieve sustainable development, balanced integration of economic, social and environmental dimensions is required (UN, 2015). Thus, when teaching people about nature and environment, the other two dimensions (economic and social) should also be included and addressed properly.

When it comes to the relationship between education and sustainable development, it is complicated, too. Many researchers claim that education is essential to promote sustainable development and to raise individuals' environmental awareness as well as increase their sustainable actions regarding the environment (Hopkins & McKeown, 2002; Heggen, 2016; Sageidet, Heggen, Ugelstad, Grøsvik & Eikeland, 2020). As it is emphasized in Agenda 21, Chapter 36 (United Nations Conference on Environment and Development, 1992), in order to achieve this target, environmental and development education are required to take aspects of the physical/biological and socio-economic environment and human development into account and there is a need for the implementation of formal and non- formal methods and effective means of communication (p.320).

Discussing the relationship between education and sustainable development, it is crucial to mention the concept of "Education for Sustainable Development (ESD)". The concept is generally considered as education that promotes changes in knowledge, competencies, values and attitudes to create a more sustainable and equal society for everyone (Leicht, Heiss & Byun, 2018, p.7). The origin of ESD could be based on the need for education to address continuously increasing environmental issues (p.7). Thus, education should be comprehensive enough to provide and promote required skills, knowledge, values and attitudes that individuals need to contribute to sustainable development (UNESCO, 2017).

In all educational institutions-from preschool to higher education- the concept of sustainable development must be taught in order to enhance informed individuals who care about their actions and consequences of their actions for the environment (Sageidet, 2019). At this point, learning environment and teaching methods have a significant role to provide abovementioned qualities. In a nutshell, it is understood that education and sustainable development goes hand in hand. It was precisely summarized in this section that sustainable development should be integrated into education in order to provide children enough exposure to the concept and allow them to contribute to it by comprehending it truly and being eager to take necessary actions for sustainable development.

2.2. History and development of environmental education in a global level

It is well-acknowledged that human actions have been the major cause of environmental changes on the Earth. Since the 1950s, the influence of human actions on the Earth system has dramatically escalated (Lewis & Maslin, 2015), thus it has put so much pressure on the planet

that we encounter today's extreme environmental problems such as climate change, global warming, loss of biodiversity, pollution, deforestation and many more. What is worse is these environmental changes may become a major cause of the extinction of global species than direct habitat destruction (Tilman & Lehman, 2001).

Human-induced environmental changes on the planet have led to suggestions to coin a new term of a geological era in Earth's history, "the Anthropocene". It is an era characterized by intense and prevalent human actions that can be traced in major parts of the earth strata (Crutzen, 2016; Zalasiewicz, Williams, Haywood & Ellis, 2011). It is estimated that Anthropocene has started in the last Phase of the eighteenth century, documented by investigations of air trapped in polar ice, which show the beginning of increasing global concentrations of carbon dioxide and methane (Crutzen, 2016). If the situation continues as it does now, humans will remain as the main environmental force for many millennia (Crutzen, 2016). Even if there are some hopeful indications that show an increasing concern about protecting and conserving nature, threats still exist (Goudie, 2013). Thus, it is urgent to inform all of the individuals about environmental problems that we have been causing and protection and conservation of the natural environment to have a secure, livable and sustainable world. Environmental education can facilitate this process of informing and educating individuals about the consequences of their actions and environmental problems as well as fostering their environmentally-friendly behaviours and attitudes.

Eneji, Akpo, Mbu and Etim (2017) claim that the origin of environmental education can be traced back to the eighteenth century when Jean-Jacques Rousseau drew attention to the significance of a kind of education that focuses on the environment in *Emile: or, On Education*, several decades later, Louis Agassiz, a Swiss-born naturalist, improved Rousseau's ideology and he encouraged students to "Study nature, not books." These two remarkable scholars are considered as the founders of the basic Environmental Education program. The growing human influence on the planet has been acknowledged in 1926, by Vladimir Ivanovich Vernadsky who stated the following sentence: "*The direction in which the processes of evolution must proceed, namely towards increasing consciousness and thought, and forms having a greater and greater influence on their surroundings*" (Crutzen, 2016). It is considered that the evolution of environmental education has been highly affected by several eighteenth and nineteenth-century thinkers, writers and educators, namely Goethe, Rousseau, Humboldt, Haeckel, Froebel, Dewey and Montessori (Palmer, 1998). However, the first use of the term 'environmental education' on an international level is claimed (Disinger, 1983) that it was in

1948, in Paris, by Thomas Pritchard at a meeting of the International Union for the Conservation of Nature and Natural Resources (IUCN); while Wheeler (1985) asserts that the term was firstly used in the book *Communitas* by Paul and Percival Goodman in 1947 (Palmer, 1998).

When it comes to the formation of the term “environmental education” there has been ongoing disputes on it. Yet, it would not be wrong to say that the International Union for Conservation of Nature (IUCN)’s attempt to define the term can be considered as a turning point in the evolution and development of the field of environmental education in the international level. The IUCN is an international organization established in 1948, concerned with nature conservation and hastening the transition to sustainable development (IUCN, 2020). In 1970, IUCN organized a meeting in Nevada, USA called as ‘International Working Meeting on Environmental Education in the School Curriculum’ and attempted to define the term of ‘environmental education’ there as follows:

“Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental Education also entails practice in decision making and self-formulation of behaviour about issues concerning environmental quality (IUCN, 1970) (Palmer, 1998).

Realizing the degradation of the environment and its consequences for the planet, nations have started taking more serious actions by organizing conferences and events to take attention to the environmental protection and a sustainable way of living. The United Nations Educational, Scientific and Cultural Organization (UNESCO) held a Biosphere Conference in Paris, in 1968 and regarding the event, IUCN proclaimed that ‘perhaps for the first time, world awareness of environmental education was fully evidenced’ (IUCN, 1971). This conference was a call for the improvement of curriculum materials concerning studying the environment for all levels of education, promoting technical training and global awareness of environmental problems (Palmer, 1998).

Promoting environmental education has gained pace during the 1970s leading to plenty of conferences and organizations to be held about environmental protection and raising awareness of environmental problems among all individuals in the world. One of the most important of them was the Stockholm Conference (UN) on the Human Environment which was held in 1972 in Sweden. It was stressed on this conference that human-induced actions cause a great deal of

harm to the earth such as water and air pollution, a vast amount of disturbances to the biodiversity, destruction and depletion of natural resources. And these seemingly threaten the physical, mental and social well-being of humans. Thus, the conference suggested 26 principles to be implemented urgently and Principle 19 was a particular call for “education in environmental matters, for the younger generation as well as adults,” (UN General Assembly, 1972) so as to increase informed and responsible individuals. It is also proclaimed in the conference that humans are able to transform their surroundings and if they can use this ability wisely, they can contribute to enhancing the quality of life, however, if misused, the same ability could cause irreversible harm to human beings and their environment which is already happening, as mentioned above. Overall, this conference was a turning point in the field of environmental education and it was a great source of motivation for authorities of all around the world to develop their understanding and actions promoting environmental awareness in all levels of education.

In the following years, Belgrade (1975) and Tbilisi (1977) Conferences have been organized on environmental education (UNESCO, 1975). In the Belgrade Conference, it is emphasized that changes must occur in all of the world’s countries in order to improve the quality of the environment and thus the quality of life for present and future generations. It is claimed that a reform in educational processes and systems is essential to achieve this goal, especially the young generation must receive a new kind of education in order to make permanent changes, not short terms. In the Belgrade Conference, the goal of environmental education was identified as follows:

“To develop a world population that is aware of, and concerned about the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions to current problems, and the prevention of new ones.”

And the objectives of environmental education are described in the Belgrade Conference as follows:

1. Awareness: to help individuals and social groups to acquire an awareness of and sensitivity to the total environment and its allied problems.

2. Knowledge: to help individuals and social groups acquire basic understanding of the total environment, its associated problems and humanity's critically responsible presence and role in it.
3. Attitude: to help individuals and social groups acquire social values, strong feelings of concern for the environment and the motivation for actively participating in its protection and improvement.
4. Skills: to help individuals and social groups acquire the skills for solving environmental problems.
5. Evaluation ability: to help individuals and social groups evaluate environmental measures and education programmes in terms of ecological, political, economic, social, esthetic and educational factors.
6. Participation: to help individuals and social groups develop a sense of responsibility and urgency regarding environmental problems to ensure appropriate action to solve these problems.

UNESCO (1975)

Two years after the Belgrade Conference, The Tbilisi Conference has been held on environmental education by UNESCO in Georgia in 1977. It has the privilege of being the first intergovernmental conference on Environmental Education. The central points emphasized in the conference were “the major environmental issues in the contemporary world, the role of education in facing the challenges of environmental issues; present efforts at the national and international levels for the development of environmental education; strategies for the development of environmental education at the national level; regional and international co-operation for the development of environmental education: needs and modalities” (UNESCO 1977). The Conference presented some recommendations for the broader implementation of environmental education in both formal and nonformal education.

In the final report of the Tbilisi Conference, three goals of environmental education have been described as follows:

1. To foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas.

2. To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment.
3. To create new patterns of behaviour of individuals, groups, and society as a whole, towards the environment.

(UNESCO, 1977)

The Belgrade and Tbilisi Conferences were prominent gatherings in history regarding the development of environmental education. Yet the field has still had a way to evolve with more conferences organized all around the world. One of the most remarkable events in the field of environmental education was the United Nations Conference on Environment and Development- The Earth Summit- in Rio de Janeiro, Brazil, in 1992, exactly two decades after the Stockholm Conference. The greatest outcome of this Summit was the release of Agenda 21, a major action programme suggesting “what nations should do to achieve sustainable development in the twenty-first century” (Palmer, 1998). Agenda 21 comprises of 40 chapters including topics such as poverty, education and free trade. The Agenda 21 has some points regarding environmental education, especially Chapters 25, about Children and Youth in Sustainable Development, and Chapter 36, about Promoting Education, Public Awareness and Training. Chapter 36 had a particular focus on public education, awareness and training, which affirms the role of education and the significance of directing Environmental Education towards the perspective of sustainable development (Eneji, Ogar, Akpo, Mbu & Etim, 2017). Another significant document revealed from the Summit is the Rio Declaration, which consists of 27 principles for sustainability. Thus, the Rio Declaration presents a detailed plan for a sustainable future while Agenda 21 is kind of a guiding programme for its interpretation (Palmer, 1998).

These abovementioned conferences and declarations have drawn the attention of the global community to further discuss environmental problems and find solutions to these problems. With this aim, the United Nations General Assembly (UNGA) declared the Decade for Education for Sustainable Development spanning from 2005 to 2014 in order to create a more sustainable, equal and livable world through changes in behaviour (UNESCO, 2005). To enable this, Decade of Education for Sustainable Development aims to integrate the principles, values, and practices of sustainable development into all aspects of education and learning (UNESCO,

2005) active participation of individuals. Thus, ESD is seen as a lifelong education process that enhances awareness of individuals on environmental matters and empowers them to make changes in their surroundings.

2.2.1. Environmental education in Norway

The environment and nature have been a great concern in Norwegian culture since a long time. Norwegian way of life supports the protection and conservation of the environment. Being in nature and outdoor has almost been a tradition for every Norwegian citizen. Norway has a long history of the tradition of outdoor education and sustainable implementations, for instance, recycling in kindergartens (Sageidet, 2014). In Norway, environmental awareness and concerns about the protection of the environment had gained great attention in the 1970s in a way that this growing interests and concerns led to the appointment of Norway's first Minister of the Environment in 1972 (Berntsen 2011). The concept of environmental education (EE) has been integrated into schools' curricula since the 1970s while the concept of education for sustainable development (ESD) was included after Agenda 21 was adopted at the UN Conference on Environment and Development which took place in Rio de Janeiro, Brazil, in 1992 (Sætre, 2016).

The World Commission on Environment and Development (WCED), also known as Brundtland Commission, chaired by the Prime Minister of Norway at that time, Gro Harlem Brundtland, produced a report in 1987, called 'Our Common Future', or the 'Brundtland Report'. This report describes the sustainable development as: *'Development that meets the needs of the present without compromising the ability of future generations to meet their needs'* (WCED, 1987).

The report provides several recommendations for both institutional and legal change which can be presented under six sub-sections:

- Getting at the Sources—International and regional organizations and national governments must start making bodies directly accountable for the environmental effect of their actions.
- Dealing with the Effects—Agencies formed to protect and restore the environment should be reinforced, especially the United Nations Environment Programme.

- Assessing Global Risks—The capacity to identify, assess and report on risks to the environment must be improved. This should not only be the responsibility of individual governments; a new independent co-ordinating body should be set up.
- Making Informed Choices—The public, NGOs, scientists and industry should all have the opportunity to participate in decision-making.
- Providing the Legal Means—National and international law is being outpaced by events. Governments must fill the major gaps.
- Investing in our Future—The overall cost-effectiveness in halting pollution has been shown over the last decade. But a commitment to sustainable development has large financial implications, and a new priority and focus must be taken up by financial institutions, aid agencies and governments. Developing countries need a strong infusion of financial support from international sources for environmental restoration, protection and improvement. Major lending agencies like the World Bank, the International Monetary Fund, and the regional development banks should upgrade their environmental programmes.

(Palmer, 1998)

Overall, it seems that the Brundtland Report puts too much emphasis on economic growth and technological development which was criticized by some scholars such as Reid (1995) and Verburg and Wiegel (1997). For instance, Reid (1995) asserts that unless apparent specifications of new ecological growth have been made, the insistence on economic growth will adversely affect the potential of technological change to push back the ecological limits (p.35). The other issues addressed in the report were the role of technology and the international economy, population growth, food security, industry, the urban challenge, the fate of the commons, peace and security, proposals for institutional and legal change (Langhelle, 1999). However, there were not many indications or interpretations regarding the role of education for sustainability in early childhood. It can be an arguable issue that one of the central points should have been made on the importance of education for sustainability. Another important development in the history of EE in Norway is the UN's Decade of Education for Sustainable Development (DESD) (UNESCO, 2005), After the declaration, Norway implemented DESD for the period 2006–2010 through guidelines for education for sustainable development (Directorate of Education, 2006).

Sageidet (2014) claims that responsibility for the protection of nature, being respectful for nature and environment, and being interested in sustainability have already been in Norwegian society even before the Brundtland Report. Norway has a long tradition of being outdoors and in nature regularly. Thanks to these cultural traditions, Norway is among the first countries that recognize the significance of education for sustainability in the early years.

Regarding the early childhood, there are two significant documents in relation to environmental education and sustainable development in Norway. First one is the Kindergarten Act which came in force in 2006 (Ministry of Education and Research, 2005). The Kindergarten Act provides the support and regulations for every child under compulsory school age, living in Norway to attend kindergarten. The document consists of eight chapters that present some guiding information both for parents and kindergarten authorities. The second one is the document that attracts the attention of this section the most, the Framework Plan for the Content and Tasks of Kindergartens which entered into force in 2017 (Ministry of Education and Research, 2017). The document comprises of nine key sections: core values, roles and responsibilities, objectives and content, children's participation, cooperation between home and kindergarten, transitions, kindergarten as a pedagogical undertaking, working methods, and learning areas. Under the section of core values, sustainable development takes its place as a particular sub-section which shows the Norwegian government's particular interest in increasing consciousness and awareness about the importance of starting education for sustainable development in the early years of life. The sustainability development section is aimed to foster children's love of nature as well as understanding their interactions within the natural environment by outdoor activities and being connected with nature. It is also emphasized in this section that kindergartens should help to make the children understand that their actions today have consequences for the future (Ministry of Education and Research, 2017, p.10).

However, Andersen and Wennevold (1997) claim that while environmental education in Norway has mostly been reinforced, the position of geographical education has been reduced in schools. They claim that Norwegians have used the landscape extensively for fishing, agriculture, forestry and hunting which ultimately created the concept of the environment as nature with small or negligible human imprints. That means that for Norwegians environment means nature, and even a very biocentric concept of nature in which environment is regarded as animals and plants while elements like soils, rocks and landforms and processes like the work of running water or weathering are ignored (Andersen and Wennevold, 1997). They

further assert that this biocentric understanding of the 'environment' can be seen in the context of environmental education in schools and in the way the mass media treats the environment.

The Framework Plan has seven learning areas that children should be acquainted with in kindergartens, and one of them is 'Nature, environment and technology' which focuses on the importance of outdoor exploration and experiences which are considered as best ways of encouraging environmental awareness and an enthusiasm in children to protect the natural resources, preserve biodiversity and contribute to sustainable development. It is also expected that kindergartens should enable children to appreciate nature and give them opportunities for outdoor experiences. Also, it is underlined that kindergartens should foster children's curiosity about natural phenomena and make them feel connected to nature by providing a variety of outdoor experiences and helping them to discover nature as an arena for play and learning. Children in kindergartens are also expected to learn about nature and sustainable development, learn from and develop respect for the natural environment and acquire an early understanding of conserving nature (Ministry of Education and Research, 2017, p.52).

The Framework Plan for the Content and Tasks of Kindergartens has guidance for teaching methods as well. It is considered that the choice of methods can help to make the content exciting and varied as well as to stimulate enthusiasm, interest and motivation in children. Thus, it is required by the Framework Plan that when teaching contents and choosing themes and projects, the staff in the kindergarten should take children's experiences and interests into account in their day-to-day work (p.43). Progression in kindergarten content has also been given attention in the Framework Plan in a way that it is suggested that all children are expected to achieve progress which can be done through the selection of pedagogical content, working methods, toys, materials and settings of the physical environment (p.44).

Overall, it is obvious that Norwegian kindergartens have great effort to promote sustainable development through their regulations, teaching methods and understanding of the importance of the concept. Given that the Kindergarten Act (2005) and the Framework Plan for the Content and Tasks of Kindergartens (2017) are the work of government, it is undeniable that the government has a crucial role in the process of enhancing the understanding of this concept just from the early years of life. The advantages that Norwegian kindergartens have such as being able to provide exposure to nature regularly and taking trips to the woods, forests quite often make them privileged in raising environmentally literate and responsible citizens who know their actions will have consequences for the future generations and their surroundings.

Beery (2012) emphasizes the Nordic cultural tradition of “*friluftsliv*”, which he defines as “nature-based outdoor recreation”, can help to foster the idea of connectedness to nature as an essential part of the culture. According to the results of the study by Beery (2012), environmental connectedness can develop over time and through regular experience which indicates that exposure to nature, as in nature-based outdoor recreation, to facilitate lifelong regular nature experience, might be a significant part of achieving connectedness and sustainability.

2.2.2 Environmental education in Turkey

The Turkish Educational System comprises of four levels; pre-school, primary, secondary and higher education. Compulsory education is 12 years based on the 4+4+4 system that involves primary (4 years), secondary (4 years) and higher education (4 years). In Turkey, both public and private schools are administered by the Ministry of National Education (MONE). The Ministry has a mission of providing settings and opportunities to raise individuals who have developed competence of thinking, understanding and problem solving ; who are equipped with the knowledge and skills required by information society; who internalize the universal values of national culture and humanity and democracy; who are open to communication and sharing; who have developed sensitivity and skills for art; who have high self-confidence, self-respect, sense of equity, justice and responsibility; who are diligent, entrepreneur, creative, innovator, pacifist, healthy and happy’ (MONE, 2020). Given the abovementioned qualities and competencies required by the Ministry of National Education, it can be seen that there is no explicit addressing to sustainability or environmental issues. Yet, one can argue that ‘internalizing the universal values of humanity and democracy and being happy and healthy might refer to the competence of being environmentally aware and responsible.

It was after 1982 that the concept of environment was included in the formal school curriculum in Turkey, but not in the kindergarten level (Doğan, 2007). In the 1990s, several projects that emphasized education for the environment in primary schools were initiated (Haktanır , Güler, Öztürk 2016). Also, in 1994, the Seventh and Eighth Five-Year Development Plan Environment Commission underlined the importance of education for environmental awareness to prevent environmental problems (Haktanır , Güler, Öztürk 2016). Soykan and Atasoy (2012) also claim that the actual initial step in environmental education is claimed to be taken in the “Turkey Environmental Education Seminar” in 7-8 June 1990 organized by the

Undersecretariat of Environment with the collaboration of UNESCO-UNEP One of the main points made in the seminar was the importance of environmental education in the early years of life and that it being a life-long education process. Another important event in this regard was the 1st Environment Council in 18-21 September 1991 in Ankara organized by the Ministry of Environment and Urban Planning(Soykan& Atasoy, 2012). There are also some non-governmental organizations (NGOs) and public organizations that have contributed to the development of environmental education in Turkey such as The Turkish Association for the Conservation of Nature (TTKD); The Turkish Environmental Conservation and Greening Association (TÜRÇEK); World Wild Fund (WWF-Turkey); The Foundation for the Protection and Promotion of the Environment and Cultural Heritage (ÇEKÜL); The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA); The Turkish Environmental Education Foundation (TÜRÇEV).

The latest Preschool Education Programme prepared in 2016, by the Ministry of National Education is a guide providing a great deal of information about the aims and principles of early childhood education, the developmental characteristics of children between 36-72 months, monthly plans, activities, setting up learning centers for certain subjects such as book center, music center, art center, science center, etc., and suggestions for tasks and contents for kindergartens. The programme has ten activity types consisting of Turkish activity, art activity, drama activity, music activity, movement activity, game activity, science activity, mathematic activity, preparation for reading and writing activity and field trips. It is also emphasized in the programme that these activities can be done outside of the classroom, as well. If the conditions allow it is more appropriate for children to do activities in outdoor (MONE, 2016).

Under the title of ‘science activity’ in the programme, it is suggested that these are the activities that lead children to draw attention, ask questions, wonder, observe, search, analyze and discover. While these activities introduce life realities, they will also raise environmental awareness in children. Teacher’s role is also underlined here, “in order for children to develop positive attitudes towards the environment and treat it in the right way, teachers’ attitudes should also be positive and right towards the environment” (p.26). Some of the activities suggested by this programme are; doing simple experiments, discoveries and inventions; knowing and using tools such as magnet, magnifying glass, compass, scales, and microscope; examining natural and unnatural elements and inviting key persons in the related science field as a quest, walking in natural places, observing living and non-living creatures in nature, informing children about the values and protection of creatures, preparing food in the

kindergarten kitchen, making collections, analyzing the board for seasons and weather, analyzing books, album and journal, taking photographs, analyzing photographs and watching documentaries (p.26).

Another title in the Pre-school Education Programme is 'learning centers' involving nine subjects; block, book, music, art, science, dramatic game, computer, sand and water centers. These centers are important for children because well-prepared educational settings support children's effective learning and develop their creative problem-solving skills (p.42). Science center aims to stimulate children's sense of wonder and learning as well as support them to learn new things about the world they live in (p.46). According to the programme, kindergartens can provide the following materials in science center; aquarium, clock, calendar, ruler, tape measure, meter, calculator, sandglass, ball, map, pictures of countries, microscope, stethoscope, computer, mirror, thermometer, chronometer, compass, binoculars, rope, rubber, raffia, ribbon, windmill, magnet, scales, dry leaves, stones, insect collections, bottles and spoons used as measuring containers, science books, slide and slide machine, camera, photograph machine, photos about science and nature, posters, films, documentaries, a model of the human body, skeleton pattern, tooth model, domestic animals, cage for domestic animals, bird nests, animal feathers, plants, germination containers, sand, clay, soil, water, seashells, torches, hairdryers, batteries, wires, bulbs, electrical devices like radio, drainer, funnel, plastic containers, caps, cake molds and various kitchen utensils like buckets, different legume families like bean, pea, lentil and seeds, flour, salt, sugar, baking powder, glue, candle, chalk, cotton, comb, fabrics in different textures, scissors, food pyramid panel, balloons, nylon bags, various iron and wooden sticks and x-ray films (p.53). Science center is the place where environmental and natural understanding and concepts are expected to be integrated into the learning subjects. Thus, it is important to have aims and principles for increasing environmental awareness and promoting sustainable development in these centers. Taking all abovementioned issues into account, one can argue that there is no direct attribution to sustainable development in the Preschool Education Programme (MONE, 2016), however; we can see that nature and environmental awareness are among the topics addressed in the programme. Materials and objects that can be provided in science centers, as mentioned above, may also help to foster children's environmental awareness and sense of responsibility for the environment as well as raise their positive attitudes towards the environment and nature.

Overall, the Pre-school Education Programme seems taking effective and appropriate steps for promoting environmental awareness and protection in kindergartens, yet the question is how

much of these are actually practiced in real life? We will find answers to this question in other chapters, particularly in the results and discussion chapter.

Some studies have been done regarding the analysis of Pre-school Education Programmes in terms of environmental education, yet all of them focused on previous Pre-school Education Programmes. For instance, Gulay and Ekici (2009) analyzed 2006 Pre-school Education Programme and their findings suggest that the programme was not enough for promoting environmental education in pre-schools. They further claim that there were fewer aims, competencies and concepts in terms of environmental education in the programme. Another study (Buhan, 2006) conducted research on pre-school teachers' environmental awareness in Turkey and it concluded that 2006 Pre-school Education Programme included more aims and competencies regarding environmental education compared to the 2002 Pre-school Education Programme. Ogelman and Güngör (2015) analysed the studies published between 2000 and 2014 on environmental education in pre-schools in Turkey. Final results in the study assert that 2013 Pre-school Education programme provides learning outcomes and indicators such as “preserving aesthetic values” and “observing living and non-living creatures” for a child to know and protect their environment. The study also claims that in order for children to gain these learning outcomes and indicators, the settings and strategies required to be adjusted are also important. Thus, we can interpret that there has been progress and development in terms of increasing objectives for promoting environmental education in Turkey. Each abovementioned Pre-school Education Programme has adopted more aims and regulations for enhancing environmental awareness and protection compared to the previous ones, hence the government's effort to enhance environmental education in kindergartens should not be disregarded. In the results and discussion section, we shall come back to this issue.

On the other hand, Kahriman- Öztürk, Olgan and Tuncer (2012) conducted a study to discover Turkish pre-school children's environmental attitudes towards environmental issues. With this aim, they have interviewed 40 pre-school children. The findings of the study revealed that children care for nature and support environmental protection but not for the sake of the environment itself, rather to maintain and enhance their own lives. Thus, the study suggests that environmental issues should be integrated into early childhood programmes and should include outdoor activities as well as indoor activities. Without a doubt, being exposed to nature regularly and having outdoor experiences has an immense role in enhancing environmental awareness. By being in contact with nature, children learn the processes of ecosystems and understand the human impact on the sustainability of these ecosystems which lead them to

develop more responsible attitudes towards nature (Soykan& Atasoy, 2012). Lack of this exposure might cause children to be less aware of the importance of environmental preservation and protection; and therefore, less capable of showing responsible attitudes towards the environment. According to Kahriman- Öztürk et al. (2012), in Turkey, there is no structured environmental education programme in kindergartens. Even though the Pre-school Education Programme aims to provide a suitable basis for environmental education programs, practiced educational implementations in kindergartens is required to be enriched and generalized (Gulay & Ekici, 2010). Hence, even if there are some indications showing that there has been an improvement in Turkish Pre-school Education Programmes regarding environmental education, they need to be expanded and developed, particularly the promotion of outdoor activities in the natural environment.

2.3. The need for environmental education in early childhood

Given that today's children are the ones who will suffer the most from environmental problems and our unsustainable habits, it is our responsibility and their right to be educated well-enough to empower themselves with knowledge, values, attitudes and skills required to adopt and promote a sustainable way of life. This does not mean that we, as today's adults, will continue to deteriorate the natural environment and then, educate the future generations about living in more sustainable manners. Absolutely not! All individuals are definitely required to receive environmental and sustainability education to change their attitudes for the benefit of environmental and human well-being. Yet, this issue needs to be addressed more broadly in another study.

It was during the early 1990s when the connections between environmental problems and early childhood education were recognized (Davis & Elliot, 2014). During the same period of time, the foundations for the concept of “early childhood education for sustainability (ECEfS)” were also laid by some practitioner publications and environmental education practitioner networks (Davis and Elliot, 2014; Elliott, Ärlemalm-Hagsér & Davis (Eds), 2020). When looking at the literature review on ECEfS, we see that there has been a slow improvement in research and practice of adapting this concept to a global level. However, nowadays, the importance of beginning early with education for sustainability is being recognized much clearer (Davis, 2009). ECEfS does not expect young children to solve the environmental problems created by adults, rather it promotes the tools and skills that empower them to think critically and comprehend concepts such as “sustainable” and “unsustainable” (Spiteri, 2018).

Next generations, in fact, today's young children, are the ones who will be affected the most by our present actions in the world. In spite of this fact, the importance of environmental education and early childhood education for sustainability is disregarded by many countries or authorities across the globe. Hence, promotion of educating future generations for a sustainable way of life and about environmental issues is enormously significant. Children at early ages have the greatest ability to learn and develop (Daries et al., 2009). Early years of life are significant for each individual since children begin forming the basis to develop their values, attitudes, skills, behaviours and habits, which may be long-lasting, therefore; early childhood education has a great capability to enhance values, attitudes, skills and behaviours that promote and support sustainable development – e.g using resources wisely, cultural diversity, gender equality and democracy (UNESCO, 2008, p.12).

During early childhood period, socio-environmental factors start modifying genetic inheritance, brain cells grow to a very large extent; and biological pathways for coping with stress arise (Young, 2002, p.3). Young also claims that brain development at early ages can have consequences for physical and mental health, learning, and behaviour throughout life. Given that the development of a young child's brain is affected by environmental stimulations, particularly the quality of care and interaction the child receives, this quality of care and interaction can have a long-lasting effect on brain development (p.5). Considering that kindergartens are the places where children are often taken care of and being in interaction, kindergarten teachers have a pivotal role in fostering the idea of living in a sustainable way, promoting environmental awareness and protection and teaching environment and its importance.

When young children receive environmental education, they will be capable of informing their environment, developing a love for their environment and conscious attitudes to protect their environment (Gülay, 2011). Given that children's role is significant to transform to a sustainable lifestyle, their understandings and perceptions of the concepts such as environmental protection and sustainable development should be constructed well enough to make them informed and responsible individuals of future generations. Regarding this, Frantz and Mayer (2014) assert that the connection to nature has been considered as a precondition to adopt an environmentally responsible behaviour. The fact that children are very sensitive to nature and its elements such as animals, plants, flowers, water, the land, wind, etc. encourages them to be connected to and interested in nature (UNESCO, 2008). Thus, educators can take this into account and enable children to have a regular contact with and in the natural

environment in order to foster their connection with nature and allow them to discover and understand issues concerning the environment and sustainability.

Environmental education in early childhood should not be considered as a narrow term that only refers to teaching children about environmental issues or taking children outside and talking about the natural environment, rather it involves the concept of ‘early childhood education for sustainability’. In this study, these two terms will be used interchangeably. In early childhood education for sustainability, children are expected to gain competencies, values and attitudes that support sustainable development as well as to learn about environmental problems and the importance of environmental protection and conservation (UNESCO, 2008). In order to achieve this goal, innovative, fruitful and authentic teaching methods are required.

2.4. The significance of teaching methods in environmental education in early childhood

Early childhood education is regarded as an important place for fostering environmental sensitivity among the young generations (Mat Said & Paim, 2010). Based on the main objectives of environmental education, the motivation behind young children’s receiving environmental education is to foster their awareness, knowledge, skills, and attitudes related to the total environment and its allied problems, as well as promote their potential to act for a sustainable way of life and the future. However, the key issue here is that in order to help young children to comprehend the meaning of sustainable development, and to learn to take relevant actions a developmentally appropriate approach is needed (UNESCO, 2008 & UNESCO, 2017). Telling learners about nature or presenting them the reality of environmental problems is not enough by themselves to raise informed and responsible individuals who are expected to understand and apply the concept of sustainable development. An EE curriculum must enable learners to discover how they interact with the environment themselves so that they can evaluate their own influence on the environment and they should be able to develop investigative, evaluative and action skills by utilizing these processes as well as learning about them (UNESCO, 1994). This is the only way to raise citizens who will make sound and responsible decisions concerning environmental issues (UNESCO, 1994 & UNESCO, 2017). Thus, children’s learning process should be facilitated and supported with innovative, effective and appropriate methods, for instance, by using their personal experiences or making toys out of waste products.

Andersen and Wennevold (1997) claim that the content of the teaching done in the classroom is possibly more affected by teachers' own perceptions of school subjects and by their choice

of teaching methods than by what is written in a curriculum document. Thus, they suggest ‘cross-disciplinary approaches’ that address learners’ needs and learning abilities better than approaches based on one discipline. On the other hand, several scholars highlight the importance of regular contact with nature and outdoor experience as effective ways to promote environmentally positive and sustainable behaviours in early childhood education (Mullenbach, Andrejewski & Mowen, 2019; Barrable, 2019; Lumber, Richardson, Sheffield, 2017 & Davis, 1998). This has already been popular in some parts of the world, especially in Scandinavian countries such as Norway, Sweden, Finland and Denmark. Fjørtoft (2001) states that in Scandinavia a considerable number of kindergartens are arranged as outdoor schools in which children, aged three to six, spend all or most of their time outdoors in natural environments. She further claims that playing in a natural environment seems to have a positive effect on children in a way that they become more creative in playing, and play activities and play forms are being richer.

According to Davis (1998) there are three main interacting approaches in environmental education - education *in*, *about* and *for* the environment. Namely, education *in* the environment basically addresses direct experiences with the environment and aims to enhance positive feelings and behaviours towards nature as well as to cultivate empathy and promote discovery by practicing environmental issues. Enabling children to discover and experience the environment, allowing them to play and learn by doing such as making toys out of sticks or stones that they found in nature, can enhance the quality of education *in* the environment. On the other hand, education *about* the environment provides learners opportunities to comprehend how these complicated natural systems work and to understand how natural and human systems interact with each other (Davis, 1998), for instance, the benefits of recycling and reusing; reducing overconsumption of energy, food and water; learning how plants grow, how the weather changes can be some examples of education *about* the environment. Also, children will be able to understand the consequences of their actions and their impacts on the natural environment. And finally, education *for* the environment refers to the values, attitudes, and positive actions required for the well-being of the environmental and for promoting sustainable and socially equal lifestyle preferences (Mat Said & Paim, 2010; Davis, 1998). This part requires the active participation of children regarding environmental concepts and issues. For example, children can be included in the process of growing vegetables and fruits in the garden of the educational place, then they can observe them growing in time. Overall, these approaches should not be seen as three separate subjects, but rather as a whole unit, interwoven approaches

so as to learn *about* and *in* the environment and to be able to act *for* the environment (Hedefalk, Almqvist & Östman, 2015). Hence, educators should have the required knowledge and skills to provide education regarding those aspects of the environment. Therefore, the teacher's role is also important in promoting environmental education and sustainability in a way that they should provide appropriate content and also use effective teaching methods regarding children's different needs and interests. They can do this by providing children assignments or projects which will foster their curiosity and understanding of these concepts.

In Agenda 21 (United Nations Conference on Environment and Development, 1992), Chapter 36 (Promoting Education, Public Awareness and Training), aims to promote environmental awareness through education, by raising public awareness and training and it recommends some activities for the implementation of environmental and development education. One of them is as follows:

“Educational authorities should promote proven educational methods and the development of innovative teaching methods for educational settings. They should also recognize appropriate traditional education systems in local communities.” (p.322)

Thus, the way we teach, the methods we use when teaching are enormously important in education. Hence, we need to use innovative, creative and effective pedagogy that can support critical thinking and interactive learning environment which are necessary factors to develop better attitudes and skills for a sustainable society.

One of the authors in the document called “The Contribution of Early Childhood Education to a Sustainable Society” (UNESCO, 2008) is Vital Didonet, and he suggests seven points regarding the relevance of early childhood education for a sustainable society. At point six, he claims that the “Project Method” is the best and the most effective way of learning and acquiring attitudes at an early age. Then, he gives an example of this which is called “Project Earthworms” that requires 3- and 4-year-old children to build an earthworm house and observe their work, learn how they multiply, and why it is a good fertilizer for kitchen gardens. In order to do this project, children obtain the necessary materials with the help of the teacher, and then they began to work firstly “by cutting a large strip on one side of the bottle through which they could dispose of the layers of soil, sand, dry leaves and fruit peelings. Lastly, they put in the earthworms and covered everything with dry lettuce leaves. Then, they covered the bottle with black plastic. Every day, the plastic was removed to observe what had happened. After four weeks, the difference was quite visible: the layers were now all mixed. The color and the

composition of the materials inside the bottle had changed. A few days later, when the manure was ready, the children put it in the plant pots and replanted the flower that had lost its flowerpot, broken after being hit by a ball (UNESCO, 2008, p. 29). With such a project, children learned about the importance of earthworms for the ecosystem, how they make manure, how they fertilize and so on. Hence, I would also argue that project-based learning and teaching is an effective and innovative way of teaching children about nature and its inhabitants as well as the importance of sustaining the environment.

It is clear that knowledge alone is not sufficient to bring up informed and action-oriented citizens. Hence, we need appropriate, sufficient, effective and innovative approaches and methods in environmental education which will enable future generations to transform our world towards a more sustainable one.

Gough and Gough (2010) acknowledge the necessity of a change in the environmental education curriculum content involving the knowledge and skills that were regarded as an essential component of the field, yet EE is also seen as “a way of learning associated with changing attitudes, behaviours and participation in society “(p.1).

CHAPTER 3: THEORETICAL FRAMEWORK

As mentioned in earlier chapters, most of the environmental issues and challenges we have been facing for decades are human- induced. Overconsumption of water, food and energy resources, misuse of natural lands and water resources, our craziness for economic development are only some examples of unsustainable human actions that have triggered environmental degradation. Seemingly, we need well-informed, responsible and action-oriented generations who have the necessary knowledge, values, attitudes and skills to transform the world towards a more sustainable, equal and liveable place. One of the strongest tools to achieve this goal is through environmental education (Akintunde, 2017). There is a close connection between concepts and theories in a way that concepts and principles are like building blocks of the theory (Akintunde, 2017). In order to fully understand and implement the concept of “environmental education” in kindergartens, it is necessary to know and comprehend theories and other concepts related to EE. Furthermore, relevant research on this field will also be provided along with the definitions of terminology.

3.1. Definitions of relevant terminology

3.1.1. Environmental Education and Sustainable Development

Environmental education is a broad, interdisciplinary concept that comprises a variety of perspectives and approaches (Semerjian, El-Fadel, Zurayk, & Nuwayhid, 2004). The central point in environmental education programs has been changing environmental behaviours through enhancing environmental knowledge (Pooley & O'Connor, 2000). However, environmental education shall not be misunderstood and misinterpreted assuming that the concept only aims to increase environmental knowledge of individuals. Yes, it is one of the significant aims of environmental education, but as Pooley and O'Connor (2000) claim, the main goal of environmental education is changing individuals' feelings and beliefs about the environment rather than their knowledge, and in this way, increasing their environmentally-conscious attitudes. Gough and Gough (2010) claim that especially after the Belgrade and Tbilisi meetings, there has been an ongoing discussion about an appropriate educational paradigm for environmental education. They also argue that while many insist on trying to fit environmental education in a traditional curriculum, others have asserted that there is a need for a different approach. So far, there have been a great deal of attempts to define the concept of EE, yet the most remarkable definition is considered to be given by UNESCO (1977) in Tbilisi Conference as *“Environmental education is a learning process that increases people’s knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action”*. Below are some other definitions of “environmental education” that have been suggested by various scholars:

- “Environmental education emerged... as the term for the educational dimensions of the environment movement which, at that time, was concerned about air and water quality (pollution), the growth in world population, continuing depletion of natural resources and environmental degradation” (Gough and Gough, 2010).
- “Organized efforts geared towards teaching about the functioning of the natural environment, particularly, how humans and other life forms interact with the environment and its resources in the ecosystems in order to live in a sustainable way” (Eneji, Akpo, Mbu and Etim, 2017).
- “EE refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behaviour and ecosystems in order to live sustainably” (Karama, 2016).

Davis and Elliott (2014) note that the term “environmental education” has nearly been supplanted by the emerging concept of ‘*education for sustainability*’ as the latter is a more comprehensive term that acknowledges the interrelationship between social, political, cultural, economic and environmental dimensions. Yet, they also assert that these two terms are also used interchangeably although the term environmental education is generally used in the United States and across Asia, while education for sustainable development is commonly preferred in European countries (UNESCO, 2005). In this study, these two terms are used interchangeably.

When discussing environmental education, it is inevitable to mention the concepts of *Sustainable Development (SD)* and *Education for Sustainable Development (ESD, mainly in Europe) or Education for sustainability (EfS in Australasia)*. Gough and Gough (2010) argue that regarding the development of environmental education, there has been ongoing attention to the curriculum objectives related to awareness, knowledge, attitude skills and participation; however, one of the important emphases has been on the shift from the environmental focus to the three pillars of sustainable development- *environment, society and economy*. These three principal domains of sustainable development are interrelated and intertwined, cannot be separated (McKeown, Hopkins, Rizi & Chrystalbridge, 2002). *The environmental pillar* refers to the protection of ecosystems and their biological diversities; *the social pillar* is about justice, equality and a democratic approach; and *the economic pillar* is concerned about a financial approach to resources where economic development affects humans and/or the environment in a positive way (Hedefalk, Almquist & Östman, 2015). In a nutshell, these three dimensions of sustainable development are interwoven and they affirm the interaction between individuals’ attitudes, natural environment and society. Hence, in order to achieve sustainable development, balanced integration of economic, social and environmental pillars is required (UN,2015).

Achieving sustainable development, further, requires drastic changes in the way we think and act (UNESCO, 2017). In order to create a more sustainable world, individuals are required to empower themselves with knowledge, skills, values and attitudes needed to contribute to sustainable development, thus education is an essential part of sustainable development (UNESCO, 2017). Regarding this, the other relevant concept emerges: “*Education for Sustainable Development*” (ESD). The concept enables individuals “*to make informed decisions and take responsible actions regarding environmental integrity, economic welfare and equal society for present and future generations*” UNESCO (2017). Gough and Gough (2010) claim that environmental education has evolved over past decades leading to a contested

relationship with the emerging field of “Education for Sustainable Development”. Thus, in the current study, these two concepts are considered highly interrelated and dependent on each other. On the other hand, Vare and Scott (2007) consider ESD as two interrelated approaches: ESD 1 and ESD 2. They define the former as “the promotion of informed, skilled behaviours and ways of thinking, useful in the short-term where the need is clearly identified and agreed, and the latter as “building capacity to think critically about what experts say and to test ideas, exploring the dilemmas and contradictions inherent in sustainable living”. They also claim that it is worrisome that authorities who promote sustainable development generally consider formal education in terms of ESD 1 which may lead to almost no changes in people’s behaviour and may cause a reduction in our capacity to manage to change ourselves, which, in turn, make us less sustainable (p.194-195). It is therefore suggested that ESD 1 and ESD 2 should be hand in hand, and given equal importance.

3.1.2. Early Childhood Education and Early Childhood Education for Sustainability

This study focuses especially on “*early childhood*” because as emphasized in UNESCO (2008), it is in the early years of life that children begin constructing basis to develop their long-lasting values, attitudes, skills, behaviours and habits, therefore; early childhood education is a great period to enhance these competencies that are required for achieving sustainable development (p.12). Bredekamp and Copple (1997) states that *Early childhood education (ECE)* covers the period of human life from birth to eight years. Siraj-Blatchford, Smith and Samuelsson (2010) also highlight the importance of early years stating that based on the research and experience, even very young children are able to think sophisticatedly regarding the socio-environmental issues, thus the earlier ESD ideas are provided the greater their impact and influence can be.

Early Childhood Education for Sustainability (ECEfS) is another relevant concept that is defined by Davis (2010) as “a synthesis of EfS and ECE”. Li, Zhang, Yuan and Birkeland (2019) claim that even if ECE has been late to address SD issues and have not played an active role in developing policies and innovative practices during the United Nations’ Decades of Education for Sustainable Development in 2004– 2015, World Organisation for Early Childhood Education (OMEP) has recognized the contribution of ECE to a sustainable life for since a long time (p.442). Davies et al. (2009) also assert that children are the greatest stake in the future and if we think ourselves as advocates for them, then we have a particular responsibility to promote sustainable development in early childhood education.

3.1.3. Outdoor Education

Cooper (2004) highlights the importance of *outdoor education* in environmental education claiming that outdoor education was considered as a tool for enhancing environmental awareness, valuing natural beauties, encouraging the imagination and acquiring knowledge about the environment. Karama (2016) also states that environmental education is usually taught or fostered through outdoor experiences. She considers outdoor education as “learning *in*” and *for*” the outdoors, yet she still claims that outdoor experiences generally involve elements of teaching *about* the environment. Furthermore, Cooper (2015) highlights the significance of outdoor education for children saying that a variety of studies indicate that outdoor learning and play environment with different natural elements develops and enhances all of the domains of children’s development, health, and well-being.

On the other hand, Prince (2017) argues that role modeling and mentoring along with sustainable practice, by outdoor educators and using outdoor experiences, can promote pro-environmental action by providing a great variety of possibilities to create pro-environmental behaviour. Regarding this, there are a good number of studies emphasizing the benefits of outdoor education and the necessity for contact with nature in terms of children’s emotional, social and psychological health and development. Some of these are indicated by White (2004) as follows:

- “Children who play regularly in natural environments show more advanced motor fitness, including coordination, balance and agility, and they are sick less often (Fjortoft, 2001, Grahn et al., 1997)”.
- “When children play in natural environments, their play is more diverse with an imaginative and creative play that fosters language and collaborative skills (Faber Taylor et al., 1998; Fjortoft, 2000; Moore & Wong, 1997)”.
- “Exposure to natural environments improves children’s cognitive development by improving their awareness, reasoning and observational skills (Pyle, 2002)”.
- “Nature buffers the impact of life stress on children and helps them deal with adversity. The greater the amount of nature exposure, the greater the benefits (Wells, 2003)”.
- “Natural environments stimulate social interaction between children (Moore, 1986; Bixler, Floyd & Hammitt, 2002)”.

- “Outdoor environments are important to children’s development of independence and autonomy (Bartlett 1996)”.

White (2004)

Hence, contact with nature and outdoor experiences are of paramount importance for fostering children’s connectedness with nature as well as for supporting their educational and developmental well-being and growth.

3.1.4. Nature connectedness

Another relevant concept in this study is *nature connectedness* which is claimed by Liefländer, Fröhlich, Bogner, and Schultz (2013) that if we aim at providing the knowledge necessary to achieve a sustainable world, we should give connectedness to nature a high priority. They also argue that environmental education programmes focusing on the enhancement of nature connectedness shall provide positive experiences in nature, for instance, outdoor activities like nature discovery games or experiments in nature can easily be made appropriate for all academic levels and ages. In their study, they have also found that these programmes should be done in natural environments and have an adequate duration and frequency focusing on developing connectedness with nature through enabling learners having positive and affective nature experiences before the age of 11 as such experiences can play a significant role in achieving a sustainable future (Liefländer, et al., 2013). Similarly, Heggen et al. (2019) emphasize the importance of nature connectedness for children by claiming that children who are not yet exposed to an established understanding of the relationship between nature and humans might challenge established anthropocentric solutions for ESD. They also define nature as “innocent” and state that the innocent character of nature might be useful to combine ESD with the term of innocent childhood.

Nowadays, fewer children have regular contact with nature since they spend most of their times in front of televisions, with their telephones and on social media. Soga and Gaston (2016) call this as an “extinction of experience” claiming that loss of interaction with nature lead to deterioration of public health and well-being, reduced emotional affinity toward nature, and a reduction in pro-environmental attitudes and behaviours (p.94). Considering that, environmental education should be given more importance and supported by the governments in order to gain the attention of young generation.

3.2. The model of education *about, in* and *for* the environment

Achieving the quality and effective environmental education requires a clear comprehension of relevant concepts as well as appropriate, innovative and action-oriented teaching methods. There have been different suggestions by different scholars regarding how to teach EE and sustainability issues. Davis (1998, 2010) mentions three concepts of EE which were developed during the 1990s- education *in, about* and *for* the environment. She identifies them as follows:

- Education *in*, through or from the environment that provides direct environmental (usually outdoor) experiences and field knowledge and skills;
- Education *about* the environment that focuses on understanding concepts and knowledge related to environmental processes and issues;
- Education *for* the environment that develops values and action skills - as well as knowledge and processes - aimed at learners making informed judgments, participating in decision making and taking action on environment-related issues.

Davis (2010)

Davis (2009) analyzed 14 internationally important early childhood and environmental education/ education for sustainability peer-reviewed journals published between the years of 1996-2007, and she categorized those that were published according to the content around the concepts of *in* the environment, *about* the environment and *for* the environment. Her research revealed that most of the articles described children *in* the environment, experientially- engaged with gardening or playing in observing nature, while a few papers described young children gaining knowledge *about* the environment, and almost none of the articles described children as acting *for* the environment (Davis & Elliott, 2014). This indicates that there has been little reflection regarding the young children's capability and competency in the world as change agents for sustainability (Davis & Elliott, 2014, p. 4). However, since the UN Decade, there has been a significant increase on research on this issue. For instance, Yeshalem (2013) conducted research on environmental education *about, in* and *for* the environment in Ethiopia and he found out that the missing point of Ethiopian environmental education system was teaching only about the general environment without giving the knowledge and skills needed to know and experience local environment. He adds that this way of system and approach does not allow students to develop favorable attitudes *in* and *for* their local environments (Yeshalem,

2013). Elliott, Ärlemalm-Hagsér & Davis (2020) also emphasize this issue in their recently published book called “*Researching Early Childhood Education for Sustainability: Challenging Assumptions and Orthodoxies*”. The current study will contribute to this issue by addressing kindergarten teachers’ approaches and methods regarding the education *in, about* and *for* the environment and children’s role as change agents for sustainable development. Yet, the focus will especially be on analyzing the situation of education for the environment in kindergartens in Norway and Turkey.

On the other hand, Hedefalk, Almquist and Östman (2015) describe these three components of EE as follows: education *about* the environment focuses on knowledge about how natural systems work, such as water cycles, ecological systems and how plants grow; education *in* the environment refers to direct experiences in nature; and finally, education *for* the environment is about active participation in solving environmental problems or making socially equal and sustainable choices. They also claim that according to recent studies, only being knowledgeable about natural phenomena and humans’ influence on the environment is not enough to be able to behave in sustainable manners, thus action skills for sustainable life is required such as the ability to change current manners of action by making value judgements about different ways to act (p.976).

Osaki defines education *about* the environment as the acquisition of knowledge and skills and claims it is concerned with developing awareness, knowledge and understanding about human-environment interactions (as cited in Kimaro, 2018). Robottom (1987) also highlights the importance of “adopting the approach of being critical in environmental education regarding the environmental, educational and social values informing environmental, educational and social actions when and where required, rather than just adopting the approach of focusing on the acquisition and retention of information of an alleged universal type - information drawn from the stockpile of "objective knowledge" collected by others” (p.292). Paredes Chi (2015) argues that these three domains of environmental education were originally proposed by Lucas (1972) in his doctoral thesis, and according to him, the actual aim of education *about* the environment is ‘producing a knowledgeable individual’, awaiting that this knowledge brings environmental awareness that not necessarily will be reflected on actions to preserve the environment (Lucas 1972, p. 128).

Education *for* the environment, on the other hand, refers to the acquisition of skills and attitudes that promote the efficient use of natural resources (Kimaro, 2018) and it considers

environmental development as a main aim of education and fosters a sense of responsibility and active student participation in the resolution of environmental problems (Lucas, 1979, cited in Kimaro, 2018). Mat Said and Paim (2010) assert that education *for* the environment is about developing the values, attitudes, and positive action for the environment.

Gough and Gough (2010) claim that teachers can promote both education *about* and *in* the environment by going outdoors to investigate environments through activities such as data collection, and then, they can also implement the approach of “education *for* the environment” by working with students on local environmental action projects. According to Mat Said and Paim (2010), education *in* the environment requires inquiry and investigation of nature. Overall, as Gough and Gough (2010) emphasize that education *about* or *in* the environment seems easier for teachers to do, however environmental education actually happens only when there is education *for* the environment. Furthermore, it is in the form of education *for* the environment that is regarded as having the potential to receive ‘the values transformation necessary to promote sustainable and socially just lifestyle choices’ (Working Party to the Queensland Board of Teacher Registration, 1993:23, cited in Davis, 1998).

3.3. Experiential Education and Experiential Learning Theory

According to Widyastuti, Probosari, Saputro, Soetikno and Sajidan (2019), experiential education is a combination of active learning with concrete experiences, abstract concepts, and reflection in an effort to engage all learning styles in which the process of knowledge is constructed through the transformation of experience. The Experiential learning theory (ELT) can be traced back to the works of Kurt Lewin, John Dewey, Jean Piaget, William James and others who aimed to “develop a dynamic, holistic model of the learning process from experience...” (Kolb and Kolb, 2011). Experiential learning is defined by the Association for Experiential Education (2012) as a tool of guiding students through reflection to “*increase knowledge, develop skills, clarify values, and develop people’s capacity to contribute to their communities*” (p. 1). The ELT focuses on learning by doing and Kolb (1984) describes it as a “*process whereby knowledge is created through the transformation of experience*” (p.38). In this model, “*the learner experiences, reflects, thinks and then acts again, hence, the whole learning process is critically reflexive of the individual’s experience and actions*” (Kolb, 1984). According to Kolb (1984), the ELT consists of four learning cycles; (1) Concrete Experience

stage, (2) Reflective Observation stage, (3) Abstract Conceptualization stage, and (4) Active Experimentation stage. McLeod (2017) summarizes these stages as follows:

1. Concrete Experience - a new experience or situation is encountered, or a reinterpretation of existing experience.
2. Reflective Observation of the New Experience - of particular importance are any inconsistencies between experience and understanding.
3. Abstract Conceptualization - reflection gives rise to a new idea, or a modification of an existing abstract concept (the person has learned from their experience).
4. Active Experimentation - the learner applies their idea(s) to the world around them to see what happens.

Regarding EE and sustainability, we can create an imaginary scenario based on this Experiential Learning Theory in order to illustrate and have a better comprehension of the ELT. Let's assume that we are in kindergarten and playing outside with the children. Then, one of the students asks about how a tree grows that long. The teacher takes the children near to the trees and shows one little tree and one long tree to compare them according to their high and leaves. She then tells them how a tree is planted and grows in time. The children touch and feel the trees (Concrete Experience). Afterward, the teacher wants them to talk to their friends about what surprised them the most about the trees (Reflective Observation). The next day, the teacher brings seeds to plant a tree in their kindergarten with the children. Each child plants one seed with the teacher (Active Experimentation), and every week, they watch and observe how the seeds slowly turn into trees (Abstract Conceptualization).

According to Kolb's (1984) Experiential Learning Theory, learners have different approaches in using the learning cycle stages, for instance, they do not go through the stages equally, rather, focus on one or two stages. Based on the Learning Style Inventory Grid (LSI), Kolb (1984) describes four learning styles—divergers, assimilators, convergers and accommodators. Akela (2010) interpret these four learning styles as; *diverges* being inclined to learn through concrete experience and reflective observation; *assimilators* preferring abstract conceptualization rather than an actual implementation; *convergers* learning through abstract conceptualization and active experimentation and *accommodators* who are skilled at the concrete experience and active experimentation.

On the other hand, regarding ESD, Gadotti (2010) emphasizes the need for experiential education claiming that there is a need for adopting different strategies in the formal education system, for instance, “children need to experience and know plants’ and animals’ needs, their habitat, how to reduce, reuse and recycle materials that were used, how to keep ecosystems linked to forests and water” (Gadotti, 2010, p.232). Karama (2016) views experiential education as “*both a process and method to deliver the ideas and skills associated with environmental education*”. Cutter-Mackenzie and Edwards (2013) conducted a study emphasizing the significance of the relationship between experience, knowledge, and values as a foundation for becoming knowledgeable about the environment. They assert that there has been a great philosophical and theoretical interest in early childhood education to valuing the role of experience in directing children toward knowledge. According to them, this situation revealed two specific approaches regarding learning in the field of early childhood environmental education; the first: “experience, knowledge, and values are engaged to support learning, and the second: experience is claimed to lead toward learning (particularly where this is provided through the provision of open-ended activity or play-based learning)” Cutter-Mackenzie & Edwards (2013). Thus, their study had an argument that these two approaches indicate “a potential pedagogical “gap” in which what is known about teaching and learning in environmental education may not associate with what is known about teaching and learning in early childhood.

Similarly, Widyastuti, Probosari, Saputro, Soetikno & Sajidan (2019) conducted research to investigate teachers’ knowledge and their understandings of the experiential learning model as well as their ways of implementing EE. With this aim, they conducted a survey with 35 science teachers in Indonesia. The results of this study indicated that when the experiential learning model was first presented to teachers, many of them had not known or even used it in science learning, but, after ten days of the training programme, the teachers stated that they were ready to use the experiential learning model in their science lessons. The authors concluded that this was because of the fact that teachers saw how learners were enthusiastic and motivated when they were involved in the learning process with this model. As Akella (2010) emphasizes, the ELT model advocates the ideology that there is a need for learner involvement in all educational activities, and supports the understanding of how an experience makes learning meaningful. Thus, an experience-based learning approach can easily be implemented as a teaching style regarding EE in kindergartens with the help of and under the supervision of the teacher.

On the other hand, according to the results of their study's findings, Jose, Patrick and Moseley (2017) suggest that the experiential field trip that they have done with students significantly changed the students' knowledge of the local delta environment. The findings also revealed that an experiential learning model could provide an effective strategy both for informal program design and formal classroom activities regarding field experiences.

Since the current research focuses on exploring and analyzing appropriate, innovative and action-oriented teaching methods and approaches regarding environmental education in kindergartens, ELT provides a fundamental base and facilitates the process of analyzing and interpreting the collected data.

CHAPTER 4: METHODOLOGY

This chapter presents and discusses the chosen methodological approach and explains why such an approach was chosen. Followed by the research design, design of the interview and how the data was collected, coded and analyzed will be described.

4.1. Research design

A research design is defined as a structured collection of rational decision-making choices that support producing valid and reliable research results (Cavana, Delahaye & Sekaran, 2001), and these choices are related to what to be studied, why it is to be studied and how it will be studied (Blaikie, 2010). In this thesis, the following main research question will be answered:

“How can teaching methods facilitate developing environmental education and education for sustainability in kindergartens?”

In order to answer this main research question, the following sub-questions will be addressed:

1. What is the relationship between education and sustainable development?
2. What kinds of teaching methods/activities are being used in kindergartens in Norway and Turkey regarding EE and sustainable development? What are the differences between these two countries' approaches?
3. What possible influence of culture regarding the implementation of environmental education and sustainable development can be identified?

In the light of these research questions, the qualitative research method is applied in this study. Aspers and Corte (2019) defines qualitative research as “an iterative process in which improved understanding of the scientific community is achieved by making new significant distinctions

resulting from getting closer to the phenomenon studied” (p.155). In a qualitative method, researchers are more flexible and can use themselves as the instrument, thus can add their own cultural assumptions to the data, on the other hand, in the quantitative approach, the instrument is usually a pre-determined and finely- tuned technological tool that gives the researcher less flexibility, imaginative input and reflexivity (Brannen, 2017). Denzin and Lincoln (2005) suggest that qualitative research involves various methods such as an interpretative, naturalistic approach to its subject matter, which indicates that qualitative researchers study things in their natural settings and attempt to make sense of, or interpret, phenomena regarding the meanings people give to them. Thanks to the methods they use, qualitative researchers get into direct close contact with their research and/or the material, such as texts, being analyzed or by conducting interviews (Aspers and Corte, 2019). Therefore, as opposed to quantitative research, qualitative research is not concerned with numbers and variables (p.155). In environmental studies, qualitative research design allows the researcher to conduct the research with minimum planning and equipment; whereas some quantitative and experimental methods are usually time-consuming, complex and even impractical in certain situations (Roudgarmi, 2011). In qualitative research, the researcher also has the advantage of “*taking richer and more holistic qualities of real-life circumstances, flexibility in design and procedures allowing adjustments in process, sensitivity to meanings...*” (Roudgarmi, 2011, p.871).

Thanks to its flexibility, the qualitative method suits the best for this research. Since the current research aims to explore, understand and analyze what kinds of teaching methods support environmental education in kindergartens and enhance children’s positive attitudes towards the environment, the explorative approach is applied. In this study, inductive reasoning is implemented to search for patterns in the collected data. (Antwi & Kasim, 2015). The study implements the qualitative content analysis which aims to “*systematically transform a large amount of text into a highly organized and concise summary of key results*” (Erlingsson and Brysiewicz, 2017).

The study also includes some semi-quantitative aspects and numerical data, to give the reader a better overview of the data material (Hsieh and Shannon, 2005; Mayring, 2014). In line with these considerations, I have chosen a research design, building on interviews, document analysis and personal experiences.

4.2. Sample size and sampling techniques

The sample size used in qualitative research is usually smaller than that used in quantitative research due to the fact that qualitative research is often concerned with gaining an in-depth understanding of a phenomenon or is focused on meaning (Dworkin, 2012). Therefore, it may not be appropriate to ask “how many interviews are enough?” in qualitative research, rather the point is the richness and intensity of the data, not the number of samples.

Based on the literature regarding how many samples are enough for qualitative research, there is no clear answer to that question, however, the concept of data saturation can be useful in this discussion. Data saturation refers to the point at which no new information or themes are observed in the data (Guest, Bunce & Johnson, 2006). Kolb (2012) claims that data saturation must happen to aid in ensuring that sufficient information has been collected to accurately reflect the perspectives of the study’s informants. Boddy (2006) argues data saturation suggests that a single case study or interview is never enough since data saturation can only be known after at least two cases, and generally more, are examined. He also asserts that one can use this view of “saturation” as a justification for the use of particular sample size in any qualitative research which is guided by this view. Therefore, in this study, 13 samples were used (6 from Norway and 7 from Turkey), and the researcher considered these data reflect a saturation.

This study used a purposeful sampling technique (Gentles, Charles, Ploeg & McKibbin, 2015). to acquire more profound, reliable and diverse results referring to the content of the study. The research applied one of the methods of the “purposive sampling” technique which is “maximum variation sampling” in order to understand and analyze the topic from all possible angles, and thus achieving a greater understanding (Etikan, Musa, & Alkassim, 2016). Moreover, it is aimed to maximize the diversity of the samples and get more balanced answers regarding the research questions. With this aim, samples from Norway and Turkey were chosen from different cities so that the researcher could understand and analyze a wide range of perspectives regarding the research questions and could make sound interpretations.

4.3. Design of the interview

Within the scope of this thesis, semi-structured interviews have been conducted with 13 kindergarten teachers and/or educational administrators in kindergartens, 6 of them were from Norway while 7 of them were from Turkey. With the help of a semi-structured interview, the researcher can focus on the necessarily significant issues and provide the participants freer and

more comfortable environment to think about and answer the questions. Similarly, semi-structured interviews allow the researcher to adjust, add and probe extra relevant questions during the interview.

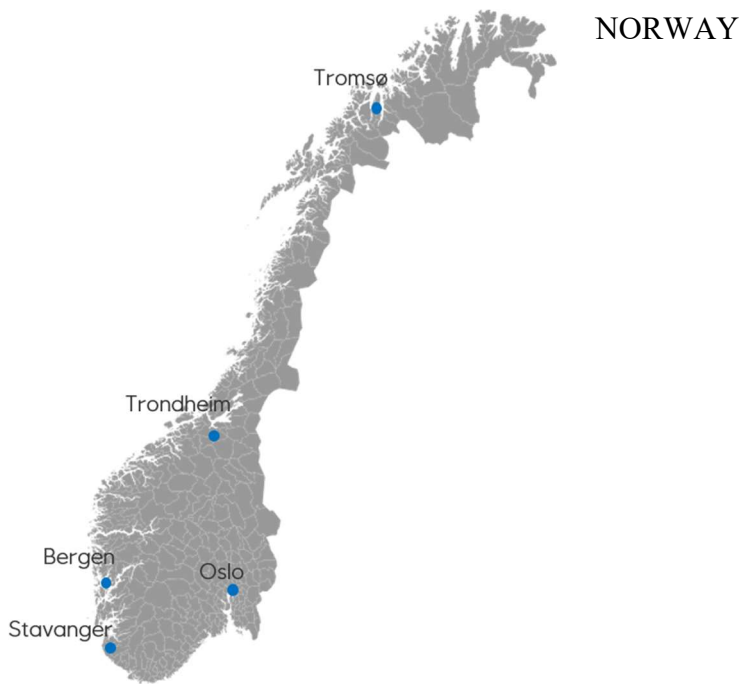
Before the interviews, an interview guide (see Appendix) has been prepared by the researcher herself to focus on the most relevant and significant topics or questions. It is also important to note that before the interviews, informants were informed about the research, its aims and topics to be discussed. The participants were also acknowledged that the interviews would be tape-recorded if they give consent.

Given the Covid-19 situation and also practical reasons, all of the interviews have been conducted on phone from February to March. The informants were anonymously presented both in the process of the analysis and in the section of results and discussion.

4.4. Selection of informants

All of the informants interviewed were kindergarten teachers and/or educational administrators in kindergartens. The informants were chosen purposively from different cities (See Figure 1) in order to get a more variety of perspectives and to make the research more reliable. With this purpose, from Norway, two people from Stavanger, one from Bergen, one from Trondheim, one from Tromsø and one from Oslo were interviewed, while from Turkey, three people from Istanbul, one from Ankara, one from Izmir, one from Samsun and one from Antalya were interviewed (See Table 1). Selecting informants from different cities has enabled me to make more objective and sound interpretations regarding the answers from the informants. For instance, if all of the informants in Norway or Turkey were chosen from the same city, the possibility of drawing some general conclusions from the data, related to the country's approach regarding EE would be less representative. Consequently, the collected data could only say something about the perspectives of kindergarten teachers in the selected cities, and not in Norway or Turkey as a whole country. (See Figure 1). Table 1 also includes some abbreviations such as "TR 1" and "NO 2", the former refers to the informant from Turkey with number 1 and, the latter refers to the informant from Norway with number 2.

Figure 1: Chosen cities for interviews



Source: https://commons.wikimedia.org/wiki/File:Norway_municipalities_2010_blank.svg



Source: https://commons.wikimedia.org/wiki/File:Turkey_provinces_blank_gray.svg

Table 1: Distribution of the selected informants

Country	Cities which informants were selected from	Number of people interviewed with	Abbreviated names of the informants
Norway	Stavanger	2	NO 1
	Bergen	1	NO 2
	Trondheim	1	NO 3
	Tromsø	1	NO 4
	Oslo	1	NO 5
Turkey	Istanbul	3	TR 1
	Ankara	1	TR 2
	Izmir	1	TR 3
	Samsun	1	TR 4
	Antalya	1	TR 5
			TR 6
			TR 7

4.5 Data collection and processing

The data were primarily collected from semi-structured interviews with kindergarten teachers and educational administrators from Norway and Turkey. In this study, the terms “kindergartens”, “preschools”, early childhood education” are used interchangeably. The current study and the interview guide have been approved by the Norwegian Center for Research Data (NSD).

Data collection procedure was initiated in February 2020 and lasted until March 2020. Before the interviews were conducted, the researcher introduced herself and gave information about the research project and the interview. The informants were also informed that participation in the research is voluntary and they could withdraw at any stage of the interview. With this aim, the researcher prepared a semi-structured interview guide (see Appendix 1) which consists of twelve relevant and appropriate questions. According to Kajornboon (2005), semi-structured interviews give the researcher advantage of prompting and probing deeper into the given situation as well as explaining or rephrasing the questions if informants are unclear about the questions. Thus, in this study, the researcher had the interview guide which consists of mainly

open questions, and the informants were encouraged to speak out their minds freely without adhering to the interview guide. The interviews were conducted on the telephone. Novick (2008) argues that telephone interviews are mostly neglected in the qualitative research literature and they are usually considered as a less attractive data collection tool than face-to-face interviewing. However, telephone interviews can allow informants to feel relaxed and able to disclose sensitive information. This type of interview also gives an advantage to the researcher to take notes comfortably.

Since most of the interview questions were open-ended, the informants were given enough time to think about their answers. Each interview took approximately 10 to 15 minutes and they were audio-recorded. However, some of the interviews could not be recorded since some of the informants were not comfortable with their voices being recorded. Hence, for these interviews, only notes have been taken by the researcher. Overall, all of the informants were anonymously presented both in the process of the analysis and in the presentation of results and discussion.

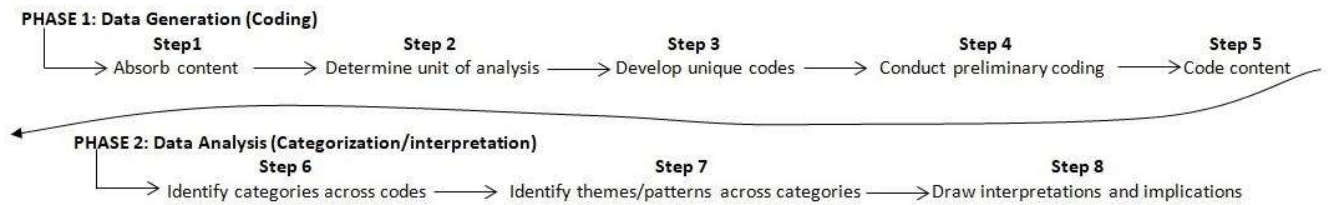
On the other hand, in this research, I used strategies of “participant language verbatim accounts” and “mechanically recorded data”. The strategy of “participant language verbatim accounts” was used to acquire literal statements of participants and quotations from documents, and “mechanically recorded data strategy” was used by using a tape recorder for the interviews. These strategies are pointed out by McMillan and Schumacher (2006) as some of the ways of increasing validity in qualitative research.

4.6. Data analysis and coding

Data analysis is the most crucial process of qualitative research (Basit, 2003). In this study, the preliminary data were gathered through semi-structured interviews and transcribed and analyzed by the researcher based on the “qualitative content analysis” which aims “to provide knowledge and understanding of the phenomenon under study” (Downe-Wamboldt, 1992, p. 314). In this study, one of the three approaches of qualitative content analysis- *conventional content analysis*- is applied (Hsieh & Shannon, 2005). The consistent approach of QCA was chosen as a method to analyze the collected data. Roller and Lavrakas (2015, p.232) define the QCA as “*the systematic reduction of content, analyzed with special attention to the context in which it was created, to identify themes and extract meaningful interpretations of the data*”. They suggest two phases regarding the process of the qualitative content analysis- Phrase 1: Data generation (i.e., coding) and Phrase 2: Data analysis (i.e., categorization and

interpretation) (p.235). Figure 2 below illustrates how these two phrases are conducted step by step.

Figure 2: Phases and steps in qualitative content analysis



Source: Roller and Lavrakas (2015, p.235)

According to these 8 steps of conducting a qualitative content analysis, I first familiarized myself with the collected data by reading each transcript attentively, highlighting the parts that seemed the most relevant to the teaching methods used and suggested in kindergartens regarding EE, and writing keywords regarding the informants' words, then decided units of analysis and developed initial codes. These initial codes were then analyzed and after open coding of a few transcripts, preliminary codes were determined (Hsieh & Shannon, 2005). For open coding strategy, I started with observing/realizing of the phenomena given in the interviews and identified conceptual categories to group these phenomena and labeled the categories with tentative names. After generating preliminary codes, the next step was coding the remaining transcripts using these codes and adding new codes once different data than previous ones detected. Then, categorizations were made based on these codes and then themes that seemed the most relevant were decided (Strauss and Corbin, 1998). With this aim, the following codes were determined as final codes: "Exposure to the natural environment, learning by experience, visuals: images and videos, and project method". These codes refer to the used and recommended teaching methods by the informants to enhance children's awareness and positive attitudes towards the environment (see Table 2 below). As a final step, I used these generated codes to interpret the collected data and make implications from it. Such an approach to content analysis gives the researcher an advantage of receiving direct information from the participants of the study without imposing preconceived categories or theoretical perspectives (Hsieh & Shannon, 2005).

In the discussion of the results, findings from this conventional content analysis were analyzed and discussed in the line with Kolb's (1984) Experiential Learning Theory and the model of

education *about, in and for* the environment (Davis, 1998) in order to see the similarities and differences between them

Table 2. Used and suggested teaching methods by kindergarten teachers to enhance children’s awareness of and positive attitudes towards the environment

Code	Example from the interviews
Exposure to the natural environment	<p><i>“It is very important that we take them outside and show them how to react when they are outside. We tell them that they have to be gentle with plants, trees and do not throw things on the ground. Sometimes they bring what they have found in nature to the kindergarten”.</i> (NO 2)</p> <p><i>“We can make observations in nature”</i> and TR 7 stated that; <i>“We can do activities outside”.</i> (TR 4)</p>
Learning by experience	<p><i>“We can do experiments; they can find things outside and bring them to the kindergarten”.</i> (NO 4)</p> <p><i>“Since understanding abstract concepts is tough for children at these ages, we have to give concrete examples. We should let them touch, play and learn by experience. For example, we have ecology club in our kindergarten where children are encouraged to plant their own fruits and vegetables and then eat them”.</i> (TR 2)</p>
Visuals: images and videos	<p><i>“We can teach children about nature by using flash cards, images and videos”.</i> (TR 1).</p> <p><i>“Maybe, we can show children videos to teach about the environment.”</i> (NO 1).</p>

Project method	<p><i>“In our kindergarten we have some small projects. We prepare small projects to do outside and children can do these projects as a group”. (NO 3).</i></p> <p><i>“Sometimes I organize a “waste materials day”, children bring waste materials from their homes and a few months later, we make trees out of them. Or we make 3D animal design out of waste materials”. (TR 3)</i></p>
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4.7. Validity and reliability of the study

According to Bashir, Afzal and Azeem (2008) the validity of qualitative research rests on data collection, analysis techniques and the instrument. The instrument or, in other words, the method in this study consists of the selection of informants, selection of questions, interviewing and the researcher’s preunderstanding and interpretation. This passage will reflect and discuss how the data collection and analysis techniques were chosen and conducted by the researcher in order to ensure trustworthy and valid research findings.

Regarding the data collection process, in-depth interviews in Norway and Turkey were the preliminary method to collect the necessary data in addition to the document analysis and personal experiences. Saturation is one of the most frequently used tools of showing that the results of the study are satisfying, and interviews are considered as one of the methods by which one’s study results reach data saturation. In this study, the researcher thought saturation had been reached before 13 interviews were conducted. However, it might be related to the guiding questions, they may be too general that most of the informants gave similar answers.

In this study, 13 kindergarten teachers and educational administrators (6 from Norway, 7 from Turkey) were interviewed. Unlike quantitative research, qualitative research does not rely on the numbers of samples, instead, the richness of the acquired data holds a more crucial place. Richness, in this sense, includes opinions, values, beliefs and specific details about a subject or phenomenon.

On the other hand, choosing samples from different cities has increased the diversity of possible answers. In this way, I, as the researcher, have tried to enhance the reliability of the data.

As, suggested by Kondracki, Wellman and Amundson (2002), one of the main issues concerning the validity in content analysis is the selection of communications to be studied and sample selection methods. For instance, this study is about exploring, understanding and analyzing teaching methods in EE used in kindergartens. Therefore, kindergarten teachers who represent the focused group of this research were interviewed to acquire adequate and necessary information, which seems to meet the validity concern of “selection of communications to be studied”. Also, sample selection methods are of paramount importance in research that uses qualitative content analysis. Sample selection methods that lead to biased or unrepresentative samples might threaten a study’s validity (Kondracki, Wellman and Amundson, 2002), it is therefore crucial that all decisions concerning sampling must be justified, and the sampling strategy must be explicitly described (p.226). This study tried to address these two significant issues in separate sections above. However, my sample selection may have the weakness that the results from the selected samples cannot be generalized.

On the other hand, by the use of participant language verbatim accounts and mechanically recorded data, I tried to increase the validity in this research; Hence, although some limitations which will be discussed in the “limitations” section towards the end of the study, the researcher claims that the abovementioned factors have helped to increase the validity of this research.

CHAPTER 5: RESULTS, ANALYSIS AND DISCUSSION

The results of this study were obtained from analyzing the semi-structured interviews conducted with 13 kindergarten teachers. The results were analyzed and categorized by the help of *conventional content analysis* (Hsieh & Shannon, 2005). With this respect, the results from the interviews were categorized under five titles as follows; (1) teaching about nature and environmental issues, (2) cultural impact on children’s attitudes towards the environment, (3) reasons behind the differences of used teaching methods, (4) teaching methods enhancing environmental awareness positive attitudes, and (5) teachers as “role models” and the need for environmental education for teachers. In the following sections, since the results, analysis, and discussion parts are interwoven, they are combined under this chapter.

5.1. Teaching about nature and environmental issues

One of the interview questions in this study was, if kindergarten teachers from both countries teach about nature and environmental issues in their kindergartens (see Table 3). And if yes, what kinds of methods/approaches/ activities they use when teaching was also asked (see Table 4). Table 4 is based on the evaluation and categorization with specific codes (see Table 2). The numerical overview shall help to organize and interpret the collected data in a better way.

Table 3: Teaching about nature and environmental issues in kindergartens

Question: “Do you teach about nature and environmental issues in your kindergarten?”	Answers	
	Yes	No
Country		
Norway	4	2
Turkey	7	0

As seen in Table 3 above, four out of six kindergarten teachers from Norway stated that they teach children about nature and environmental issues, while all of those from Turkey claimed that they all teach about these matters.

NO 1: *“We are outside most of the time but I do not teach about the environment because children are so small (0-2 years) in my department. We always talk about nature, weather, etc. Children can get experiences in nature. My colleagues work with older ones (2-3 years), maybe they teach more about these things but I personally have not observed how they talk or teach about nature. But I know that kids love being outside all day.”*

NO 3: *“I personally do not teach. We are often outdoors but it is not like teaching. However, we talk about nature, go outside, look around, they touch and feel things in nature. They can hear the rain, and feel snow outside.”*

Even if these two informants from Norway who said “no” to this question claim that they do not exactly teach about these issues because children are so small to understand such topics (NO 1) or because the informant does not think what they are doing is not teaching (NO 3),

they stated that they care about providing children regular environmental exposure and outdoor experiences in nature. I understand their answer in a way that they do not consider teaching about nature and environmental issues as a “lesson to be taught in the classroom”, rather they prefer providing children hands-on experiences and exposures in nature. It is, therefore, their claim that they do not teach about these issues, yet I argue that they indeed teach about these issues by using different methods rather than traditional ones, for instance, by providing exposure to the natural environment which is one of the teaching methods addressed in this study, and allowing them to discover and learn nature by themselves.

On the other hand, all of the Turkish informants claimed that they all teach about nature and environmental issues, however; it remains uncertain if they actually do so. This question could not be fully answered in this study, more research might be needed on this issue.

Table 4: Used methods/approaches/ activities by kindergarten teachers in Norway and Turkey when teaching about nature and environmental issues

Country	Numbers of kindergarten teachers	Used methods/approaches/ activities
Norway Turkey	6 1	Exposure to the natural environment
Norway Turkey	1 4	Learning by experience
Norway Turkey	2 3	Project method
Norway Turkey	0 4	Visuals: images and videos

The informants were also asked about the methods they use in order to teach about nature and environmental issues. The answers to this question were categorized under 4 titles (see Table 4 above). Some of the answers from the informants are presented below:

NO 2: *“Two times during the day we go outside. One in the morning and one in the afternoon. Children walk or play outside. We go to tours, forests, other playgrounds nearby. I think it is very important that we take them outside and show them how to react when they are outside.*

They have to be gentle with plants, trees and do not throw things on the ground. Sometimes they bring what they have found in nature to the kindergarten.”

NO 4: *“We live in Bergen, it is always raining but still, since we are close to the harbour, we go out and see what is happening there. We talk to kids why and how it happens etc.”*

NO 6: *“We go out a few times during the day. We go for trips in nature...”*

TR 3: *“Children should learn by experience. We should let them discover and experience things.”*

TR 4: *“We have to let children get experience in nature by activities such as planting in the kindergarten”.*

While the method “exposure to the natural environment” is claimed being used by all of the informants from Norway, only 1 out of 7 informants from Turkey claimed using this method. Regarding the method “learning by experience”, only 1 out of 6 informants from Norway claimed using this method, while 4 out of 7 from Turkey uttered that they use it. The “project method” is used by 2 out of 6 informants from Norway and 3 out of 7 informants from Turkey. Lastly, the method “visuals: images and videos” is claimed being used by 4 out of 7 informants from Turkey while none of the informants from Norway stated that they use this method as a way of teaching about nature and environmental issues.

Overall, the results show a tendency that, regarding EE, kindergarten teachers from Norway seem to prefer the method of “exposure to the natural environment”, while kindergarten teachers from Turkey seem to prefer the method of “visuals” such as images and videos. Also, both countries’ informants seem to consider “project method” as an appropriate way of teaching about nature and environmental issues.

Further, the study seems to show a tendency that Turkish kindergarten teachers focus more on education *about* the environment by giving information and facts about nature and environmental issues while Norwegian kindergarten teachers focus more on education *in* the environment by promoting outdoor activities and experiences in natural environment (See phrases from some informants above). The data do not reveal whether the informants of this study have any knowledge about the theoretical model of “education *about, in* and *for* the environment” (Davis, 1998, 2010). However, as Karama (2016) associates outdoor education with learning “*in*” and “*for*” the environment, it may be interpreted that Norwegian kindergarten teachers of this study have a focus on education “*in*” and “*for*” the environment

since all of them said that they provide children outdoor experiences very often. This may also indicate that they seem to prefer the method “exposure to the natural environment”. In this way, they can possibly increase children’s connectedness with the natural environment. On the other hand, most of the Turkish kindergarten teachers of this study seems to have a focus on education *about* the environment since they stated that they use visuals as a way to teach about nature and environmental issues (See Table 4 above). Thus, Turkish informants seem to focus more on giving children information about these issues rather than providing them direct exposure to the natural environment. However, as highlighted by Pooley & O’Connor (2000), the main aim of environmental education is not to change people’s knowledge about the environment, instead, it is to change their feelings and beliefs about it.

5.2. Cultural impact on children’s attitude towards the environment

The another research question and also interview question was about the impact of culture on kindergarten children’s attitudes towards the environment as well as their understandings about it. In addition to that, whether Norwegian/Turkish culture promote children’s positive attitudes towards the environment was also asked. A summarized overview of these questions is presented below in Table 5 and in Table 6.

Table 5: Impact of culture on children’s attitudes towards the environment

Question: “Do you think culture has an impact on children’s attitudes towards the environment?”	Answers	
	Yes	No
Country		
Norway	6	0
Turkey	7	0

According to the results in Table 5, all of the informants from both countries agreed that culture indeed has an impact on children’s attitudes towards the environment. Regarding this, UNESCO (2017) highlights the significance of culture in creating a more sustainable world by identifying specific learning objectives for each SDGs. For SDG 4 (Quality Education | Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”),

one of the cognitive learning objectives was suggested as follows: “The learner understands the important role of culture in achieving sustainability (p.18).

Most of the informants from both countries support the claim that treating the natural environment with care and respect or not wasting water/food is culturally formed attitudes and such attitudes are usually promoted in every culture. The informants were also acknowledged that such attitudes can be learned in the family, yet they are mostly reinforced at schools, especially in kindergartens where children are more inclined to gain long-lasting values, beliefs, skills and attitudes. With this respect, Chuaungo (n.d.) claims that being informed about the environment depends on the understanding of humans and their social and cultural perceptions not only on the environment itself. Hence, culture seems to have an important role in promoting sustainable attitudes, and one of the great places to develop such attitudes are kindergartens.

Table 6: Cultural promotion of environmentally positive attitudes

Question: “Do you think Turkish/Norwegian culture promotes/supports children’s positive attitudes towards the environment?”	Answers		
	Country	Yes	Not exactly
Norway	6	0	0
Turkey	1	4	2

Even if all the informants from both agreed that culture has an impact on children’s attitudes towards the environment (see Table 5), Table 6 shows that some of those from Turkey (4 out of 7) claimed that Turkish culture does not exactly promote positive attitudes towards the environment while 2 out of 7 certainly disagreed that Turkish culture promotes children’s positive attitudes towards the environment and, only 1 out of 7 claimed that Turkish culture promotes/supports children’s positive attitudes towards the environment. On the other hand, all kindergarten teachers from Norway (6 out of 6) agreed that Norwegian culture does promotes children’s positive attitudes towards the environment. In the Norwegian Framework

Plan for kindergartens (Ministry of Education and Research, 2017), it is emphasized that *“Kindergartens shall help to promote the children’s connectedness with society, nature and culture”*(p.21), which indicates that Norwegian kindergartens acknowledge the link between culture, nature and individuals. It is, therefore, easier and common in Norway that kindergarten teachers use methods, approaches and activities that can foster children’s connectedness with nature and raise their awareness and eco-centric attitudes towards the environment. With this regard, one of the informants from Norway (NO 2) said that: *“Being outside is very special to Norway and it is a very positive thing. By the way, I am not Norwegian and when I first came to Norway, it was a new thing for me to be outside for such a long time. But I have been a kindergarten teacher in Norway now for twenty years, and I got used to this tradition of being outside often”*. It is quite a well-known fact that Norwegians have the tradition of being outside and in nature without regarding the weather conditions. Hence, it is part of their culture to be connected with nature and pass this tradition to future generations.

However, the cultural impact can be both positive and negative depending on to what extent and how a certain culture considers and promotes the importance of environmental education and sustainability. So far, we have discussed above the positive part of this impact regarding Norway, yet there can also be negative implications that culture brings to this issue. Namely, in Turkey, culture is generally not considered as a positive element in environmental conservation and protection. In this sense, the informant TR 1 stated that: *“Culture has an impact in promoting children’s positive attitudes towards the environment, but I think there is no such a thing in Turkish culture, it does not have useful and beneficial perspectives concerning environmental education”*. Similarly, TR 3 also uttered: *“Turkish culture does not exactly support environmental sensitivity, yet we have started being more conscious about it, I hope our next generations will be more sensitive to the environment”*. Since culture does not have a much positive impact on children’s and actually on individuals in Turkey regarding environmental awareness and attitudes, it is a tough work to foster such concepts in kindergartens. Perhaps, this is one of the reasons why there is a difference between Norway and Turkey regarding teaching methods used in EE, which shall be discussed more below in section 5.3.

5.3. Reasons behind the differences of used teaching methods

After an extensive analysis and comparison of the collected data as well as reflections on the data, there seem to be certain differences between Norway and Turkey in preferences of chosen methods/approaches/activities used in teaching children about nature, environmental issues and sustainability. The differences are categorized under three sub-titles as follows:

- Unavailability for regular contact with nature
- Cultural impact on the choice of teaching methods: Traditional customs and beliefs
- Governments' different approaches in Environmental Education

5.3.1. Unavailability for regular contact with nature

One of the major causes of differences between Norwegian and Turkish teaching methods regarding environmental education in kindergartens seems to be the unavailability of regular contact with nature in Turkey. Kindergarten teachers in Norway emphasized the importance of providing children regular contact with nature while those in Turkey were complaining about the unavailability of their conditions for providing children expose to nature regularly. For instance, TR 2 said: *“There are a small number of kindergartens where children could be in touch with nature and even in some kindergartens, there is almost no place to walk around”*. Thus, the lack of appropriate physical environment to play, walk or just be in natural environment leads kindergarten teachers in Turkey to sit with the children in the classrooms and do activities such as playing with toys, painting, talking, etc. even if being outside is essential to learn about the environment and to increase environmental awareness according to Cooper (2004). As White (2004) emphasizes, loss of contact with nature is actually nature's loss in a way that loss of children's outdoor play and contact with the natural environment impact the development of the child negatively, but also it leads to the continuation of exploitation and destruction of nature. Therefore, we need to provide direct outdoor experiences to develop children's affinity to the environment and encourage them to preserve it.

Additionally, when the informants were asked how they teach about nature and environmental issues, most of the Turkish informants stated that they teach by using visuals such as videos and images. With this method, children usually sit in the classroom settings and learn about nature and environmental issues with visual aids provided by teachers, rather than being outdoors and learn by playing, discovering, observing and experiencing the natural

environment by themselves. Yet, this may cause what Soga and Gaston (2016) call as an “extinction of experience” which refers to the loss of interaction with nature and a reduction in pro-environmental attitudes and behaviours. As pointed out by several Turkish informants, this may be the case in Turkey. For instance, TR 4 stated: “*We generally do not go outside of the classroom*”. Also, TR 2 said: “*In Turkey, there is a certain education system set by the government, and I believe that children are restricted by this system. There should be more interactive learning environments in which children can be connected with nature...*”. Hence, as pointed out by Liefländer, et al. (2013), kindergartens should provide children outdoor experiences so that children can get enough exposure to develop positive environmental attitudes.

On the other hand, this study’s kindergarten teachers from Norway have asserted that Norwegian culture promotes and supports children’s positive attitudes towards the environment and nature. When they were asked why they think so, most of them claimed that Norwegian kindergartens are designed and organized in a way that children can play and spend time outdoors freely and safely (Cutter-Mackenzie & Edwards, 2013). Thus, they associate the Norwegian tradition of “being outdoors” with the accessibility and availability of the physical environment for outdoor play and learning.

5.3.2. Cultural impact on the choice of teaching methods: Traditional customs and beliefs

Another major factor that may influence differences in teaching methods used in Norway and Turkey in EE is the fact that they both have different cultural understandings and customs. All of the informants from Norway confirmed that Norwegian culture supports and promotes children’s positive attitudes towards the environment; while, most of those from Turkey (4 out of 7) claimed that Turkish culture does not exactly promote and support children’s positive attitudes towards the environment, and 2 out of 7 certainly asserted that it does not support or promote such attitudes (see Table 5).

As pointed out by Gadotti (2010), exposure to the natural environment is essential for children to understand what nature is indeed and to learn how to keep nature sustained. According to the results of this study, Norwegian culture seems to apply this ideology to their kindergarten education programmes. All of the informants from Norway confirmed that allowing children to be outside in nature and providing them regular contact with nature is part of the Norwegian culture, and that it has a long history of the tradition. Hence, they choose teaching

methods/activities that can be done outside the classroom, such as playing outside, walking in the forest, trips to the woods. For instance, NO 3 stated that “*when it is snowing, we take children outside to see and feel snow*”. It is also emphasized in the Norwegian Framework Plan for kindergartens that kindergartens should enable children to appreciate nature and have outdoor experiences that teach them to move around and spend time in the outdoors during the different seasons (p.52).

On the other hand, even though some of the Turkish informants of this study acknowledged the importance of outdoor experiences, most of them did not utter it as a method they use in their kindergartens to teach about nature and environmental issues (See Table 4). Similarly, most of the Turkish informants claimed that Turkish culture does not promote and support children’s positive attitudes towards the environment enough (See Table 6). For instance, TR 7 said that “*even if we go out with kids and spend time outdoors, this happens in the summer season, not in winter or in rainy weather*”. As a Turkish citizen who was born, raised and received kindergarten education in Turkey, I argue that this is due to the classical Turkish beliefs which defend the opinion that “*staying at home in bad weathers, especially in the winter season is better*” or “*if you go out in bad weather, you will get sick*”. Thus, Turkish people generally tend to stay away from outdoors especially in cold and rainy weather because of the fear of being sick. I personally received kindergarten education when I was 5 years old, and I remember we were always inside not outside. Inside, we were playing with toys, painting, or doing other indoor activities. I also remember that we were learning about the seasons of the year, drawing pictures for each season, then talking about weathers in these seasons, etc. We were just learning how nature basically works; however, as a child, it was never enough to understand such concepts without being exposed to nature and learning by doing. Overall, the results show that cultural traditions and understandings may actually affect the choice of teaching methods/activities in environmental education in kindergartens.

5.3.3. Governments’ different approaches in Environmental Education

One of the causes of choosing and applying different teaching methods in Norwegian and Turkish kindergartens regarding environmental education seems to be because of their governments’ different approaches to environmental education. When interviewing people from Norway and Turkey, many of them mentioned their government’s understanding of and approach to environmental education. Some of the answers from the informants are presented below:

NO 2: *“I think the government cares about nature. It is very important in the Framework Plan (rammeplan), as well to care about nature, and we think it is a very good thing. We can see that it is not only us who care for the environment but also the government. So, it is national”.*

NO 3: *“We have Norwegian rammeplan (The Framework Plan for Kindergartens) prepared very nicely by the government. We say to the teachers in our kindergarten that they have to read it and give us feedback what they think about it...”*

TR 2: *“Education in Turkey is dependent on governmental systems which restrict children. I think there should be a more alternative system for the benefit of children where they can get in touch with nature and learn by experience rather than an education system based on rote-learning. Yet, the government is now more conscious, they are making projects about the environment. Even if the progress is slow, it is getting better”.*

TR 3: *“Throughout Turkey, environmental themes are not considered much important. Beforehand, we were not so sensitive to the environment, however, lately, we have seen progress in this issue, for example, the government gives environmental issues and sustainability more place in their curricula now, but we still have shortcomings. And, shortcomings are in all educational levels; not only in kindergarten, but also in primary, secondary, and even in high school. Thus, more things can be done for this issue, yet we are progressing well”.*

TR 5: *“There are limited hands-on training programmes suggested by the government, thus as teachers, we cannot go out of those”.*

These answers seem to indicate that the Turkish government needs to give more importance to environmental issues and sustainability in all their educational levels. The results seem to underline that the government should promote and facilitate the process of providing children regular exposure to the natural environment so that children can make close connections with the environment by discovering and learning in the natural settings (Barrett and Greenaway,1995). It is also revealed that there is a need for more alternative and authentic teaching methods in the Turkish education system. The government should be responsible for guiding teachers in this issue and allow teachers to include their personal ideas and opinions in the prepared curricula, especially in kindergartens where more innovative and authentic methods are needed the most (Lim & Able-Boone, 2005). It was also found that despite some shortcomings in the Turkish education system, there is also considerable progress regarding

the promotion of environmental education in kindergartens, for instance, as TR 3 points out, the government has started to give environmental issues and sustainability more place in their curricula. The Ministry of National Education in Turkey has prepared the Preschool Education Programme (MONE, 2016), however there is not much emphasis on environmental issues and sustainability. Thus, these concepts can still be considered as the new concepts in the Turkish education system including kindergartens. Given that, there should be more seminars, conferences, and hands-on training programs especially for kindergarten teachers in order to promote the development of environmental education in kindergartens in Turkey.

On the other hand, in Norway, most of the informants seem very thankful to the government regarding its contributions to EE in kindergartens. For instance, informants believe that the government facilitated the process of learning and teaching by preparing The Framework Plan for the Content and Tasks of Kindergartens (Ministry of Education and Research, 2017). In this Framework, teachers can benefit from suggested innovative and fruitful activities that can help them while preparing curricula for children.

5.4. Teaching methods enhancing environmental awareness and positive attitudes

Informants from both countries were asked what kinds of teaching methods/approaches/activities can increase environmental awareness and positive attitudes of children towards the environment. The results were diverse and interesting. Table 7 presents the results obtained from this question. In the part “Recommended methods/approaches/activities”, answers were categorized under four sub-titles as follows; exposure to the natural environment, learning by experience, visuals: images, videos, and project method.

Table 7: Recommended teaching methods/approaches/ activities by kindergarten teachers in Norway and Turkey regarding environmental education

Kindergarten teachers	Countries and number of kindergarten teachers	Recommended methods/approaches/ activities
NO 1, NO 2, NO 3, NO 4, NO 5, NO 6, TR 7, TR 4	Norway: 6 Turkey: 2	Exposure to the natural environment

NO 1, NO 4, NO 6, TR 2, TR 3, TR 4, TR 5	Norway: 3 Turkey: 4	Learning by experience
NO 1, TR 1, TR 5, TR 6, TR 7	Norway: 1 Turkey: 4	Visuals: images, videos
NO 1, NO 3, TR 2, TR 3, TR 4, TR 5,	Norway: 2 Turkey: 4	Project method

5.4.1. Exposure to the natural environment

As seen in Table 7, while all of the kindergarten teachers from Norway (6 out of 6) suggested that exposure to the natural environment should be regarded as an important part of teaching methods/approaches, only 2 out of 7 kindergarten teachers from Turkey suggested it as an approach that can enhance children’s awareness of and positive attitudes towards the environment.

For instance, NO 2 stated that *“It is crucial that we take them outside and show them how to react when they are outside. We tell them that they have to be gentle with plants, trees and do not throw things on the ground. Sometimes they bring what they have found in nature to the kindergarten”*. Also, NO 3 said that *“We talk to children a lot about the weather, why we are outside (e.g., observing the weather) etc. We listen to their feelings about it. In our kindergarten, we can use the outside area the whole day*. Similarly, NO 6 highlighted the importance of exposure to nature by these words; *“Experience in nature is important. We can go on field trips. We let them use their body and how to act in nature. Children love to be in nature and in forests. We can organize different kinds of playing in the forest. We have a large outdoor space, different kinds of small trees and a place to make a fire in kindergarten”*. These answers indicate that Norwegian kindergartens seem to be very sensitive and caring about providing children exposure to the natural environment. It also seems to be an essential part of Norwegian kindergarten teachers’ agenda and curriculum that should be done regularly. As pointed out by several scholars (Liefländer et al., 2013; Green, Kalvaitis & Worster, 2016 and Hallås & Heggen, 2018), spending time outside and having contact with the natural environment can increase children’s sensitivity for protecting and preserving nature as well as develop positive attitudes towards the environment. Hence, kindergartens should provide

children enough exposure to the natural environment with effective and appropriate activities that can be done outside.

On the other hand, those two kindergarten teachers from Turkey (TR 4 and TR 7) also suggested that children should be provided exposure to the natural environment, yet they did not specify how to do that. For example, TR 4 said that; “*We can make observations in nature*” and TR 7 stated that; “*We can do activities outside*”. It is a positive thing that they consider outside experience and exposure to nature as significant for children, however, I argue that there is a difference between Norwegian and Turkish kindergartens’ understandings of these concepts. I am quite acquainted with Turkish kindergartens since I have had experience in kindergartens as a teacher and I have friends who are kindergarten teachers in Turkey. Also, I know some kindergartens in Norway, as well. Based on the interviews I have done and my personal experiences, I can claim that approaches and understandings of “providing children exposure to the natural environment” are considered quite differently in Turkish and Norwegian kindergartens. Namely, only 2 out of 7 kindergarten teachers from Turkey suggested that exposure to nature is important for children, however; they were not confident saying that. They did not specify how and why it is important as well as did not have much interest in answering this question. Hence, it can be interpreted that they perhaps thought how they should answer this question the best, and that’s why they said “outdoor experience and exposure to nature” are important parts of teaching methods regarding environmental education in kindergartens. Whereas, kindergarten teachers from Norway emphasized the significance of providing children exposure to the natural environment in a very confident voice and with reasons and benefits of it for children. As also emphasized by White (2004), being in natural environments offer children many benefits such as better psychological well-being and better cognitive functioning.

The Norwegian kindergarten teachers seem to know this fact, and they emphasized that they follow very carefully what the Norwegian Framework Plan for Kindergartens (Ministry of Education and Research, 2017) recommends regarding this issue. In the framework, the importance of “exposure to the natural environment” for children has been emphasized in many places. For example, it is stated that “*The children shall be given outdoor experiences and discover the diversity of the natural world, and kindergartens shall help the children to feel connectedness with nature*” (p.11) and “*Kindergartens shall inspire and make room for different kinds of play both outdoors and indoors*” (p.20).

On the other hand, in Turkey, Preschool Education Programme prepared by the Ministry of National Education (2016), mentions the approach of “exposure to the natural environment” in a few places. For instance, the programme provides activities regarding ten branches such as art activity, science activity, mathematic activity, etc., and it emphasizes that if the conditions allow, it is more appropriate for children to do these activities in outdoor (MONE, 2016). In addition to that, under the title of ‘science activity’, some of the suggested activities related to “exposure to the natural environment” are as follows; walking in natural places and observing living and non-living creatures in nature. Even if there are no direct indications about the importance and benefit of “exposure to the natural environment” for children, the programme still gives a focus on outdoor activities and contact with nature.

5.4.2. Learning by experience

The second suggested teaching method/approach for enhancing children’s awareness of and positive attitudes towards the environment is “learning by experience”. While 3 out of 6 kindergarten teachers from Norway recommended this approach, 4 out of 7 from Turkey suggested it (See Table 7). Some of the answers given for this method are as follows:

NO 1: *“First we can talk about things in nature, then show the same things in nature so that they get physical experience about what we have talked”.*

NO 4: *“We can do experiments; they can find things outside and bring them to the kindergarten”.*

NO 6: *“Trips experience in nature. Children love to be in nature and forests. We can create different kind of playing in the forests”.*

TR 2: *Since understanding abstract concepts is tough for children at these ages, we have to give concrete examples. We should let them touch, play and learn by experience. For instance, sometimes children find an ant or a worm in the kindergarten, then we observe them. I encourage them to use elements and objects in nature as a toy, for example, a tree piece. We also have an ecology club in our kindergarten where children are encouraged to plant their own fruits and vegetables. We then observe them growing and finally eat them. Moreover, we give children responsibilities for taking care of the animals in our kindergarten”.*

TR 3: *“You cannot teach children how acid and base react, but with an experiment of mixing vinegar and baking soda, they can understand that there is an effect between them. The*

important thing is observing and learning by experience. We also go to recycling factories with children”.

TR 4: *“We should let children learn by experience such as going for field trips, planting fruits and vegetables in kindergarten, observing things in nature”.*

TR 5: *“We can plant seeds in our kindergarten and grow our own vegetables such as tomato, cucumber and pepper”.*

Based on these answers, it seems that Turkish informants gave relatively more specific and detailed answers, while informants from Norway were more general when giving answers regarding this “learning by experience” approach in EE. Regarding Turkey, TR 2 based her answer upon the children’s developmental process claiming that children in the early childhood period may experience hardship in understanding abstract concepts; thus she suggested that we have to give concrete examples, let them touch, play and learn by experience (Kolb, 1984). She also gives examples from her way of using this method in teaching about nature and environmental issues, for example, by letting children use objects in nature as a toy such as a tree piece, or by encouraging children to plant their own fruits and vegetables etc. As she herself stated during the interview, this informant, among other Turkish informants, is more interested in environmental issues and activities. Hence, I argue that her answers in this and also in other questions involve more specific, detailed and interesting arguments and opinions. On the one hand, TR 3 focuses more on conducting experiments and going for trips with children in order to provide them real-life experiences regarding EE. She said that they go for trips to recycling factories with children where they can observe, understand and think about what is happening in such factories and why. They can then develop their concept of recycling and its benefits for both the natural environment and human well-being. With the guidance of the teacher, they can also associate this with the concept of “sustainability”. In the Preschool Education Programme (MONE, 2016), field trips are suggested as a way of learning by experience in a direct and meaningful way. It is also stated that such trips pave the way for children to know the environment they live in, achieve competencies in the educational programme, learn concepts and gain different experiences (p.28). The programme also suggests that children develop better and can show their skills in settings where they get experience and move freely (p.42). Regarding all these abovementioned points, it can be interpreted that Turkish kindergartens put emphasis on the importance of “learning by experience” and they use and recommend this method in teaching children about nature and environmental issues.

On the other hand, informants from Norway expressed their interest in the method of “learning by experience” by suggesting showing things in nature that they have discussed with children about them earlier (NO 1), or doing experiments such as finding things outside in nature and bringing them to the kindergarten (NO 4), or going for trips in nature such as to the forests, and then creating different kinds of playing there (NO 6). In the Framework Plan for Kindergartens (Ministry of Education and Research, 2017), “learning by experience” has been emphasized in several places. For instance, regarding EE and sustainable development, the framework suggests that “*the children shall be given outdoor experiences and discover the diversity of the natural world, and kindergartens shall help the children to feel connectedness with nature*” (p.11). It is also highlighted in the framework plan that outdoor exploration and experiences can stimulate children’s environmental awareness and their desire to protect the natural resources, preserve biodiversity and contribute to sustainable development. Seemingly, Norwegian kindergartens are required to provide children such experiences that can encourage their positive attitudes towards the environment as well as foster their understandings of sustainability.

The approach of “learning by experience” is indeed quite related to the method of “exposure to the natural environment” since they have many points in common. For instance, providing outdoor activities can be associated with both methods; when children are outside, they both get physical exposure to the natural world and also can learn things by gaining experiences outside. However, analyzing these two methods in separate sections will give the reader a better understanding of their importance and usefulness regarding EE.

As Samuelsson and Park (2017) claim, if we want children who take a stand and speak out for human rights, justice, and the environment, we must enable them to experience those ideas for themselves and to see themselves as human beings with rights. He further adds that if children’s acquired knowledge is not supported and reinforced by their own experiences, it is dead knowledge—something learned only for evaluation (Samuelsson & Park, 2017). Hence, kindergartens should allow children to have such experiences so that they can then relate those experiences with the concepts of environmental protection and sustainability.

In this study, it was also revealed that most of the informants from both counties have claimed that children may have different interests and capabilities, and therefore, they suggested that kindergartens should consider this factor when planning and preparing programmes for children. Given that, Kolb’s (1984) Experiential Learning Theory seems to focus on this issue

by suggesting different learning styles (divergers, assimilators, convergers and accommodators) that learners may have. It is therefore important that teachers provide children diverse and appropriate learning opportunities according to children's interests and inclinations. Regarding this, Kolb's (1984) learning cycle and stages could guide teachers in choosing the most fruitful and appropriate teaching methods regarding EE in kindergartens. In this way, learners will engage in the process of learning which will make their learning more meaningful (Akella, 2010) and long-lasting. Kolb (1984) also supports this claim stating that learners learn better if the subject matter is presented to them in a way that is compatible with their preferred learning style (Mulholland & Turnock, 2012, p.26). Additionally, ELT is a significant model in the identification and development of different teaching pedagogies appropriate for different learning styles including the importance of experience within learning (Akella, 2010).

Overall, in this study, "learning by experience" is suggested by informants both from Norway and Turkey as one of the teaching methods that can increase children's awareness of and positive attitudes towards the environment.

5.4.3. Visuals: images and videos

The third way addressed by several teachers of this study was visuals such as images and videos. While only 1 out of 6 kindergarten teachers from Norway suggested this method, 4 out of 7 from Turkey recommended this way of teaching. The answers categorized to this sub-title were not very detailed as opposed to other recommended teaching methods. Almost all of the informants who suggested visuals as a way of teaching methods only uttered that images and videos can be used for teaching children nature and environmental issues. Regarding Norway, the only kindergarten teacher (NO 1) who suggested this way does not even use this method in the kindergarten she works. It was only an idea that she could think at that time as a way of teaching children about the abovementioned issues. Hence, based on Table 3 and table 6 which show the used and recommended teaching methods by the kindergarten teachers I have interviewed with, I argue that Norwegian kindergarten teachers do not prefer visuals much as a teaching method regarding EE and sustainability, rather their focus is more on providing "exposure to the natural environment" (Bartlett, 1996; Pyle, 2002 & Liefländer, at al., 2013). However, in the Framework Plan for kindergartens (Ministry of Education and Research, 2017), the use of technology (visual aids etc.) has been emphasized. With this respect, it is stated that "*kindergartens shall stimulate the children to remain curious about natural phenomena, feel connected to nature and gain experience of using technology and tools. By*

engaging with nature, the environment and technology, kindergartens shall enable the children to build constructions from different materials and explore the opportunities offered by tools and technology and to explore and experiment with technology and natural phenomena together with the children” (p.52). Nevertheless, there is no direct expression regarding visuals as a way of teaching in EE and even in other learning areas (e.g. mathematic, arts etc.), too.

When it comes to Turkey, visuals seem the most used and preferred method of teaching children about nature and environmental issues. 4 out of 7 Turkish kindergarten teachers use and suggest this method (see Table 3 and Table 6). They stated that they use flashcards, images and videos to draw children’s attention to the subject and teach them. In the Preschool Education Programme (MONE, 2016), Visual aids have been explicitly mentioned as one of the suggested ways of teaching as follows: *“analyzing the board for seasons and weather, analyzing books, album and journal, taking photographs, analyzing photographs and watching documentaries”* (p.26). Similarly, it is also stated in the programme that kindergartens, in their science center, can provide materials such as camera, photos about science and nature, posters, films, documentaries (p.53).

In a nutshell, we can come to a conclusion that while Norwegian kindergarten teachers do not much prefer and use visuals as a way of teaching about nature and environmental issues, Turkish kindergarten teachers seem to rely heavily on visual aids in their teaching. Regarding the documents by the governments in Norway and Turkey, it is also seen that the Norwegian Framework Plan for Kindergartens (Ministry of Education and Research, 2017) mentions this method indirectly only a few places by addressing the use of technology as a way of teaching, whereas Turkish Preschool Education Programme (MONE, 2016) has several direct indications referring to visuals as a teaching method.

5.4.4. Project method

Project method was suggested by 2 out of 6 kindergarten teachers from Norway and 4 out of 7 from Turkey as an innovative and appropriate teaching method to develop children’s environmental awareness and positive attitudes towards the environment. Some of the interesting and significant answers are as follows:

NO 3: *“In our kindergarten we have some small projects. We prepare small projects to do outside and children can do these projects as a group”*.

TR 2: *“I have made a lot of environmental projects in our kindergarten. For example, this year we are planning to make a project called “Insects Hotel” where we will make a living space*

for insects out of dry fruits or vegetables”. “We will collect fruits’ peels and dry them so that we can give them to insects as a prey”.

TR 3: *“Sometimes I organize a “waste materials day” in our kindergarten, children bring waste materials from their houses, and a few months later, we make trees out of them. Or we make 3D animal design out of waste materials”.*

TR 4: *“In our kindergarten, we create small gardens, for example, a few days ago, children planted onions. They did it by themselves; first dug the soil and then planted the onion seeds”.*

TR 5: *“We make boards for seasons with children and experiments for instance; digging soil and observing worms”.*

Based on these answers, Turkish kindergarten teachers seem to have more focus on using the project method. Yet, the fact that most of the Norwegian kindergarten teachers did not mention this method as a way of teaching, does not mean that they do not make projects in their kindergartens. It was discussed in the earlier sub-sections that Norwegians love being outdoors and engaging with nature (Fjørtoft, 2001). Norwegian kindergartens provide children outdoor experiences and activities which may involve project method, too. I argue that the three methods which are “exposure to the natural environment” (Liefländer, at al., 2013), “learning by experience” (Kolb, 1884) and “the project method” are quite interrelated and interwoven. For instance, planting vegetables in the kindergarten can be considered relevant to all of these three methods. By touching the soil, children will get exposure to nature; by planting, they will learn by personal experiences; and this activity they have done is kind of a project. Hence, this research does not claim that one of these methods is the best, instead, it claims that all of these methods discussed in this research should be provided in order to address children’s different interests and abilities.

5.5. Teachers as “role models” and the need for environmental education for teachers

The kindergarten teachers from both countries were asked how teachers can contribute to the development of environmental education in kindergarten and, they were also asked if they think teachers should also receive environmental education (see Table 8 below).

Table 8: Kindergarten teachers' view on if teachers should receive environmental education

Question: “Do you think kindergarten teachers should receive environmental education?”	Answers		
	Yes	Depends on the teacher’s interest	No
Norway	5	1	0
Turkey	7	0	0

The answers revealed that all of the kindergarten teachers of this study agreed on the importance of teachers as “role models” for children regarding EE (Prince, 2017). And, most of the teachers said that teachers should receive environmental education so that they can fully understand the importance of it and be knowledgeable enough to be able to teach and develop this concept in kindergartens. Only one kindergarten teacher from Norway claimed that receiving environmental education depends on the teacher’s interest. Thus, even if she did not disagree with the idea of “kindergarten teachers should receive environmental education”, she implied that it should be based on the teacher’s interest and willing. However, The Norwegian curriculum requires using sustainable development as a core value (Ministry of Education and Research, 2017) which indicates that all kindergartens in Norway shall promote sustainable development. Therefore, teachers in kindergartens should also be promotive and knowledgeable about the concept.

Some of the interesting and relevant answers to this question were presented below:

NO 4: *“We as teachers have to talk about the environment just from the early ages, we can just go out and see what’s happening outside, with older ones we can do experiments, they can find things outside and bring them to the kindergarten.”*

NO 6: *“teacher is a role model for children. They have to be in front of them with a smile to show how to act in nature.”*

TR 2: *“We tell children that we should not throw litter, yet being a role model is also important in this sense. For example, if we see children throwing litter and we warn them or we take the*

rubbish and put it in the waste bin, children see this and internalize this habit. Hence, teachers have a big role as they are the role models for children.”

TR 3: *“Children take teachers as role models, therefore as teachers, it is important to maintain our good environmental habits so that children can also maintain it”.*

TR 4: *“Teachers are role models, so they should do as they say. If they say throwing rubbish around is a bad thing, and if they do so, it will affect children’s attitudes too”.*

Based on these answers, it can be inferred that both Norwegian and Turkish kindergarten teachers consider teachers as role models for children regarding environmental awareness and developing positive attitudes towards the environment. I can say that almost all of the informants were aware of their tremendous role, as teachers, in this issue and they expressed their interest in receiving environmental education so as to become better examples for children as well as to develop their own understandings of the concepts such as environmental protection and sustainable development.

National early education documents from both countries also emphasize teachers’ role in achieving development in EE and SD in kindergartens. For instance, in the Turkish Preschool Education Programme (MONE, 2016), it is claimed that in order for children to develop and show positive attitudes towards the environment, teachers’ attitudes should also be right and positive (p.26). As TR 2 stated *“... if we see children throwing litter and we warn them or we take the rubbish and put it in the waste bin, children see this and internalize this habit”.* Hence, teachers should also actively participate in the progress of fostering children’s understandings of the environmental protection and its related issues by being conscious of and responsible for their own actions and attitudes regarding the environment. Mat Said and Paim (2010) also suggest that teachers are required to be prepared and equipped with all necessary psychological, cognitive, and social skills in order to successfully convey the concept of EE to the children.

On the one hand, in the Norwegian Framework Plan for kindergartens (Ministry of Education and Research, 2017), it is also emphasized that kindergartens play a significant role in promoting values, attitudes and practices for more sustainable communities (p.10). Hence, kindergarten teachers are particularly trained to fulfill the tasks assigned to kindergartens and they are required keep up to date and be good role models for children (p.15). Regarding sustainable development, the Framework Plan also suggests that kindergartens should allow children to understand that their present actions will have consequences for the future (p.10).

Relating teachers' role in EE to the model of education *about, in and for* the environment, it seems that Turkish kindergarten teachers mostly prefer and focus on education *about* the environment in which facts about and principles of the environment and the working and interaction of natural systems and human system are introduced (Mat Said & Paim, 2010). On the other hand, Norwegian kindergartens are more likely to focus on education *in and for* the environment where children are provided direct and regular exposure to the natural environment and encouraged to think critically and observe their surroundings. Hence, the teachers are required to possess essential knowledge and skills in order to truly and adequately address those aspects (Mat Said & Paim, 2010).

CHAPTER 6: CONCLUSION

6.1. Conclusion

This thesis is built upon three main concepts; environmental education, sustainable development, and early childhood education. The study considered these three concepts interwoven and explored the hypothesis that using innovative, creative and appropriate teaching methods can enhance children's understanding of the concepts of EE and SD. With this hypothesis, this study investigated what kinds of teaching methods are considered having positive effects on children's understanding of and attitudes towards the environment, by some kindergarten teachers in Norway and Turkey.

The study tried to contribute to the limited research area on the role of teaching methods in promoting environmental education in kindergartens, by exploring kindergarten teachers' use of teaching methods in Norway and Turkey. With this respect, the main research question in this study was:

“How can teaching methods facilitate developing environmental education and education for sustainability in kindergartens?”

In order to answer this main research question, the following sub-questions have been answered as follows:

Question 1: What is the relationship between education and sustainable development?

The empirical findings have shown that kindergarten teachers of both countries are aware of a close relationship between education and sustainable development in a way that education is deemed as a strong tool to achieve sustainable development. The informants of this study seem to reflect a certain consensus in both countries that sustainable development should be

integrated into education in order to provide children enough exposure to the concept and allow them to contribute to it by comprehending it truly and being eager to take necessary actions.

Question 2: What kinds of teaching methods/activities are being used in kindergartens in Norway and Turkey regarding EE and SD? What are the differences between these two countries' approaches to environmental education?

When analyzing the teaching methods/activities used and/or suggested by kindergarten teachers of this study to teach environmental issues and sustainable development, four methods have been identified: (1) exposure to the natural environment (2) learning by experience (3) project method (4) visuals: images and videos. The main difference between the interviewed kindergarten teachers' approaches in Norway and Turkey, respectively, seems to be related to a Norwegian focus on "education *in* and *for* the environment" by providing children outdoor experiences and exposure to the natural environment. For Turkish kindergarten teachers, the study seems to reveal a tendency to focus more on "education *about* the environment" by promoting indoor environmental education by using visuality such as images and videos.

Question 3: What possible influence of culture regarding the implementation of environmental education and sustainable development can be identified?

The interviews of this study (presented in part 5.2. and part 5.3.2.) seem to underline that culture indeed has an impact on children's understandings of and attitudes towards the environment. This impact can be both positive and negative. For instance, it was found that the informants of this study from Norway give attention to the significance of the connection between culture, nature, and individuals. It was also revealed that Norwegian kindergarten teachers of this study use more methods, approaches, and activities that can foster children's connectedness with nature and raise their awareness and promote eco-centric attitudes towards the environment. Being outdoors quite often and having direct contact with nature has been part of Norwegian culture that is passed through generation to generation.

On the other hand, the interviews of this study seem to underline that Turkish culture may not support environmental protection and sustainable development enough due to their beliefs and customs. Therefore, Turkish children are not accustomed to being outdoors often, especially during the winter season or in a rainy weather. However, it is claimed in this study that we should let children experience things in nature without regarding the weather conditions. This

is one of the ways to raise children's awareness and increase their positive attitudes towards the environment.

Overall, the study reveals that there are four teaching methods used and suggested by kindergarten teachers of this study, regarding the development of environmental education. They are listed as follows:

- 1) exposure to the natural environment
- 2) learning by experience
- 3) project method
- 4) visuals: images and videos.

Based on the restricted data gathered through the interviews with 13 kindergarten teachers, this study claims that these methods seem to have positive impacts on children in terms of their understanding and practices of the concepts of environmental education and sustainable development. However, it remains uncertain if these methods have actually positive effects on the Norwegian and Turkish children's environmental awareness and their attitudes towards the environment. This issue might be elaborated more in future research with the inclusion of children along with kindergarten teachers.

6.2. Limitations

It is imperative to mention that there are some limitations of this thesis. First of all, the comments and outcomes in the "results, analysis and discussion" section are based on the subjective point of view in which the researcher interprets the findings according to the collected data and national documents from both countries. Hence, there is a possibility of "researcher bias" which may cause misinterpretation of the collected data.

Second, in total, 13 kindergartens teachers were interviewed and their answers were used as the main source of data analysis. However, the fact that 13 interviews can never be representative enough makes this research not generalizable, which is one of the weaknesses of this study. Additionally, there may be a lack of various other perspectives, for example from key informants. Therefore, more interviews with key informants such as people from the government who are responsible for educational issues can be interviewed in future research.

Third, few of the interviews could not be recorded since some of the informants did not give consent for their voices being recorded, hence only notes have been taken from such interviews.

This may cause the researcher to take missing notes, and/or notes according to her perception and interpretation of those interviews which might indicate that some bias may have occurred in analyzing and interpreting those interviews.

Fourth, the research applies the purposive sampling technique in which participants are selected non-randomly, that shows that the researcher is subjective and bias in choosing the subjects of the study (Etikan, Musa, & Alkassim, 2016). This may prevent the research to be generalized to the whole population.

Lastly, the interview guide which was prepared by the researcher herself may have caused some weaknesses in this study. For instance, the choice of the guiding questions may have led the informants gave similar answers to the questions and made the researcher thought that data saturation had been achieved.

6.3. Suggestions for future research

Although this study has provided some insights regarding the teaching methods that can promote environmental education in kindergartens, further research is needed for several reasons. First of all, kindergarten children can be included in the study in order to evaluate their understandings of the concepts of environmental education and sustainable development as well as to observe their environmental attitudes. With this purpose, a training programme which consists of several teaching methods, can be given to the children, and at the end, evaluations can be made based on their progress considering before and after receiving the training programme. Second, it may be important to research further teaching methods, then to develop and teach them to early childhood teacher students and implement them. Third, the scope of the interviews can be broadened; more kindergarten teachers, more cities, or even other countries can be investigated. Fourth, in order to facilitate children's learning process and foster their positive attitudes towards the environment, parents' involvement can also be given attention.

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Appendix: Interview guide

- 1) How long have you had experience in kindergartens? Which age group are you working with?
- 2) What does quality education mean for you personally? What does quality environmental education mean for you?
- 3) Do you teach environmental issues? Can you give examples? What kinds of teaching methods or activities do you use to teach environmental issues?
- 4) What do you think about treating the learners (children) as passive recipients of knowledge or as active participants in the construction of meaning and understanding?
- 5) Do you think there is a relationship between environmental knowledge and children's attitudes?
- 6) Do you think culture has an impact on environmental attitudes of children? Can you give examples? How do you think Turkish culture/Norwegian culture can contribute to promoting children's positive environmental attitudes?
- 7) How could environmental education contribute to creating a more sustainable environment? Can you give examples?
- 8) Is there a specific educational act on environmental education in Turkey/in Norway? How is your impression about the government's view on environmental education?
- 9) Are there upcoming projects to improve environmental education in Turkey/in Norway? In your kindergarten?
- 10) What do you think, how can we apply our knowledge about the environment in the real life? We know about the environment and its problems, but do we use this knowledge in practice? What about children and adults in this connection? Which one do you think is more considerate and caring for the environment?
- 11) How do you think, environmental education could be improved to increase the number of responsible individuals?
- 12) What is the teacher's role in the implementation of environmental education? Do you think teachers should be educated particularly for environmental education? How should this education look like?