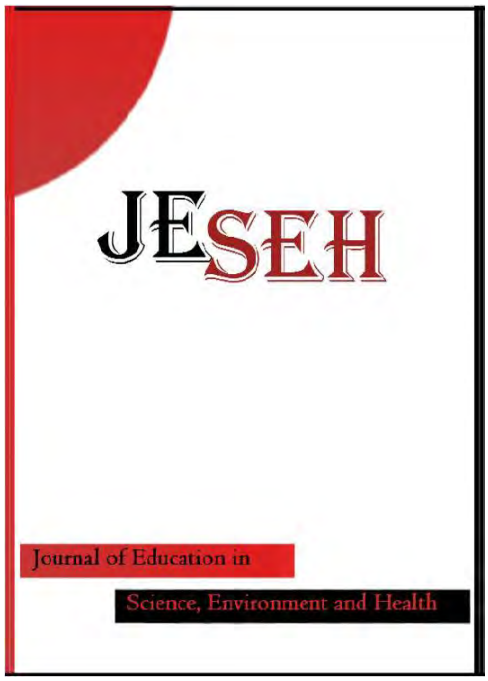

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Abstract

The current study aims to understand the expectations of pre-service preschool teachers regarding what kind of environment we will live in in the future and the reasons behind these expectations in terms of sustainable development (SD). To this end, the current study was conducted based on a phenomenological model with the participation of 77 pre-service preschool teachers. The participating pre-service teachers were first asked to draw the future environment they expect to see. Subsequently, they were interviewed and asked to explain their drawings and why they hope to see that environment in the future. According to the study, most pre-service teachers have negative expectations about the future environment. On the other hand, there are a few positive and technology-oriented expectations. Furthermore, a significant portion of the participants explained the environmental dimension of SD. On the other hand, a small number of participants preferred to explain different pillars together by creating cause-and-effect relationships. Given the obtained findings, it is suggested that environmental education should be more widespread at every level of schooling. The political, economic, and social pillars of SD should be more extensively incorporated into the existing curriculums.

Introduction

> *"It is 2030. The world's population has now grown to 8.5 billion people. Global temperatures are now an average of 1.2 degrees Celsius higher than in 1880. Seas have already risen forty centimeters since 2016, suggesting that the models of that year that projected a rise of two meters by 2100 were likely significant underestimates. In addition, the Arctic Ocean is now consistently ice-free every summer. Moreover, several countries have lost a primary source of fresh water and freshwater storage as glaciers grow smaller and smaller each year."*

In the book *Rethinking Education on a Changing Planet,* Assadourian (2017, p.303) projected the future environment with these words. When we consider the world's current situation due to the Covid-19 outbreak, it is clear that Asssadourian's description of the future environment is quite realistic. Nature is being destroyed at an unprecedented pace in human history. While the planet is changing and natural resources are being depleted at a frightening speed, many countries have long regarded education as an essential factor in combating the global crises that environmental problems are causing now and will drive in the future. Education aims to raise individuals with the necessary knowledge, attitude, and skills required for a sustainable life by focusing education programs on sustainable development (SD), starting from early childhood education (ECE) (UNESCO, 2012).

SD is not only about what percentage of the world's natural resources are consumed: all issues, such as poverty, population growth, gender equality, justice, social life, and solidarity, are related to how and by whom natural resources are consumed. As Stern (2006) emphasized, the poorest countries in the world, which hardly consume any natural resources, will be the ones most severely affected by the consequences of climate change.

From this perspective, SD is a dynamic phenomenon that emerges and evolves in line with the world's needs. SD is defined in three pillars: environmental, sociocultural, and economical. Considering the place of development in politics, "politics" has been added to these pillars. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2002) classification, SD is established on four pillars: environmental, social, economic, and political.

As a result, SD is a concept that covers issues such as gender discrimination, human rights, and the right to education, health, safety, and intercultural communication, supporting the sustainability of animal and plant species, ecosystems, and natural resources and fighting climate change (UNESCO, 2005). In this context, Education for Sustainable Development (ESD) requires integrating and presenting social, political, and economic development concepts and environmental issues in an educational framework (Davis, 2015).

When re-evaluated in this framework, it would be more appropriate to see environmental problems not only as pollution and excessive use of natural resources but as a whole with social, political, economic, and cultural pillars. It has become almost impossible to distinguish between environmental and human problems today. Human beings not only affect their environment with their behaviors but also are affected by the environmental systems they are in (Bronfenbrenner, 2005). Lewin (1942, p.218) described this behavior as 'the environmental and psychological factors of the current situation surrounding the behavior' in his Field Theory. He defined the psychological factors mentioned here as people's perceptions, beliefs, thinking skills, etc. Shuman and Ham (1997) integrated Lewin's theory into environmental education, stating that teachers' personality, ecological philosophy, ideas, and attitudes would affect their environmental actions. Thus, perceptions about the environment's future can also be said to be essential for the relationship of humans with the environment.

At this point, asking pre-service teachers the question, "What kind of environment can humanity expect in the future?" is essential because this question can elicit their perceptions of the future environment, and these perceptions will affect their beliefs, values, and behaviors as related to education for SD. Another point to be underlined is the role of education and the teacher in shaping children's perceptions of the environment's future (Shuman & Ham, 1997). Therefore, it is essential to investigate the perceptions of teachers and pre-service teachers about the future of the environment and the factors that cause these perceptions. In this respect, the first research question to be addressed in the current study is as follows:

How do pre-service preschool teachers see "the future environment"?

At the UN Sustainable Development Summit held on September 25-27, 2015, "2030 Sustainable Development Goals (SDGs)" were adopted with the signatures of 193 countries. SDG 4 is Quality Education, which emphasizes that quality of education is related to SD. To accomplish this goal by 2030, country administrations, society, and individuals should realize their responsibilities. In this context, SDG 4 stipulates that all students should acquire the knowledge and skills necessary to promote SD by 2030 and emphasizes the role of higher education in this process. To this end, by 2030, it aims to take actions, including international cooperation, to train qualified teachers in developing and less developed countries (United Nations, 2015). Increasing the quality of teacher education for a sustainable world was previously addressed in the Bonn Declaration (UNESCO, 2009), and it was discussed that teacher-training programs should be handled reworded on ESD and that pre-service teachers should be given teacher training that emphasizes the knowledge, skills, attitudes, and values required for a sustainable future.

Higher education institutions in many parts of the world plan and implement various actions to promote sustainability, and teacher education programs should be reoriented in this sense (Shephard, 2008). As Samuelsson and Park (2017) highlighted, the underlying reason is that pre-service teachers, who are future teachers, have a vital role in promoting ESD by supporting the attitudes and behaviors of each child to contribute to a sustainable life. On the other hand, how teachers perceive SD is mainly related to the learning content they prepare for children regarding SD (Somerville & Williams, 2015). Therefore, like the world, SD should be important in Turkey's teacher-training process. Sustainability-related courses are offered in teacher-training programs, and pre-service teachers propose projects to support SD in social responsibility courses. In this connection, it is crucial to see to what extent pre-service teachers relate to SD when describing the environment of the future; therefore, the second research question of the current study is:

Which of the four pillars (environmental, social, economic, and political) of SD explains the reasons behind the scenarios developed by pre-service teachers on the issue of "the future environment"?

Method

Research Model

This phenomenological study aims to understand the pre-service preschool teachers' opinions about "the future environment." In addition, it also seeks to understand the reasons behind the pre-service teacher's views about

"the future environment" and under which of the four pillars of SD (political, environmental, economic, and social) they can be handled. In the study, "future" and "environment" will be used as the central phenomena. Phenomenological research is done to understand a person's or people's experiences related to any phenomenon (Creswell, 2013). Van Manen (1990) states that the primary purpose of phenomenological research is to make a universal definition based on individual experience. Husserl (1931), who formed the basis of phenomenological research, emphasizes that the essential criterion for understanding ideas is to be free from prejudices. From this viewpoint emerged the concept of transcendental phenomenology. Moustakas (1994) emphasizes that perceiving everything about the phenomenon as something new encountered for the first time is the basic understanding of transcendental phenomenology. The current study assumes pre-service preschool teachers are free from prejudices because they have been dealing with environmental issues for 20 years. Therefore, the present study was conducted based on transcendental phenomenology.

Setting and Ethics

The current study was conducted on the pre-service preschool teachers attending the Department of Pre-school Teaching in the Education Faculties of Kastamonu University and Mersin University. The setting of the study is these two universities, and classes of the education faculties of these two universities were used. The researchers work in these departments as tenured faculty members. Thus, there is already teacher-student interaction between the researchers and the participants. The participants were given the necessary information to take our researcher role to the fore. The current study was conducted on a volunteer basis, so the participants were told that they would not be graded for the activities they would be involved in and that the study would not bring any extra responsibility to them. Before initiating the study, the faculty administrators were informed, and the data were collected so as not to interrupt the regular classes of the participants.

Study Group

The research study comprises pre-service teachers attending the Department of Pre-school Teaching in the Education Faculties of Kastamonu University and Mersin University, taking the elective general culture course of Sustainable Development and Education in their second year. As Turkish is the second language of one of the participants, they departed from the study voluntarily since he/she could not discuss the questions in detail. This student was of Syrian origin and was in Turkey with the status of a temporary refugee. He/she gave the following written explanation "*I want the war to be over and to go to my country,"* and even this short statement is relevant to the current study. Therefore, this student was excluded from the study, and thus it was conducted on 76 preschool pre-service teachers. The course Sustainable Development and Education is an elective course that the students select at their discretion. Therefore, the homogenous sampling technique was used to form the study group. This technique is widely used in qualitative research because it reduces the differences between participants, offers the ease of focusing on the phenomenon, and facilitates the analysis process (Miles & Huberman, 1994); therefore, it was preferred for the current study. Though this reduction of differences is a limitation, when the socio-cultural status and facilities of the cities where these two universities are located and their place in the achievement ranking are considered, this limitation can be partially overlooked.

Data Collection

The current study's data was collected from the participating pre-service teachers through their drawings about the phenomenon of the "future environment" and the interviews conducted based on the drawings they had produced. In the data collection process, firstly, a meeting was held with the participation of all the participants, where it was explained to them that they would draw paintings and be interviewed for a scientific study. Those who did not want to participate in the study were asked to inform the researcher. The students who agreed to participate were told they could leave the study whenever they wanted.

A ready-made document was prepared for the participants to produce their drawings on. This document consisted of two parts: the first part was for drawing, and the second or indicating all the codes involved in the drawings and for the interviewer to take notes. All the participants produced their drawings in one session at the same time. Some measures were taken to prevent the participants from being affected by each other in the class. Each participant was personally instructed on what to do. The participants used whichever drawing technique they wanted to make their drawings. The large majority of them used colored pencils. They drew for about 30 minutes. After the completion of the drawings, the codes in the drawings were determined.

Another source of data was the interviews conducted with the participants individually. To keep external factors under control, the participants were invited to the researchers' rooms for interviews. This was a place with suitable conditions for the discussions. In addition, the researchers were already familiar with the students as they had conducted some educational and instructional activities at school together. This way, the possible emergence of factors that could spoil the interview process, such as anxiety or fear of being alone with a stranger, could be controlled.

During the data collection process, participants were asked: What environment do you think people will live in in the future? Then they were requested to draw their answers. Accordingly, interviews were held with the participants. The interviews were related to the drawings. Although different questions were asked to the participants according to the flow of the dialogue, some questions were asked to each participant. These questions are posed: What are the reasons for creating such a future in your drawing in this way? What is the role of humans in having such a future? Due to the nature of the research model, no interviews were conducted in a structured form. Therefore, each participant is assumed to know and experience the related phenomenon.

Data Analysis

The data collected in the current study were analyzed in the framework of transcendental phenomenology. In this respect, a textural and a structural description of the data were performed. According to Creswell (2013), textural description is done to understand what the participant experiences about the phenomenon, and structural characterization is done to understand what the participant experiences regarding the situation and content. Through the drawings, it was hoped to determine the structures (code) that remained in the participants' minds about the concept of the future environment. To put it more precisely, drawing creates textual description by enabling us to understand what they are experiencing about the phenomenon of the future environment and the construction of the phenomenon in their mental structures due to this experience. During the analysis, the style and tone of drawings were determined to realize the content, whether positive or negative, etc. The place of the drawings' is also crucial in establishing a spatial relationship with the participant's perception of the future environment. While the style of the drawings points to the participant's way of expression and makes a small contribution to the primary purpose of the research, the tone and place are also critical in understanding the mental structure of the participants' views about the phenomenon.

Table 1. The findings obtained from the participants' drawings

Categories	Frequency (f)	Percentage (%)
Drawing Style		
Symbolic	30	39.5
Depictive	44	57.9
Both	2	2.6
Drawing Tone		
Positive	4	5.3
Negative	51	67.1
Technological	18	23.7
Dual	3	3.9
Where		
Nature	6	7.9
Urban	35	46.1
Rural	2	2.1
World	12	15.8
N/A	21	227.6
Sustainable Development Pillars		
Social	4	5.3
Political	3	3.9
Economic	5	6.6
Environmental	53	69.7
Social and political	2	2.6
Social and environmental	1	1.3
Political and environmental	1	1.3
Economic and environmental	6	7.9

Interview scripts were used for structural description. With the data obtained from the interviews, it was attempted to reveal how the participants see and experience the relevant phenomenon in terms of the conditions and situations they are in now about the future environment. Furthermore, it was attempted through textual and structural descriptions to understand how the future is visualized in the participants' minds and how they understand and internalize the phenomenon. All these procedures were performed using the method developed by Colaizzi (1978). By this analysis technique, basic sentences in the interview texts were identified, specific meanings were developed from these, and themes created the light of these meanings. In the findings section, the data given with the sub-title of Sustainable Development Pillars, as revealed in Table 1, emerged from the interview analysis. In addition to the abovementioned purpose, the interviews were also used to support the findings obtained from the drawings.

The data obtained from the interview texts consist of two themes. Firstly, the drawing and participants' views about the future environment were focused on. In this theme, the tone of the drawing, positive, negative, technological, and environmental classifications of the future environment were performed. The second theme attempted to understand why and how the participants believed the future environment would be as shown in their drawings and how this was by their experiences and expectations. The reasons given by the participants were located in one of the four basic pillars of SD (Davis, 2015): political, environmental, economic, and social.

Reliability

One of the most critical problems of qualitative research is the reliability of the results derived from the data. There are a variety of ways to ensure this. The triangulation technique based on the researcher-centered post-positivist paradigm was used in the current study. With triangulation, researchers combine multiple and different sources and interpret them with evidence to support the findings (Creswell, 2013). Moreover, according to Creswell and Miller (2000), triangulation is a popular technique, and by this method, it is possible to collect data in different ways and allow in-depth data analysis.

In the current study, the data were collected based on both visual and interview techniques. To ensure triangulation, a specialist in the field of ESD was appointed as an external observer during the analysis. After the researchers finished their analysis, the external observer's opinions about the process were asked, and the external observer analyzed the findings. The agreement between the researchers' and the external observer's themes was calculated as 0.91 by summing the Kappa Fit Index. In this way, it was concluded that the external observer and researchers achieved reliability.

Findings

The current study's findings were obtained from the drawings and documents of the interviews conducted with the participants. First, the drawings were analyzed, and the conclusions obtained were collated. Then, the results of the interviews were discussed.

Figure 1. A sample drawing using the dual method of the future environment
drawing style: depictive, drawing tone: dual, place of drawing: nature

Findings Obtained from the Drawings

The drawing style shows the depictive style preferred by the participants in their drawings. More than half of the participants (*f*= 44, 57.9%) were found to have drawn their drawings in the depictive style. While 30 (39.5%) participants preferred to use symbolic elements in their drawings, only two (2.6%) used both techniques (Details can be seen in Table 1, in Annex).

The drawing tone indicates the participants' opinions about what kind of place the future environment will be compared to today's environment. The most remarkable finding here is that most participants (f = 51, 67.1%) drew the future environment in a more unfavorable condition than it is today. In contrast, only four participants (5.3%) drew the future environment more favorably than today. Furthermore, the number of participants drawing the future environment in a more technological structure than today is considerable (*f*= 18, 23.7%). All participants who produced these drawings depicted buildings piercing the sky, flying cars, rockets, or interplanetary journeys in the future. From the data in these drawings, it is impossible to determine whether such an environment will be better or worse than today. In addition, three participants (3.9%) used dual scenarios in their drawings. All three indicated that today is a turning point for humanity, and if it continues, the future environment will worsen. However, still, if one manages to solve the problems through information and technology, there will be a much better environment in the future.

Figure 2. A sample drawing with a positive perspective on the future environment
drawing style: symbolic, drawing tone: positive, place of drawing: world

Figure 3. A sample drawing with a negative perspective of the future environment
drawing style: symbolic, drawing tone: negative, place of drawing: world

The place drawn indicates where the events in the participants' drawings happen. As researchers, we care about this finding in terms of understanding where the demographic structure, while in the background of the

participants' minds and directly affecting SD, will be in the future. From the perspective of SD, it is seen that in there are cities in nearly half of the drawings (f = 35, 46.1%), the number of participants who drew their drawings in the context of nature (f = 6, 7.9%) and the countryside (f = 2, 2.6%) is quite limited. Therefore, it is impossible to understand where the drawings of 21 participants (27.6%) are set. The remaining 12 (15.8%) participants indicated the world as the place.

One or more of the four pillars of SD can be explained by the situations emerging in the drawings. Although the findings obtained from the interviews are important to understand the distribution here better, the distribution in the drawings is also important in revealing a general understanding of the study group. First, how many pillars are included in a drawing matters to us as researchers. In this sense, the findings from the study group are quite limited. The arguments or thoughts used by 65 participants while explaining how the future environment will be related to just one of the pillars of SD. The remaining 9 (11.6%) participants discussed the effect of two pillars. A large proportion of the drawings explained with a single sub-dimension (f = 53, 81.5%) stated that the future environment would b shaped by the reasons found in the environmental sub-dimension. The others are shown in Table 1.

The more important finding of the current study is to explain the reasons for the formation of the future environment by establishing connections between more than one sub-dimension. The information obtained here is limited. The participants could associate at most two pillars or indicate this in their drawings by establishing a cause-effect relationship. These participants constitute a small part of the study group (*f*= 9, 11.8%).

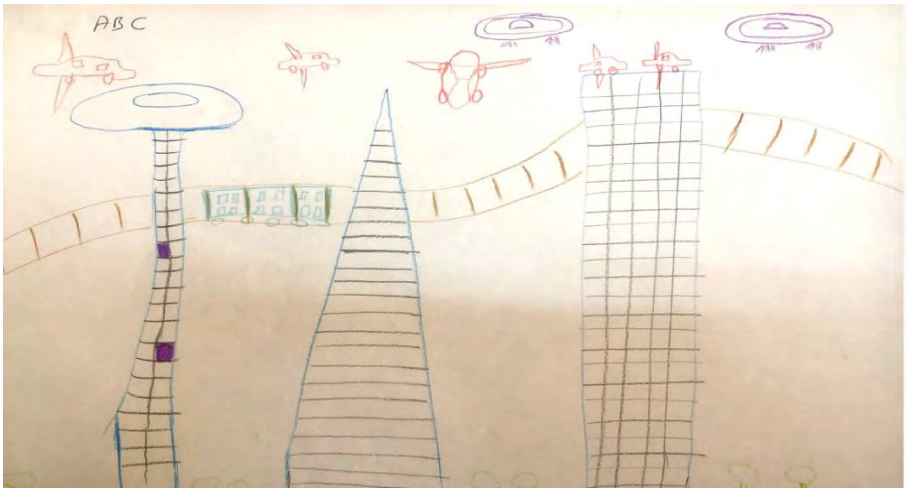

Figure 4. A Sample Drawing with the Technological Perspective of the Future Environment
Drawing Style: Depictive, Drawing Tone: Technological, Place of Drawing: Urban

Findings Obtained from the Interviews

Explanations Made with a Single Reason

The data obtained from the interviews showed how the views of the future environment in the participants' drawings were shaped. In addition, it became clearer through which pillars of SD these views could be explained. A minimal number of participants (f = 4, 5.3%) explained the social sub-dimension of SD. The social dimension of SD focuses on peace, equality, and human rights. All participants commented negatively about the environment based on war and post-war human rights victims. P41 expressed their opinion: *"A tank and a guy are shooting a rocket in my drawing. What drives me to this drawing is the obliviousness and selfishness of people. People who have problems even with mutual communication and cannot tolerate each other offer war as an option at the end of the day. This understanding will destroy us. Therefore, I do not think a better environment awaits us in the future."* Another participant (P56) emphasized the theme: *"I think that there will be a bad environment in the future due to people devoted to worldly materials and seeing their country as superior to other countries. The most important reason for this to happen is that I think people care about the values of the groups they feel they belong to and ignore the values of other groups and people. Nations or groups within nations are not seen to be equal. This is a serious problem."*

Another sub-dimension of SD is politics. The politicians, practices, decisions, and decision-making processes

are important focal points within the sub-heading of politics. A limited number of participants (f = 3, 3.9%) provided opinions that could be included in this sub-dimension. P30 expressed his/her views about the sub-dimension of politics *"(...) After all, everything is sadly in the hands of a few politicians. They affect the rights of our citizens with the decisions they make. The point where these policies will take us is obvious: the collapse of peoples, policies which failed to inequality, racism, and sectarianism. This will destroy the whole world."* P1 explained his/her opinions based on the decision-making process of politicians and the quality of the decisions made: "*Every decision made by politicians pushes us to become more polarized. They try to turn people into enemies as if they were doing it intentionally. There is fierce competition, and this will bring our end. The implemented policies seem to force us to work harder and to be more content with less. In such conditions, I do not expect a good future."*

The other sub-dimension on which the participants expressed limited opinions (*f*=5, 6.6%) is the economy. The opinions expressed about this sub-dimension consisted of professions and sources of income, with particular emphasis on the low-income and unfair distribution of income. K64 emphasized the inequality in income distribution *"I do not think that income growth can keep up with this rapid consumption growth. People are constantly looking for ways of earning more. The rich are becoming richer. This makes them unreachable. Moreover, this makes people feel frustrated."* P3 also emphasized the inequality in income distribution *"People try to live according to their income, but people who qualify as really poor have callous living conditions. So I think they will somehow disrupt this system. People need to distribute money more fairly."* K58 expressed his/her opinions: *"The most important reason for the worlds becoming a worse place in the future is that people lose their current values and substitute money for them. Everything is money now. Our only aim in life is to earn money. Therefore, selfishness has reached its peak. We thought everything was enough for us, but it did not work. It was not shared as we had thought."*

More than two-thirds of the participants (f = 53, 69.7%) expressed opinions within the scope of the environmental sub-dimension. Among these are their negative and positive expectations about the future environment. Only four participants expressed an expectation of a future environment better than it is now. The remaining 49 participants, on the other hand, expressed negative opinions. The participants expressed positive opinions in general and thought that people would realize the facts after a certain point with the help of technology. In this regard, P4 said his/her opinions: *"People play the leading role in forming this world. I think we have realized we were doing it wrong. We have the technology. I believe that it will correct this."* P28 expressed his/her opinions: *"I think people are now aware of the facts. We will save the world and our environment. Electric cars have become widespread. We have alternative energy sources. People are more conscious about conserving natural resources. A better future will come true thanks to technology and scientists."*

On the other hand, the common point emphasized by all the participants having positive opinions about the future environment within the context of the environmental sub-dimension is the pressure on using natural resources. In this regard, P44 expressed his/her opinion: *I do not know exactly what will happen in the future. However, we are at the highest point of natural resource consumption. I hope it will remain there. However, we have lost our direction within this production and consumption chain. Even if we notice the depletion of natural resources, we manage it somehow with the perception that we have time anyway. We do not think about future generations but do not even think about our generation."*

Explanations Made Over Multiple Reasons

The pillars of SD are processes that interact with each other. Our expectation was the establishment of cause-and-effect relationships involving more than one sub-dimension. However, only a small proportion of the participants (*f*=9, 11.9%) expressed multiple reasons. Six of these nine participants established connections between the economic and environmental pillars. P2: *"We have established more factories to produce and consume more. Factories have consumed natural areas and resources for their raw materials. Now we have factories, but we have destroyed nature. It will be worse in the future."* P12: *"The current state explains everything. A life focused on money and consumption is being designed for us. We have taken everything that works for us, as much as we want, and we are about to finish nature just as we need it for our consumption."* Two participants established connections between the social and political pillars and thus shaped their expectations of the future environment accordingly. In this regard, K48 stated: *"This question reminded me of the book titled* Fahrenheit 451. *I think everything is clearly stated there. The politicians we have chosen will first suppress us with the decisions they make; the policies they offer us will make us enemies, then humanity will experience a deep social collapse."* Moreover, P33 stated: *"Worse environmental conditions are waiting for us*

in the future. First of all, social relations among people have been destroyed. States have done their best to make this happen. I think the states caused the collapse of social life. States do not implement correct policies. They act in their interests."

One of the remaining three participants established connections between the social and environmental pillars. In this regard, P16 stated: *"We humans are socially polarized. We do not care about each other's views. We are selfish. This selfishness makes it harder for us to understand nature, let alone understand each other. Since we do not understand nature, we will rapidly destroy it for our purposes."* P24, on the other hand, stated his/her opinions about the relationship between the social and economic reasons as follows: *"(...) because now we are living for our interests. Everyone is focused on his/her interests. We put control into the hands of the people wearing suits and sitting in comfortable seats. We watch how they get us stuck and expand their positions in their banks, nature, environment, animals, water, etc. Nobody cares about them anymore. Economies will collapse, and destruction will start."* Finally, P69 expressed his/her opinions about the relationship between the political and environmental pillars: *"Advances in science will affect our policies. Flying cars etc., everything will be produced for the rich. States will be under the control of the rich. We will consume the natural resources of the world more rapidly. Wars will break out for natural resources, and we will face a worse future."*

Discussion

When the styles of depiction that the pre-service teachers preferred in their drawing styles were examined, it was seen that the participants drew the future environment in a more negative situation than it is today. The pre-service teachers also included many technology-related elements while describing the future environment. According to pre-service teachers, the deteriorating environmental conditions will be solved by developing technology to create a better environment than today. The reason behind these negative viewpoints of the pre-service teachers is undoubtedly the rapid increase in the number of people struggling with hunger, war, and epidemic disease in a world where natural resources are rapidly depleted. At this point, pre-service teachers should realize their significant role as teachers of the future. In the changing and barren planet, how the environment will be in the future is shaped mainly by environmental education. Achieving this transformation in education is the most critical responsibility of pre-service teachers, who qualify in environmental education and sustainability issues during their teacher training. It should not be forgotten that the transformation process lies in education. Perhaps, as Orr (1990) stated, the fact that all education is environmental education can change the negative picture foreseen for the future.

It is seen that the participants mainly indicated 'cities' as the places where the events occur, and there were very few participants drawing 'nature' and 'rural' locations. Instead, some participants saw the world as the place where the events take place. Most pre-service teachers were born and raised in cities; even their higher education years are spent in universities in big cities. In this context, it is understandable why they mainly drew cities. However, this finding reminded us of an important point that should be emphasized. Significant Life Experiences is a theoretical framework developed by Tanner (1980) and Chawla (1998) and then mentioned by many researchers in their studies (Sward, 1999; Gough, 1999; Hsu, 2009). According to Significant Life Experiences, past natural experiences affect the human-environment relationship in adult life. The bonds established with nature by a child turn into environmentally friendly behaviors that require caring for nature and natural resources in adulthood. Children, who will be the future adults, must establish ties with nature, starting during childhood, so that they will care about the environment of the future. Therefore, pre-service teachers need to have action plans for both themselves to connect with nature and for their future pupils.

When the drawings were evaluated in terms of SD, it turned out that the drawings only touched upon the environmental dimension of SD. Similarly, in the interviews, the vast majority of the pre-service teachers mentioned the environmental dimension of SD. Research conducted in different countries, using other research methods and techniques, with teachers and pre-service teachers showed that SD is often associated with environmental issues. The studies conducted by Kagawa (2007) with university students in England, by Summers, Corney, and Childs (2004) with pre-service science and geography teachers, and by Choi et al. (2010) with pre-service elementary school teachers in Korea it has been found that pre-service teachers associated the concepts of SD with environmental issues. When the history of SD is examined, the World Conservation Strategy Report (1980) suggested that if development were sustainable, the ecosystems could be protected. In addition, this report proposed the economic and social causes and consequences of the environmental problems. It is emphasized that to get better results from environmental education, it is necessary to consider the environmental education process in economic, social-cultural, and political contexts (IUCN, 1980). In their reports, Fien (1993) and Huckle (1993) stated that SD emerged from environmental education and the

"education for environment" approach, which forms the basis for "ESD," emphasizing the effects of social, economic, and political pillars on the human-environment relationship. When the participants' relating of SD to the environmental dimension is re-evaluated in the light of these reports, it seems that it is necessary to expand the scope of the environmental education courses in the process of teacher training and to integrate socio-cultural and economic pillars into the practices of ESD in the early childhood period.

Apart from the majority relating SD to the environmental dimension, very few participants explained the social dimension of SD, focusing on peace, equality, and human rights. Instead, participants made pessimistic predictions environment based on wars and post-war human rights violations. SD is based on creating a balance between environmental, economic, and social areas of development. The social dimension of SD is not as prominent as the other pillars, but it needs to be investigated further (Boström, 2012). In addition, Gough & Scoot (2008) emphasized that the relationship between environmental and social pillars of sustainability should be investigated more. Based on this gap in the literature, Murphy (2012) conducted a theoretical study describing the social dimension of SD and the relationship between the environmental and social pillars. After this study, he characterized the social dimension of SD with the concepts of "public awareness," "equity," "participation," and "social cohesion." While describing the future environment, the pre-service teachers who participated in the current study mentioned the victims of war, people whose rights were violated, and those who did not have similar conditions. The victims of war are much more affected by the state the world has come to due to pollution, climate change, and depleted natural resources. As Boström (2012) stated, bringing the relationship between the social dimension of the SD and its environmental dimension into the agenda is more important for national and international SD projects. At this point, directing pre-service teachers to social responsibility projects that would enable them to discover the relationship between the social and environmental pillars of SD is seen as a proposal to be presented within the framework of the current study's findings.

As many resources emphasize, SD consists of social, economic, and environmental pillars. UNESCO (2002) highlighted the political dimension and mentioned democracy and decision-making processes. Similarly, the policy sub-dimension of SD focusing on democracy, management, and decision-making processes was associated with the environment of the future by a small number of participants. While the current study participants explained the environment of the future through the decisions made by politicians, they emphasized that the decisions made during the political processes were decisive. In their study with young people from Malta, Mifsud (2010) found that they have similar thoughts about the effects of political structures on the world's future. The critical point to be highlighted here and perhaps the question to be asked, as Orr emphasized in the foreword to EarthEd (State of the World): Rethinking Education on a Changing Planet (Assadourian, 2017), is "Are these decision-makers aware of the side effects of fast climate change on agriculture, biological diversity, and coastal regions; economic problems created by climate change and the effects of climate change on many issues ranging from drought to famine, diseases to wars and deaths and the necessity of putting these issues into the center of public management?" Based on the pre-service teachers' descriptions of the future environment and the questions asked by Orr, we can make the following suggestion: Pre-service teachers can be encouraged to develop policies about what should be done for a more sustainable environment and a more sustainable world by taking initiatives in the associations to be established within the administrative bodies of universities, and suitable conditions can be provided for them to do so by university administrations.

Just as with the social and political pillars, the economic dimension of SD was addressed by a limited number of participants in the current study. Pre-service teachers emphasized the economic dimension by presenting arguments about the low income and inequality of income distribution in the future environment. When the economic dimension of SD is associated with the environment, concepts such as local production and consumption, energy saving, and environmentally friendly production emerge (Siraj-Blatchford et al., 2016). In his article, which explores the economic dimension of SD, Ahmed (2010) has addressed the economic dimension within the framework of ending poverty and emphasized that through education and lifelong learning, a robust system of values can be created that encourages economic development. The economic dimension of SD should be explained to pre-service teacher candidates, just like the other relatively less mentioned pillars, and they should be taught how to teach them in ECE. Developing countries like Turkey are where the economic dimension should be better understood and developed. Pre-service teachers should realize this, make sense of the economic dimension, and integrate it into their curriculum when they become teachers.

Finally, when all the current study findings are evaluated together, the most critical finding emerges from pre-service teachers' explanations about the causes of their formation of the future environment. Pre-service teachers established the connections between more than one sub-dimension of SD in their drawings and interviews. When the interviews about the future environment are evaluated, it is seen that the participants

explained both single and multiple reasons. While these reasons provide a more straightforward interpretation of the drawings, it can be seen that the pre-service teachers' opinions about the future environment are explained with different pillars of SD. When the pre-service teachers' views were evaluated, it was found that they established cause-and-effect relationships between the pillars of SD while explaining the future environment. It is understood that the participants related environmental-economic, social-political, social-environmental, political-economic, and political-environmental pillars to each other.

SD is a holistic concept of intertwined, harmonious pillars (UNESCO, 2005). In other words, SD practices cannot be carried out without considering any social, economic, political, and environmental pillars. When the 2030 SD goals are analyzed, it is seen that each of the goals that must be achieved in all pillars of SD is interrelated and inseparable. In this context, it was to be expected that the pre-service teachers included these relationships in their descriptions of the future environment. The Brundtland Report (WCED, 1987) emphasized that it is necessary to deepen the links between the pillars of SD. Similarly, addressing development with a holistic and relational approach in the education process for SD will enable individuals to consider the social and economic pillars of their environmental actions (Rudsberg & Öhman, 2010). In addition, the holistic approach to the education process for SD allows individuals to learn concepts related to SD more easily (Gough, 2002; Herremans & Reid, 2002). Therefore, when the findings of the current study are evaluated in this context, it can be suggested that while pre-service teachers are planning and implementing an educational process for SD, they should activate the network of relations occurring in their minds; that is, they should shape their applications, considering the cause-effect relationships they have created while explaining the future environment.

Educational Implications

The findings obtained in the current study have revealed not only the pre-service preschool teachers' views of the future environment but also their views about the world's future. Although the environmental dimension came to the fore, the pre-service teachers also mentioned the economic, political, and social pillars of SD. They explained their perceptions about the world's future with a holistic approach. Pre-service teachers' perceptions related to how they will carry out the ESD in ECE when they become in-service teachers. The early years are crucial to promoting SD. Research in recent years has shown that children can express ideas about environmental and social problems even at a very young age (Kahriman-Öztürk et al., 2012; Grodzinska–Jurczak, et. al., 2006).

Furthermore, children are the ones who will face future problems created by the economic and social conditions that have been deteriorating for a long time. For this reason, future citizens should be involved in ESD starting from preschool. In this process, the most significant responsibility lies on the shoulders of the teacher. In developed countries, preschool teachers integrate sustainability into curriculums and daily activities. In this way, preschool children obtain concrete opportunities to understand sustainability better daily (Davis, 2009; Siraj-Blatchford et al., 2016). The relevant teacher training to pre-service preschool teachers regarding ESD will enable them to integrate SD into ECE. Thus, more children worldwide will be more hopeful about their future environment.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in JESEH journal belongs to the authors.

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