ATATÜRK ÜNİVERSİTESİ YAYINLARI ATATURK UNIVERSITY PUBLICATIONS

Research Article *Araştırma Makalesi* DOI: 10.33418/education.1416579

Pre-Service Early Childhood Teachers' Emotive Reasoning about an Environmental Issue: Using Well-Defined Environmental Cases in Environmental Education

Okul Öncesi Öğretmen Adaylarının Bir Çevre Konusuyla İlgili Duygusal Akıl Yürütmeleri: Çevre Eğitiminde İyi Tanımlanmış Çevresel Vakaların Kullanımı

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ABSTRACT

Environmental education should empower learners to internalize the concept that their ecological niche is an integral component of the larger environment, nurturing a moral and ethical understanding of the reciprocity inherent in their relationship with nature. Emotive reasoning is a crucial aspect of this eco-ethical perspective. From this perspective, this study aims to explore pre-service early childhood teachers' (PECTs) emotive reasoning about an environmental issue. The researchers created a scenario about an environmental issue including ethical dilemmas of protecting wildlife and environment and human needs. The researchers listed nine possible options and asked the participants to choose one or more of these options and elaborate on their responses in their reflections. Fifty-three PECTs participated in this study. The researchers coded the participants' responses in each category and analyzed the participants' decision and elaboration levels in their reflections independently. The results indicate an accumulation mostly in the categories of diffusion of responsibility, compassion, anger, and righteous indignation. The results also revealed mostly a high level of judgment and a high and moderate level of elaboration in PECTs' emotive reasoning. The results suggest that pre-service teacher education should be revised to include well-defined environmental cases to examine pre-service teachers' emotive reasoning, thus increasing their environmental awareness in environmental education. This exploration is also important to understand their emotive reasoning about wildlife issues and enable them to effectively incorporate this understanding into their teaching practices.

Keywords: Pre-service teachers, emotive reasoning, environmental issue

ÖZ

Çevre eğitimi, öğrencilerin ekolojik nişlerinin daha geniş çevrenin ayrılmaz bir bileşeni olduğu kavramını içselleştirmelerini sağlamalı ve doğa ile ilişkilerinde var olan karşılıklılığa dair ahlaki ve etik bir anlayışı beslemelidir. Duygusal muhakeme, bu eko-etik perspektifin önemli bir yönüdür. Bu perspektiften hareketle, bu çalışma okul öncesi öğretmen adaylarının (OÖÖA'lar) bir çevre sorununa ilişkin duygusal muhakemelerini keşfetmeyi amaçlamaktadır. Araştırmacılar, vahşi yaşamın ve çevrenin korunması ile insan ihtiyaçları arasındaki etik ikilemleri içeren bir çevre sorunu hakkında bir senaryo oluşturmuşlardır. Araştırmacılar dokuz olası seçeneği listelemiş ve katılımcılardan bu seçeneklerden birini veya daha fazlasını seçmelerini ve yanıtlarını yansıtmalarında detaylandırmalarını istemiştir. Bu çalışmaya elli üç OÖÖA katılmıştır. Araştırmacılar, katılımcıların her bir kategorideki yanıtlarını kodlamış ve katılımcıların yansıtmalarındaki kararlarını ve detaylandırma düzeylerini bağımsız olarak analiz etmiştir. Sonuçlar en çok sorumluluk dağılımı, merhamet, öfke ve haklı kızgınlık kategorilerinde bir yığılma olduğunu göstermektedir. Sonuçlar ayrıca, OÖÖA'ların duygusal akıl yürütmelerinde çoğunlukla yüksek düzeyde yargılama ve yüksek ve orta düzeyde detaylandırma olduğunu ortaya

Geliş Tarihi/Received Date 08.01.2024
Kabul Tarihi/Accepted Date 03.07.2024
Yayın Tarihi/Publication Date 26.09.2024

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Cite this article: Sarıbaş, D., & Çetinkaya, E. (2024). Pre-service early childhood teachers' emotive reasoning about an environmental ıssue: Using well-defined environmental cases in environmental education. *Educational Academic Research, 54*, 50-69.

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koymuştur. Bu çalışmanın sonuçları, hizmet öncesi öğretmen eğitiminin, öğretmen adaylarının duygusal muhakemelerini incelemek için iyi tanımlanmış çevresel vakaları içerecek şekilde revize edilmesi gerektiğini ve böylece çevre eğitiminde çevresel farkındalıklarının artırılması gerektiğini göstermektedir. Bu araştırma, öğretmen adaylarının yaban hayatı konularındaki duygusal akıl yürütmelerini anlamak ve bu anlayışı öğretim uygulamalarına etkili bir şekilde dahil etmelerini sağlamak açısından da önemlidir.

Anahtar Kelimeler: Öğretmen adayları, duygusal muhakeme, çevre sorunu

Introduction

There is abundant evidence of an environmental crisis on the planet due to compounding issues of climate change, pollution, waste disposal, overpopulation, ocean acidification, and food and water shortages (Akinsemolu, 2020; Singh & Singh, 2017). Although there are numerous attempts to deal with this crisis, such as the efforts of non-profit organizations and people, as well as measures taken by international agreements, humans failed to take sufficient action to overcome the crisis. For instance, the Paris Climate Agreement aims to hold the increase in the global average temperature to well below 2 °C above preindustrial levels (United Nations, 2015). However, Geiges et al. (2020) stated that the improvements made for the 2030 targets are deficient to reach *Paris Climate Agreement* goals. There are at least nine hazards known as planetary boundaries (Steffen et al., 2015) for the stable operation of global ecosystems, including ocean acidification, novel entities, land-system change, and freshwater change, and the climate crisis is one of these (Jimenez & Kabachnick, 2023). Therefore, dramatic changes are necessary for the sustainability of life. The United Nations Development Programme (2015) took a step in this direction and announced a universal call to action with seventeen interconnected goals, often referred to as the Sustainable Development Goals. In order to attain the Sustainable Development Goals, it is vital to educate individuals who possess an understanding of the prevailing issues and their interconnections among these issues (Echegoyen-Sanz & Martín-Ezpeleta, 2021). Education is one of the most powerful tools to create such a change. In order to cope with the current environmental crisis, there is a greater need than ever for an education that promotes a sustainable future, enhances individuals' awareness about the environment and nature, and change the unsustainable ways that contribute to the current environmental crisis (Gwekwerere, 2019). In other words, an ecological curriculum, which equips students with the skills to comprehend and resolve environmental challenges, fosters their comprehension of ecological matters, and promotes a sustainable life is much more important today than before. However, there needs to be created new conceptualizations of an ecological curriculum, such as ecojustice (Dentith et al., 2022).

Ecojustice is a movement that focuses on the cultural roots of the ecological crisis, argues that disadvantaged groups such as the poor, working-class, or minorities are unequally affected by the ecological crisis, and aims at cultural change (Martusewicz et al., 2021). The focus of the Eco-justice approach is to raise awareness and provide solutions to the ecological crisis by addressing the current local problems of the students or the ecological conditions of the region they inhabited in the relatively recent past (Martusewicz et al., 2010). From this perspective, eco-justice stands apart from traditional environmental education. Instead of simply exploring natural surroundings, factories, or power plants, it involves examining the repercussions of adverse conditions stemming from these establishments on marginalized communities within a cultural and historical framework and generating sustainable solutions for such challenges.

Social, economic, and ecological sustainability and justice are interdependent because of human-induced environmental problems (UNESCO, 2016). Benzce and Carter (2020) proposed that our current world is characterized by injustice, where unfair distribution of incomes leads to environmental damage primarily affecting the less affluent individuals in society. They argued that science education needs to focus on promoting ecojustice to address issues stemming from climate change, including the loss of species, the destruction of habitats, and the emergence of human diseases. This eco-ethical perspective requires eliciting students' emotive reasoning about environmental issues. Empathizing with and caring for people or living things who suffer from inequities or injustices is one of the components of emotive reasoning (Herman et al., 2020; Zeidler et al., 2019).

The achievement of the Sustainable Development Goals (Ito & Igano, 2020) and the development of strong emotive links between students and nature (Herman et al., 2020) are facilitated by place-based environmental education framework. Therefore, Herman et al. (2020) suggested that students should be allowed to engage in place-based environmental education. They argued that presenting socioscientific issues (SSI) in the context of a place-based

environmental issue could facilitate their emotional responses. Furthermore, Anufrieva (2020) argued that environmental education should provide scientific insights into the societal underpinnings of global environmental issues. They also noted that problems of the interplay between nature and society are closely intertwined with a wide range of ethical and aesthetic considerations; therefore, environmental education should create an ecocentric type of environmental awareness, in which harmony, interrelationship, interaction, and mutual development are emphasized with human attitudes to the environment. This paper argues that environmental awareness requires understanding and reasoning about the interrelationships between ecological systems and environmental degradation caused by humans. In order to develop the learners' awareness, therefore, it is necessary to develop their ecological reasoning, not only related to place-based issues, but also to general environmental problems that may arise in different regions of the world.

Wildlife has a significant impact on ecological processes. It is therefore necessary to raise public awareness of wildlife preservation. However, persuading decision-makers and the public to support conservation requires communication and education. Hao (2014) also stressed the importance of increasing cultural concern about the environment in terms of ecological preservation and sustainable development. In a study on the Rajiv Gandhi National Park, one of the global biodiversity hotspots in India's Western Ghats, Nautiyal and Nidamanuri (2012) investigated the effects of conservation policies on the ecosystem and livelihoods of local people. They found that the policies were highly unpopular, with less than 5% of people in favor of them, and a staggering 94% strongly against them. Reasons for this negative attitude included restrictions on agriculture, livestock rearing, and grazing, as well as bans on non-timber forest collection, and exclusion of local and indigenous communities from conservation programs and tourism activities. They stressed the need for an integrated science-policy research approach to examine the complicated link between nature and society. On the other hand, in a more recent study, Shi et al. (2021) investigated local herders' preferences towards increasing wildlife populations to preserve the grassland ecosystem in the Inner Mongolia region of China. The results revealed that herders were against increasing the wildlife population on the grassland which would cause loss of welfare. Researchers have proposed that support for wildlife conservation should be gained through education. We also argue that it is necessary to include education in this integrated approach. Education in this approach should involve both reasoning about the livelihood of people and the loss of biodiversity and ecosystem deterioration.

Ferguson and Bramwell-Lalor (2023) propose that both lower and higher education deserve attention, emphasizing the importance of instilling environmental education in students from a young age. Furthermore, they advocate for an increased focus on integrating environmental education within higher education, particularly for students coming from non-science backgrounds.

Sadler et al. (2007) argue that learning experiences on SSI should help students cope with complex issues. The afore-mentioned topics are too extensive to be addressed solely through cognitive means within learning contexts. Beniermann et al. (2021) emphasized that decision-making on controversial scientific issues such as climate change and vaccination also depends on emotional processes. For this reason, a learning intervention that focuses on controversial issues must also encompass emotional aspects Emotional reasoning is among the forms of reasoning that individuals use when dealing with controversial, complex, and ethically challenging scientific issues (Herman et al., 2020). Emotive reasoning involves sentiments like compassion, empathy, anger, passion, guilt, and emotive reasoning allows students to emotionally examine the issue from multiple perspectives in their decision-making processes. Lee et al. (2013) stated that students were able to deal with the moral dimensions of controversial issues and empathize with stakeholders. From this perspective, the incorporation of emotive reasoning within instructional processes and especially when dealing with controversial scientific issues, holds considerable significance in terms of facilitating decision-making that considers multiple emotional facets of the topic. Given that, pre-service teachers educate future citizens who should have environmental awareness, it is also necessary to examine their emotive reasoning about wildlife issues, such as the interrelationship between different species in nature. Furthermore, considering the important role of pre-service early childhood teachers in fostering environmental awareness in young children, it is critical to understand their emotive reasoning about wildlife issues and enable them to effectively incorporate this understanding into their teaching practices.

Purpose of the Study

Based on the ecojustice approach to environmental education (Benzce et al., 2015; Herman et al., 2018; Reis et al., 2015), Herman et al. (2020) used authentic place-based environmental SSI learning experiences in Yellowstone to explore undergraduate students' emotive reasoning when engaging in environmental issues. This experience includes

the following case: A wolf escaped from a National Park, went to a nearby farm, and attacked sheep and cattle. Then the farmer killed the wolf. A similar case happened in Turkey in April 2019, when Turkish newspapers reported that a wolf had escaped from the National Park in the southern region of the country. A few days later, the same newspapers published another story about citizens in a district who had seen and photographed the wolf while it was seeking food. In May of the same year, the search for the wolf was terminated. The researchers of this study decided to use this case to explore participants' emotive reasoning, as it is not only a place-based environmental issue, but also a wildlife issue that can occur in different regions of the world. Büssing et al. (2019) argued that wildlife issues can be effectively used as a context for environmental education because they inherently include ecological, economic, and social aspects, facilitating connections to real-world phenomena. They suggested using wolf cases to teach wildlife issues. They also stressed the importance of including emotional factors in teacher training to encourage a more holistic approach to environmental education.

Research on early childhood environmental education primarily focuses on the ecological literacy, cognitive, social, and emotional development of children (Ardoin & Bowers, 2020). In addition, future leaders must be well-prepared to address environmental challenges. Therefore, teachers play a crucial role in assisting their students to understand their responsibility as environmental stewards (Uraliovich, 2023). However, Ginsburg and Audley (2020) noted that most preschool teachers struggle to focus more on pedagogies that increase children's responsibility as active agents of change in the future. Therefore, it is necessary to investigate the reasoning and decision-making processes of PECTs regarding environmental issues in order to reassess environmental education in preschool teacher education programs.

This paper argues that it is important to explore PECTs' emotive reasoning and their level of reasoning about an environmental issue to develop environmental education in teacher education. The reasoning level was examined in two categories, including judgment and elaboration in the current study. The participants' judgment was analyzed to assess whether their decisions about the issue depended on the sound arguments. Their elaboration was examined to monitor whether they critically discussed the relationship between the aspects of the issue by giving further examples. This study explored the emotive reasoning of pre-service early childhood teachers, as they will be responsible for educating and shaping the environmental awareness of future global citizens who will critically reason about environmental issues. It is also significant to ask PECTs to elaborate on their responses by giving similar examples to investigate the level of their reasoning during making their decision about the given issue.

The use of cases in environmental education helps to promote environmentally friendly behaviour as well as a theoretical understanding of environmental issues (Rudyshyn et al., 2021). The authors of the current study also argue that environmental cases can also be used to elicit people's emotive reasoning. Although the Yellowstone case was used as a place-based environmental SSI in earlier studies, it is also a general wildlife issue because national parks are found in many regions of the World. Therefore, this example can be used in further investigations in teacher education about environmental SSI. Furthermore, it provides a valuable tool to examine the participants' emotions regarding the wolf and the farmer. While a similar case happened in Turkey, the wolf was not found. The participants in the current study may be employed by schools in different regions of the country and experience similar situations in the future. In addition, the Yellowstone example case provides a richer opportunity to explore the issues from both the wolf and livestock perspectives. From this perspective, this example is used as a case in the current study to probe into the PECTs' emotive reasoning in environmental SSI. Specifically, the current study addressed the following research questions:

- What types of emotive reasoning do the PECTs reflect on an environmental issue?
- In which level do the PECTs reason to make their decisions about an environmental issue?

Theoretical Framework

Emotive Reasoning about Environmental Issues

Research investigating individuals' informal reasoning on environmental issues focus primarily on socioscientific reasoning. Sadler and Zeidler (2005) stated that students show evidence of intuitive, emotive, and rational forms of informal reasoning. Individuals often utilize emotive reasoning elements such as righteous indignation, empathy, and moral sensitivity, along with cognitive processes, when they are confronted with ethical quandaries in scientific contexts (Zeidler, Herman & Sadler, 2019). Therefore, science educators should emphasize the importance of emotive factors and socio-scientific reasoning on any publicized SSI (Bell and Lederman, 2003). Informed decision-making based on scientific knowledge is essential for various individuals and groups within society (Ha, Park & Song, 2022). Educators responsible for instructing community members must arrange and organize these decision-making

procedures, while also coordinating evidence-based decision-making initiatives for their students. SSIs are the topics that provide important opportunities for educators to implement evidence-based decision-making. However, to deal with SSI, students need to cultivate more complex thinking skills (Karahan, 2023). Due to the complex, multidisciplinary, open-ended, and controversial nature of SSI, they call for the attributes of informal reasoning rather than formal reasoning (Sadler & Zeidler, 2005). The decision-making process involving informal reasoning also encompasses moral, ethical, and emotive reasoning. In order to raise responsible citizens who can make informed decisions, it is necessary to address SSI at an early age (Özden, 2020). Hence, research on decision-making and reasoning within pre-service teacher education holds significance. Although emotive factors influence students' decision-making processes (Herman et al, 2020), studies focusing on students' and PECTs' emotive reasoning are rarely found. Therefore, it is necessary to examine emotive reasoning in socioscientific environmental issues to create effective teaching experiences.

Emotive reasoning can be defined as informal reasoning that people experience about complex controversial scientific issues (Herman et al., 2020) and is characterized by a care perspective such as empathy and concern (Sadler and Zeidler, 2005). This reasoning also includes understanding the others' feelings and empathizing with their well-being on complex and challenging scientific issues involving ethical dilemmas.

Extreme weather conditions, air pollution, climate change (Evans, 2019), unsustainable farming practices (Owens et al. 2019), pesticide contamination, and coal mining are a few examples of the numerous environmental issues that people are responsible that involve ethical dilemmas. According to Fang et al. (2019), learners first employ intuitive reasoning, which is unconscious, biased, and emotion-influenced prior experiences before switching to analytical reasoning, which is deliberate, logical, and abstract. Although learners use both types of reasoning, Venville and Dawson (2010) demonstrated that when making decisions about real-life issues, learners appeal more to emotive and intuitive reasoning. A study by Han-Tosunoğlu and Özer (2022) examined the informal reasoning and decision-making of pre-service biology teachers about COVID-19 and found that students used not only rational reasoning, but also emotive reasoning when making decisions. Evagorou et al (2012) found that some students relied on emotive rather than rational reasoning, despite sufficient evidence. Science educators frequently emphasize logic and evidence for reasoning. However, intuitive and emotive reasoning has a crucial role in prompting students' moral sensitivities and engaging them in the issue (Kahn and Zeidler, 2019). Therefore, it seems crucial to examine how people acquire a sense of environmental morality (Collado and Sorrel, 2019). We argue that people's emotive reasoning about environmental issues reflects their understanding of environmental morality. PECTs will probably be the first adults who introduce children to environmental issues. Therefore, eliciting their emotive reasoning is crucial (Choi et al, 2011; Ladachart & Ladachart, 2021; Lee, 2013).

Recent literature has emphasized children's moral reasoning, understanding and awareness of environmental issues (Rios et al., 2021; Spiteri; 2021). Spiteri (2021) also argued that moral reasoning is shaped in early childhood and may be subject to situational influences. She pointed to the need for appropriately designed environmental education programs to discuss the reasons for protecting the environment in ways that are relevant and interesting to children, and to explore their understandings and misconceptions. Engaging children in environmental issues is, therefore, necessary for their personal empowerment and democratic pluralism in acting for the environment in society. PECTs play a crucial significant role in the design and implementation of these programs. Thus, it is essential to explore their emotional reasoning to enable them to communicate their reasoning to children.

Environmental Decision-Making

Environmental decisions are complex because of the ecosystems going beyond the human-created technological systems (Harding, 1998). In today's globalized world, humans cause severe damage to the environment because of the decision made to control the nature. Human actions have created an increasingly unsafe and uncertain future for the environment and future generations. It is, therefore, an ethical responsibility for human beings to protect the environment and the future of life on earth. Environmental education is a very effective way to communicate this responsibility. Thus, one of the main goals of environmental education is to educate citizens to make thoughtful decisions about environmental issues (Arvai et al., 2010). In this regard, the interaction between individuals, society, and the state is crucial to guide public participation in decision-making regarding projects, policies, and the management of the natural sources and environment. The participation of individuals in this decision-making process also consolidates democracy in society (Rodríguez & Vargas-Chaves, 2018).

Freed (2017) found a positive correlation between decision-

making and pro-environmental behavior and suggested that we focus on understanding the mechanisms that underlie decisions in order to guide behavior that protects the natural world. Thus, it seems necessary to explore PECTs' decision-making as well as their emotive reasoning about an environmental case.

In the study, decision-making refers to the critical evaluation of an ethically complex environmental issue in order to reach a final judgment on the issue (Gresch & Bögeholz, 2013). Critical reasoning by constructing sound arguments and elaborating judgment by exemplifying the issue is required for the decision-making process. Decision-making was explored in the current study in two folds, judgment and elaboration.

Methods

Participants

Fifty-four PECTs were enrolled in the Early Childhood Environmental Education course in the Preschool Education Department of a private university in Turkey. However, 53 of them participated in the study. The participants were third-year undergraduate students, aged between their early twenties and mid-twenties, from middle-class socio-economic backgrounds. The participants were mostly the residents of a metropolis in Turkey and rarely came from Anatolia. They were predominantly female (52 female, 1 male) as usual in Turkey because the early childhood teaching profession is seldom preferred by Turkish males.

The researchers decided to gather data from the PECTs who had successfully completed the early childhood environmental education course, with the aim of evaluating the course's effectiveness in enhancing PECTs' emotive reasoning and decision-making concerning environmental issues. This inquiry aims to improve environmental education in early childhood teaching programs. The first researcher was the lecturer of the Early Childhood Environmental Education course, and the current study was conducted at the end of the semester in this course. The reflection form, which was used as the data collection tool in the study, was distributed to the participants online and they submitted their answers online again.

Turkish university entrance examination consisted of four parts including (1) Turkish Language and Literature and Social Sciences I; (2) Social Sciences II; (3) Mathematics; (4) Science. The students in the preschool education departments were responsible for answering the first and second parts of this exam. They completed the basic pedagogy and teaching methods courses and science education in early childhood but, they did not take any course to provide them opportunities to engage in argumentation in environmental and SSI.

Research Design

The current study conducted a case study, descriptive research to explore the PECTs' emotive reasoning on an environmental issue. In line with this purpose, the researchers presented the Yellowstone example to the PECTs and listed the types of emotive reasoning. They then distributed a reflection form and asked participants to identify and justify one or more types of emotions they had about this scenario, feeling free to add more options to the list if needed. The participants' reflections of their emotions on this environmental case were the data of the study.

Data Collection Tool

The participants were given the following instructions to reflect on:

Based on the following case study for human activities that threaten sustainable life, indicate which option about the event reflects your feelings and thoughts and discuss why.

Case Study: National parks are parks established on semi-natural or developed for wildlife sanctuary. It is known that these parks also have importance for tourism in the country. A wolf escaping from a national park went to a nearby farm and attacked sheep, cattle, and other ovine and bovine animals there and the farmer killed the wolf.

a. I am not passionate about joining a movement or starting anything related to environmental issues. I am not very interested in farms and wolves.

b. I realize that people's actions cause environmental problems and harm both nature and the human species, but I am not very sure what I should do about these problems. National parks are necessary, but farmers also need to protect their animals. I don't know what is right or wrong.

c. Although we think that we should preserve the natural balance in the ecosystem, in some cases, we may need to kill some animals and other living things. The farmer in this case may have to kill a wolf attacking the animals on his farm.

d. Although we think that we should protect the natural balance in the ecosystem, it is difficult to say with certainty how we should behave in the circumstances we may find ourselves in. For example, I cannot know what I should do in the example of the farmer and the wolf he killed

without experiencing that situation and having knowledge about it.

e. Sometimes I feel responsible for the environment, but I think everyone has a responsibility in this regard. People should act more collectively in this regard. In the example of the farmer and the wolf, the state should do its duty to protect the environment and support the farmer whose animals are damaged with the taxes paid by the citizens by adjusting the budget. Considering the wolf's right to life, the authorities should take the necessary measures to establish the national park away from settlements.

f. When I empathize with the farmer, I think about the damage suffered by the farmer whose animals were attacked by the wolf and I feel sorry for him / It makes me feel bad that the wolf was taken from its natural environment and brought to the national park.

g. I feel guilty about it. I do not do much because I feel that the measures to be taken for environmental protection will cause me inconvenience or discomfort. I feel that I should do something about it. I feel bad because I have never been interested in issues such as the establishment of the national park elsewhere or the damage caused to farmers.

h. I am very angry about the damage that people do to the natural world and the environment. People don't even care about the damage their own activities cause to the environment. Was the national park supposed to be built close to that farm or is there no way to compensate the farmer for the damage he has suffered?

i. People are selfish beings who do not think about the consequences of their behavior before they experience them. However, it is necessary to think about the social and ethical dimension of an event. For example, when we bring a wolf to the national park near the farm, we need to think about the damage to the farmer before the tourists who will come to the park.

j. Other (you can share your other feelings and thoughts on the subject).

The options were created by the researchers of this study. The participants were asked to choose one or more options to reflect on their thoughts and feelings and explain the reason for their choice. Thus, we could analyze whether their explanation reflect the correct option and examine the level of their reasoning.

Data Analysis

The researchers independently analyzed whether the participants' selected choices reflected their explanations. If they did not, then the researchers did not code their choices. If they explained a different thought or feeling from described in the option they chose, then the researchers coded it as a different option. The participants were free to select and explain more than one option. Because categorizing emotions based on pre-defined options, this approach might limit the depth of understanding of participants' emotions. However, this option might lead the participants to make biased selections. Therefore, they were also informed that they were free to reflect on other emotions or ideas not included in the list. They were also asked to explain their emotions in an open-ended way to gain a deeper insight into their emotive reasoning. Both researchers independently analyzed the participants' reflections in case of biased framing and ensured that they interpreted and coded the participants' responses consistently. They identified and coded their responses into the following types of emotional reasoning listed by Herman et al. (2020):

1) Apathy (In reflection option a)
2) Passive care (In reflection option b)
3) Moderated concern including
    a. Value judgment (In reflection option c),
    b. Helplessness (In reflection option d), and
    c. Diffusion of responsibility (In reflection option e).
4) Forms of empathetic dissonance including
    a. Compassion (In reflection option f),
    b. Guilt (In reflection option g),
    c. Anger (In reflection option h), and
    d. Righteous indignation (In reflection option i).

There is an agreement among science education researchers that individuals must be able to construct sound arguments and make informed decisions on complex real-world problems (e.g. Owens et al., 2017; Sabel et al., 2017; Zeidler et al., 2005). However, Brosch (2021) emphasized that emotions play a significant role in shaping perceptions and actions related to climate change and that emotional communication can promote sustainable behavior. Therefore, the researchers of the current study developed a rubric to assess the participants' ability to reason emotionally, specifically in the categories of judgment and elaboration. The judgment category evaluated the participants' critical evaluation of the case based on sound arguments. The Elaboration category assessed the

participants' ability to express their emotions by reflecting the interrelationship between people and the environment.

The participants' responses were coded independently by the researchers and were classified into one or more categories based on their explanations. The initial percentage agreement of each researcher's coding on emotive reasoning and reasoning levels were 79% and 88% respectively. Following their first analysis, they discussed their conflicts until they reached a full consensus on the coding.

The researchers independently coded the participants' explanations in each level for both judgment and elaboration categories once again. They then included quotations exemplifying participant responses for each category. The researchers used pseudonyms for student names when using quotations. Following coding the participants' responses in each of the categories listed above, the researchers also analyzed the PECTs' reflections to identify the level of their reasoning while making their decisions by using a rubric they developed.

The ethical process in the study was as follows:

- Ethics committee approval was obtained from Istanbul Aydin University University Social and Humanitarian Ethics Committee (Date: 27.09.2021, Number: E-45379966-050.06.04-25307)
- Informed consent has been obtained from the participants.
- The informed consent form stated that participants could withdraw from the research if they felt uncomfortable about environmental issues or questions.
- After completing the research, the participants were informed that they could seek assistance from the researchers regarding the research results or institutions to address any issues that arise during the implementation.
- Pseudonyms were used in the paper instead of the real names of the participants to ensure the confidentiality and anonymity of the participants.
- The topic was not initially discussed in the environmental education course to avoid influencing the participants.
- The research results are disseminated to the participants through an online seminar on environmental education, which is open to all pre-service teachers at the university.

Results and Discussion

Research Question 1: Types of Emotive Reasoning that the PECTs Reflect

The researchers aimed to examine how pre-service preschool teachers reflect their emotive reasoning on an environmental issue in the first research question. None of the participants explained their thoughts and feelings that should be coded in a category other than the given options. Thirty-four out of the 53 participants chose more than one option, while 19 of them chose only one option. The explanations and the examples for each category and level are shown in Table 1.

Table 1.

The Rubric of Reasoning Levels

	High	*Moderate*	*Low*
Judgment	*Explanation:* The participant made his/her decision on the issue by critically evaluating the scenario and constructing sound arguments. *Example:* Show compassion and empathy for the wolf and/or the farmer by explaining the reasons for the wolf's native habitat and the farmer's husbandry.	*Explanation:* The participant clearly and rationally explained his/her position but did not provide sufficient justification during making his/her decision. *Example:* Clearly express feelings about the issue without justifying them.	*Explanation:* The participant did not provide any justification to support his/her decision. *Example:* -
Elaboration	The participant elaborated his/her position by giving further examples and discussing the relationship between the aspects of the issue critically. *Example:* Clearly express feelings and thoughts on the topic by explaining the interrelationship between people and the environment and giving further examples.	The participant clearly elaborated his/her position on the issue by discussing the relationship between the aspects of the issue critically but without giving further examples. *Example:* Clearly express feelings and thoughts on the subject, explaining the relationship between man and the environment, without giving further examples.	It is not clear why the participant chose this option. *Example:* -

Table 2 lists the participants' reflections coded in categories, subcategories, and definitions that we obtained from the participants' emotive reasoning.

Table 2.
Categories and Subcategories of Emotive Reasoning

Categories of emotive reasoning	*Subcategories of emotive reasoning*	*Definition*
Passive care		Emotive statements that prioritize and care about the well-being of the environment and people
Moderated concern		Emotive statements of concern for the preservation of the natural balance and welfare of people
	Value judgement	Emotive statements identifying that people are responsible for the environmental issue
	Helplessness	Emotive statements illustrating of desperation for resolving the issue
	Diffusion of responsibility	Emotive statements shifting the burden from themselves to a larger society such as policymakers for the environmental issue
Empathetic dissonance		An emotive response to the adverse consequences experienced by living things about the environmental issue
	Compassion	Feeling empathy towards the problems of the people and living things who suffer from the environmental issue without questioning the cause of the suffering
	Guilt	Feeling shame or regret because of not acting on environmental issues
	Anger	Felling rage towards the identified cause of environmental issues
	Righteous indignation	An emotive response toward people or living things who suffer from inequities or injustices

Passive care: The participants' comments emphasizing that they cared about people and the environment but were unsure of how to address the current environmental issue were categorized as passive care. The following quotations display the participants' responses coded as passive care:

> *Natalie: We harm the environment with our actions. Our actions harm environment not only for us but also for its cohabitants. I am aware of this fact, but I am not sure how to handle it.*

> *Elizabeth: National parks are valuable resources for our nation, but in this particular case, I side with both the farmer and the wolf. Consequently, I am at a loss on what to do.*

Moderated Concern: The participants' responses that include expressions of concern about preserving the natural balance and explanations to ensure the well-being of people were classified as moderated concerns. This category includes three sub-categories which are value judgment, helplessness, and diffusion of responsibility.

Value Judgement: We classified emotional statements arguing that individuals are responsible for the environmental problems in the value judgement subcategory. The following participants moderated their concern by justifying the necessity of harming other living things when it is necessary:

> *Emma: Although the wolf's slaughter may seem brutal, I do not think it is unethical to kill the wolf to protect the farmer's livestock.*

> *Sophie: The farmer has made a correct decision to protect the existence of his animals in line with his own interests. The wolf is a threat to both farmer and cattle. The farmer's decision to kill the wolf to maintain the welfare of his family is understandable.*

Helplessness: The participant comments arguing that the ecosystem's natural balance should be preserved but were unsure what to do in a similar situation were categorized as helplessness. The following quotations are the examples of this subcategory:

Elizabeth: With a superficial judgment, we can declare that we would not kill the wolf if we were the farmer. However, we do not stand in the farmer's shoes. We cannot know how to act until we actually face the same problem.

Yara: I do not know how to act in such a situation because my environmental education background is insufficient to make an informed decision about the issue.

Diffusion of Responsibility: The participant responses that moderated their concerns by shifting the burden for the environmental issues from themselves toward a larger society such as lawmakers were coded as diffusion of responsibility. The quotes that describe this scenario are presented below:

Alison: Environmental problems are social. If the government does not develop policies regarding environmental issues, the society will not adopt and implement it. Establishing a national park close to the settlements is the fault of the policymakers.

Bella: Because we cause the environmental issues, we may solve these problems together. A portion of the collected taxes can be spent on solving this problem.

Empathetic Dissonance: Empathetic dissonance refers to the emotive responses of the participants to the adverse consequences experienced by living things about environmental issues. The subcategories of compassion, guilt, rage, and righteous indignation were used to analyze these incompatibilities.

Compassion: We coded the states of the participants' sympathy towards the problems of the stakeholders of the environmental issue as compassion.

Tracy: I am against moving wolves from their native habitat and placing them in new locations where they may cause harm. I feel sorry for the wolf.

Zara: I do not confirm what the farmer did but most probably killing an animal was not what we wanted. When I put myself in his shoes, I felt bad for both the moral discomfort that he experienced and the financial damage that he faced.

Guilt: The participant responses that expressed difficulty in acting on environmental issues or regret over not acting were categorized as guilt. The first quotation includes the awareness of the necessity of taking action to solve environmental issues, but they felt bad about it because they were afraid of the challenges. The second is an example of feeling guilty because of indifference to environmental problems.

Nicole: I do not do much because the actions needed to protect the environment will impose on me. I feel guilty because of it.

Simone: I feel guilty because I have never thought about such issues before.

Anger: We identified anger as a strong negative emotional response to those who pave the way for environmental issues, and decision-makers. Two quotes that perfectly exemplify the participants' anger are as follows:

Mary: People merely use the ecosystem's natural cycles for their benefit and create their misery. Enormous amounts of water are wasted in farms without considering the water scarcity in some other regions of the planet.

Nadia: I am furious because everyone is so selfish. Others' rights are not respected in any way. Landscaping is important while establishing a settlement or national park. We have to leave nature alone.

Righteous Indignation: We coded the participants' responses such as the right to live of other living things, the priority of protecting the natural environment, climate justice and the access of future generations to the environment as righteous indignation. The following quotations of two participants exemplify these responses:

Frances: People act only for their benefit. They operate in self-centeredly without respecting other people, animals, the natural world, and the environment. It is selfish to pick flowers, use deodorant, pour trash, cause forest fires, and prefer private vehicles. These behaviors cause the extinction of some species as well as other environmental problems, but those people do not even care.

Irene: Unfortunately, innocent people pick up the bill for some big mistakes. We cannot just put all the blame on the government and step aside. We must become conscious. This world is not solely ours, we borrowed it from earlier generations, and we will leave it on to future generations.

Table 3.

Categories and Subcategories of Emotive Reasoning

Categories of emotive reasoning	*Subcategories of emotive reasoning*	*Frequency*
Passive care		4
Moderated concern		2
	Value judgement	7
	Helplessness	32
	Diffusion of responsibility	25
Empathetic dissonance		4
	Compassion	
	Guilt	22
	Anger	
	Righteous indignation	19

Table 3 presents the frequencies of responses included in each subcategory. Consequently, we reported the descriptive findings for each category and subcategory along with quotations in the order presented in the table.

The explanations categorized in the passive care category indicate a general concern for the welfare of people and nature in their responses, but these participants did not provide a detailed explanation of the detrimental consequences of environmental problems on people and nature. These explanations may also point out the unfamiliarity of the situations in national parks, demonstrating the need to discuss such cases in environmental courses to increase familiarity and awareness of environmental issues.

The participants' responses in the value judgement category considered the farmer's perspective without considering the wolf's natural habitat. This type of explanation indicated a human-centered perspective on environmental problems.

The explanations in the helplessness category did not reflect an ecocentric position either. These participants either showed compassion or empathy for the farmer or directly preferred not to decide the matter.

The responses in the diffusion of responsibility category again reflected a human-centered perspective. For example, Alison correctly discussed the proximity of national parks to settlements but considered only allowing the park to be established close to settlements, rather than the other way around. This explanation may reflect a human-centered rather than an eco-centered approach to environmental problems.

The participants, whose responses were categorized in empathetic dissonance, empathized with the farmer who lost his only source of livelihood and the wolf that was killed. Although these participants showed compassion for the affected parties as well as guilt, anger, and righteous indignation, they did not engage in an in-depth analysis of the causes of the problems. Some examples also reflected a misunderstanding of national parks. For example, Tracy seemed to have never visited a national park and might have considered these parks as zoos.

As shown in Table 2, the PECTs rarely demonstrated a passive care for the given environmental issue. Considering the category of moderated concern, they seldom made explanations included in value judgment and helplessness while more than half of them expressed their emotions in the diffusion of responsibility subcategory. In the empathetic dissonance category, more than half of the participants gave the motive responses of compassion, anger, and righteous indignation. This result is promising because of the awareness that PECTs have about the diffusion of responsibility for humans as well as the empathetic dissonance that many participants have for the improvement of pro-environmental behaviors. It is interesting to note that they rarely feel guilty about the given environmental issue. This result might be related to the conditions they live in. None of these participants live on farms and have experience in the presented scenario. Only those participants whose explanations are categorized in righteous indignation used equality and justice. They also seemed to tend to adopt an ecocentric perspective because of mentioned species other than humans. This result suggests that PECTs must be encouraged to reason at this level.

Research Question 2: The Level that the PECTs Reason to Make Decisions

The second research question addressed PECTs' reasoning levels on the environmental issue. Figure 1 shows the participants' reasoning levels in the categories of judgment and elaboration.

Although the participants who made a high level of judgment clearly explained and justified their judgments,

these explanations again provide evidence for the participants' misconception about national parks. These participants overlooked that the wolf was still in its own habitat and behaving naturally. These results again reveal their lack of ecocentric perspective and knowledge of nature and the environment. The participants who made moderate judgments explained why they felt that way or what to do to solve the problem but did not justify their emotions and beliefs. It can be inferred that the participants did not adopt an ecocentric perspective, even when they made moderate or high levels of judgment.

Although both high and moderate levels of elaboration examples included the explanations of human's responsibility to protect the environment and the importance of pro-environmental behaviors, they again reflect the human-centered way of looking at the environmental issues, rather than an ecocentric approach.

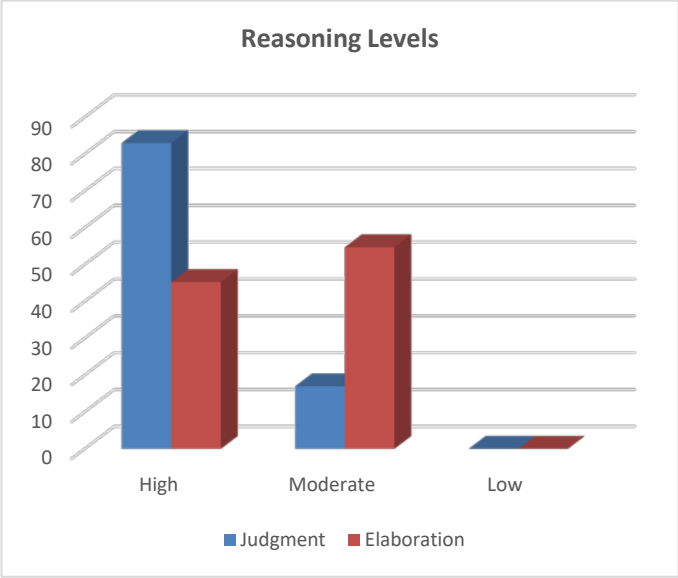

Figure 1.
Reasoning Levels

The following quotations are classified as high levels of judgment because these participants make their judgment by constructing sound arguments and justifying their positions. They mostly seem to have considered both the farmer and the wolf during making their explanations:

Barbara: If I were the farmer, I would be upset because of my loss. Animal husbandry is a difficult work. Furthermore, removing animals from their native habitat is like putting them in a cage. This might have caused the wolf to behave violently.

Zoey: I feel sorry for both the farmer and the wolf. The farmer suffered from losing his/her cattle and the wolf is dead just because it was removed from its native habitat.

The following participants explained their emotions and positions clearly; however, without justifying their judgment. Therefore, their judgment was classified as moderate level.

Betty: I feel myself very guilty about this issue. I do not do much about environmental issues because I feel burden or troubled about these issues. I think I should do something about it, but I do not.

Dalila: All of us are responsible for the environment and we must act collectively. We will keep having such bad consequences unless we act collectively, and the government do not encourage the protection of environment.

High level of elaboration required PECTs to give further examples to explain their emotions and judgments as well as indicating the relationships between these examples and ideas about the issue. The following examples revealed such an elaboration as they gave various examples of human actions that cause environmental problems and provided solutions to deal with these problems:

Belle: As humans, we cause the biggest harm to the environment and ruin the balance of ecosystems. So, we have the biggest responsibility for Earth. Many human actions are the causes of many environmental problems, such as increasing carbon dioxide in the atmosphere, polluting water, deforestation, destroying habitats, etc.

Brenda: I feel responsible for the environment, and I think I act pro-environmentally. I prefer using recyclable products, saving electricity and water, using public transportation, etc. However, environmental issues cannot be solved individually. Protecting environment and sustainability requires supporting environmental organizations and acting collectively.

The following quotations are the examples of moderate level of elaboration because they include clear explanations of the participants' positions and discussions on interrelationships among different aspects of the issue; however, with a lack of further example:

Rebecca: Protecting environment and nature is a responsibility rather than a choice. There are species

on Earth other than us who have right to live. Governments should consider settlements before establishing national parks.

Olivia: The government is responsible for the restitution of the farmer's harm because the authorities should not have allowed establishing national parks close to settlements in the first place.

The results showed that most of the PECTs (83.02%) made a high level of judgment about the environmental issue and nearly half of them (45.28%) elaborated their judgment by giving further examples and discuss the relationship between the ideas critically. It is interesting to note that few participants (16.98%) made a moderate judgment by clearly and rationally explaining their positions but did not provide sufficient justification, while many participants (54.72%) elaborated their responses in moderate level by giving further examples. It is evident from this result that nearly half of the PECTs are challenged to elaborate on their arguments by giving further examples on an environmental issue regardless of their judgment level.

Twenty-three out of 44 participants who judged the environmental problem at a high level also elaborated their judgment at a high level, while 21 of them elaborated their judgment at a moderate level. Interestingly, only one out of 9 participants made her judgment at a moderate level, while elaborating her explanation at a high level. The other 8 participants made both their judgments and elaborations at a moderate level. This result provides evidence for the need for a high level of judgment to produce a high level of judgment in general, implying that a critical level of reasoning is a prerequisite for a high level of judgment.

Although the participants saw mucilage on Marmara Sea, they rarely gave this example to elaborate on their judgments about the human impact on the environment. In fact, they seldom used current examples such as wildfire, deforestation, acidification of the seas, reflections of global warming to support their judgments. This result indicates that the participants are not well-equipped to elaborate on their judgment on an environmental issue by connecting it to other environmental issues to make an informed decision about the environmental issues in general. On the other hand, it is promising that none of the PECTs made a low judgment or a low elaboration on the scenario that they were given.

Conclusion

Eco-ethical perspectives of environmental education necessitated investigating learners' emotive reasoning about environmental issues (Herman et al., 2020; Zeidler et al., 2019) to promote ecojustice. Morrision (2018) argued that reframing Westernized culture takes time and requires both intellectual and emotive and psychological reasoning, and personal internalization is needed before practical application. The students construct their arguments on SSI by utilizing not only scientific knowledge but also human behavior, emotion, social and political agenda. This complexity of decision-making on SSI highlights the necessity of reasoning and discussion of real-life situations into teaching settings (Kim et al., 2014). The current study was an attempt to bring a real-life problem by providing PECTs with an environmental issue and explore their emotive reasoning.

Bussing et al. (2019) highlighted the importance, attitude, enjoyment, and perceived behavioral control of pre-service teachers' motivation to teach environmental issues, focusing on their positive attitudes towards environmental education contexts. The Yellowstone example was used in the current study to focus the PECTs' emotive reasoning on a wildlife issue. The PECTs reflected different types of emotive reasoning. However, they mostly explained their reasons in a more human-centered way and rarely emphasized an ecocentric approach to wildlife conservation. As the research was conducted with the participants studying in a metropolitan city, who are disconnected from nature, it is understandable that their perspective on natural life is human-centered. Yerbury and Weiler (2020) stated that connectedness to nature can contribute to an ecocentric perspective on wildlife, which allows people to realize their impact on wildlife. Therefore, incorporating outdoor activities into preschool teacher education programs and encouraging PECTs to design activities that take place in nature can be beneficial in this regard.

The results of this study indicated the absence of apathy in PECTs' reflections and most of the PECTs reflected more than one type of emotive reasoning by expressing especially empathetic dissonance. More than half of the participants moderated their concern about the impact of wolf on human life. However, they rarely expressed guilt about the environmental issues. Herman et al. (2020) concluded similar results and suggested that the place-based SSI instructions are useful contexts to focus on emotive reasoning to resolve environmental issues. They also argued

the necessity of authentic contexts and a well-defined framework to improve the affective and cognitive connection. However, the results of the current study suggest that using well-defined cases and scenarios about environmental issues elicited the PECTs' emotive reasoning about environmental issues. The major contribution of the present study is, thus, indicating the participants' emotive reasoning by using well-defined cases and scenarios about environmental issues to examine their emotive reasoning on an environmental issue. Environmental SSI education in teacher training should include discussions on well-defined, real cases and scenarios to examine pre-service teachers' emotive reasoning about these issues. Further studies on PECTs' emotive reasoning in different environmental cases and scenarios, especially those that are related to their daily life may bring new light on this topic.

Dunlop and Rushton (2022) stated that emotions are strongly linked to actions and education plays a significant role in altering environmental emotions. We found that the participants of this study were unlikely to take action to resolve the issue. Some of them even did not seem to have known of national parks. Zummo et al. (2020) analyzed letters written by American youth to the next president after worldwide climate strikes and found that global climate change triggered a variety of emotive reasoning, such as an apocalyptic scenario. These findings suggest that a community that feels environmental problems closely is more prone to emotive reasoning and activism regarding the problem. Similarly, some of the participants in this study reflected that the current scenario provided an opportunity to think about the environmental issue and was a catalyst for them to act. These findings indicate the necessity of not only providing students with opportunities to express their emotions on environmental issues by using such scenarios in classes but also encouraging them to research about the topic.

Incorporating emotive reasoning into environmental education seems to have the potential to elicit learners' emotive reasoning to create educational environments that allow them to think pro-environmentally. Tsevreni (2021) found that nature journaling supports students' connection to the more-than-human world. Similarly, the current study is an attempt to enhance PECTs' connection to the environment, which includes not only humans but also other species by exploring their emotive reasoning in a real case. However, the results of this study showed that the PECTs mostly reflected a human-centered approach to environmental problems rather than an ecocentric approach. Further studies promoting PECTs' reasoning on well-defined real environmental problems with an ecocentric approach might broaden our perspective on this issue.

Citizens' participation in decision-making in environmental policies and management is significant for establishing democracy and environmental sustainability (Rodríguez & Vargas-Chaves, 2018). The individuals need to have high reasoning skills for an effective participation. The findings of the present study indicated high and moderate levels of reasoning in the participants of this study. However, some of the PECTs were challenged to make decisions by both critically evaluating the issue and providing justification to their arguments or elaborating their positions with further examples. Although place-based SSI teaching elicited PECTs' diverse perspectives including moderated concern and empathetic dissonance (Herman et al., 2020), the results of this study also indicate the necessity of promoting PECTs' level of reasoning during moral and ethical judgments on an environmental issue. Further research investigating PECTs' emotive reasoning on various environmental issues may broaden our perspectives to improve teacher education programs regarding environmental education.

Environmental issues, such as climate change is not only an ethical issue, but also a political issue (Bazzul, 2020). Therefore, it is necessary to equip PECTs with the ability to make informed decisions about environmental issues by providing justified arguments and elaborating their judgment with further examples even during emotive reasoning. Providing crucial examples in their teaching designs depends on their level of reasoning. Environmental education is important in particularly early childhood, where environmental learning and attitude are just being formed (Basile, 2000). To achieve this purpose, educators should focus on training teachers and find ways to improve PECTs' reasoning skills by enabling them to discuss their emotions on various environmental issues and relate them to each other to make coherent judgments.

According to McGimpsey et al. (2023), the disconnection of environmental problems' complex social, cultural, aesthetic, and political effects from the curriculum indicates formal education's contradictions. In contrast, environmental activism prioritizes these dimensions and has charted its course. However, a planned and programmed pedagogical approach would be beneficial for environmental education to address such activism, in which young people are active. The research findings emphasize the importance of a conscientious and human-centered approach to environmental issues, particularly among young people. An alternative pedagogical approach of this type could provide a suitable basis for transforming the current framework.

The main limitation of the current study is that the data were collected from the participants who attended the Early Childhood Environmental Education course in a private university in a metropolitan city in Turkey. Therefore, considering that the results of the present study cannot be generalized to all PECTs, the findings suggest the need for further implementations of environmental cases in different contexts of teacher education. The use of different well-defined cases and scenarios to elicit and improve PECTs' emotive reasoning and decision-making skills will bring new insight into the development of environmental education in early childhood education programs.

Etik Komite Onayı: Etik kurul onayı İstanbul Aydın Üniversitesi Sosyal ve Beşeri Bilimler Etik Kurulu'ndan (Tarih: 27.09.2021, Sayı: E-45379966-050.06.04-25307) alınmıştır.
Katılımcı Onamı: Bu çalışmaya katılan öğretmen adaylarından yazılı onam alınmıştır.
Hakem Değerlendirmesi: Dış bağımsız.
Yazar Katkıları: Fikir-D.S.; Tasarım-D.S.; Denetleme-D.S., E.Ç.; Kaynaklar-D.S., E.Ç.; Veri Toplanması ve/veya İşlemesi D.S.; Analiz ve/veya Yorum-D.S., E.Ç.; Literatür Taraması- D.S., E.Ç.; Yazıyı Yazan- D.S., E.Ç.; Eleştirel İnceleme- D.S., E.Ç.
Çıkar Çatışması: Yazarlar, çıkar çatışması olmadığını beyan etmişlerdir.
Finansal Destek: Yazarlar, bu çalışma için finansal destek almadıklarını beyan etmişlerdir.
Ethics Committee Approval: Ethics committee approval was obtained from Istanbul Aydin University University Social and Humanitarian Ethics Committee (Date: 27.09.2021, Number: E-45379966-050.06.04-25307)
Informed Consent: Written informed consent was obtained from pre-service teachers who participated in this study
Peer-review: Externally peer-reviewed.
Author Contributions: Concept- D.S.; Design- D.S.; Supervision- D.S., E.Ç.; Resources- D.S., E.Ç.; Data Collection and/or Processing- D.S.; Analysis and/or Interpretation- D.S., E.Ç.; Literature Search- D.S., E.Ç.; Writing Manuscript- D.S., E.Ç.; Critical Review- D.S., E.Ç.
Conflict of Interest: The authors have no conflicts of interest to declare.
Financial Disclosure: The authors declared that this study has received no financial support.

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Genişletilmiş Özet

Giriş

İklim değişikliği, kirlilik, atık bertarafı, aşırı nüfus artışı, okyanus asitlenmesi, gıda ve su kıtlığı gibi sorunların bir araya gelmesi nedeniyle gezegende bir çevre krizi yaşandığına dair çok sayıda kanıt bulunmaktadır (Akinsemolu, 2020; Singh & Singh, 2017). Bu nedenle, iklim kriziyle başa çıkmak ve Sürdürülebilir Kalkınma Hedeflerine ulaşmak için, mevcut sorunları ve bu sorunlar arasındaki bağlantıları anlayan bireyler yetiştirmek hayati önem taşımaktadır (Echegoyen-Sanz & Martín-Ezpeleta, 2021). Eğitim, böyle bir değişim yaratmak için en güçlü araçlardan biridir. Mevcut çevresel krizle başa çıkabilmek için, öğrencileri çevresel zorlukları anlama ve çözme becerileriyle donatan, ekolojik meseleleri kavramalarını teşvik eden ve sürdürülebilir bir yaşamı destekleyen ekolojik bir müfredat bugün her zamankinden çok daha önemlidir.

Sürdürülebilir Kalkınma Hedeflerine ulaşılması (Ito & Igano, 2020) ve öğrenciler ile doğa arasında güçlü duygusal bağların geliştirilmesi (Herman ve ark., 2020), yer temelli çevre eğitimi çerçevesi ile kolaylaştırılmaktadır. Bu makalenin argümanı, çevre bilincinin ekolojik sistemler ve insanların neden olduğu çevresel bozulma arasındaki karşılıklı ilişkileri anlamayı ve muhakeme etmeyi gerektirdiğidir. Bu nedenle, öğrencilerin farkındalığını geliştirmek için, yalnızca yer temelli konularla ilgili olarak değil, aynı zamanda dünyanın farklı bölgelerinde ortaya çıkabilecek genel çevre sorunlarıyla ilgili olarak da ekolojik muhakemelerini geliştirmek gerekmektedir. Yaban hayatının ekolojik süreçler üzerinde önemli bir etkisi vardır. Bu nedenle, yaban hayatının korunması konusunda kamu bilincinin artırılması gerekmektedir. Ancak, karar vericileri ve halkı korumayı desteklemeye ikna etmek iletişim ve eğitim gerektirmektedir.

Çevre eğitimi, öğrencilerin ekolojik nişlerinin daha geniş çevrenin ayrılmaz bir bileşeni olduğu kavramını içselleştirmelerini sağlamalı ve doğa ile ilişkilerinde var olan karşılıklılığa dair ahlaki ve etik bir anlayışı beslemelidir. Duygusal muhakeme, bu eko-etik perspektifin önemli bir yönüdür. Bu perspektiften hareketle, bu çalışma okul öncesi öğretmen adaylarının (OÖÖA'lar) bir çevre sorununa ilişkin duygusal muhakemelerini keşfetmeyi amaçlamaktadır. Araştırmacılar, vahşi yaşamın ve çevrenin korunması ile insan ihtiyaçları arasındaki etik ikilemleri içeren bir çevre sorunu hakkında bir senaryo oluşturmuşlardır. Çevre eğitiminde ekoadalet yaklaşımını (Benzce ve ark., 2015; Herman ve ark., 2018; Reis ve ark., 2015) temel alan Herman ve ark. (2020), lisans öğrencilerinin çevre sorunlarıyla ilgilenirken duygusal muhakemelerini keşfetmek için Yellowstone'da otantik yer temelli çevresel SGE öğrenme deneyimlerini kullanmıştır. Bu deneyim aşağıdaki vakayı içermektedir: Bir kurt Ulusal Park'tan kaçmış, yakındaki bir çiftliğe gitmiş ve koyun ve sığırlara saldırmıştır. Daha sonra çiftçi kurdu öldürdü. Benzer bir vaka Nisan 2019'da Türkiye'de yaşanmış, Türk gazeteleri bir kurdun ülkenin güney bölgesindeki Milli Park'tan kaçtığını yazmıştı. Birkaç gün sonra aynı gazeteler, bir ilçede kurdu yiyecek ararken gören ve fotoğraflayan vatandaşlarla ilgili başka bir haber yayınlamıştır. Aynı yılın mayıs ayında kurdu arama çalışmaları sonlandırıldı.

Yöntem

Bu çalışmanın araştırmacıları, bu vakayı katılımcıların duygusal muhakemelerini keşfetmek için bir fırsat olarak kullanmaya karar vermiştir, çünkü bu sadece yer temelli bir çevre sorunu değil, aynı zamanda dünyanın farklı bölgelerinde ortaya çıkabilen bir vahşi yaşam sorunudur. Araştırmacılar dokuz olası seçeneği listelemiş ve katılımcılardan bu seçeneklerden birini veya daha fazlasını seçmelerini ve yanıtlarını yansıtmalarında detaylandırmalarını istemiştir. Bu çalışmaya elli üç OÖÖA katılmıştır. Araştırmacılar, katılımcıların her bir kategorideki yanıtlarını kodlamış ve katılımcıların yansıtmalarındaki kararlarını ve detaylandırma düzeylerini bağımsız olarak analiz etmiştir.

Sonuç

OÖÖA'lar farklı duygusal muhakeme türlerini yansıtmıştır. Bununla birlikte, gerekçelerini çoğunlukla daha insan merkezli bir şekilde açıklamışlar ve nadiren yaban hayatının korunmasına yönelik ekosentrik bir yaklaşımı vurgulamışlardır. Sonuçlar en çok sorumluluk dağılımı, merhamet, öfke ve haklı kızgınlık kategorilerinde bir yığılma olduğunu göstermektedir. Herman ve ark. (2020) yürüttüğü çalışmayla tutarlı olarak, bu çalışmanın sonuçları, OÖÖA'ların düşüncelerinde ilgisizliğin olmadığını ve OÖÖA'ların çoğunun özellikle empatik uyumsuzluğu ifade ederek birden fazla duygusal akıl yürütme türünü yansıttığını göstermiştir. Katılımcıların yarısından fazlası kurdun insan yaşamı üzerindeki etkisine ilişkin endişelerini ılımlı bir şekilde dile getirmiştir. Ancak, çevre sorunları hakkında nadiren suçluluk ifade etmişlerdir.

Herman ve ark. (2020), duyuşsal ve bilişsel bağlantıyı geliştirmek için otantik bağlamların ve iyi tanımlanmış çerçevenin gerekliliğini savunmuştur. Bununla birlikte, mevcut çalışmanın sonuçları, çevresel konularla ilgili iyi tanımlanmış vakalar ve senaryolar kullanmanın da bu tür bir katılımı kolaylaştırmak açısından yer temelli SBK eğitimi kadar faydalı olduğunu göstermektedir. Dolayısıyla bu çalışmanın en önemli katkısı, katılımcıların duygusal muhakemelerini analiz ederek çevresel SBK öğretiminde çevresel vakalar ve senaryolar kullanmanın faydalarını ortaya koymasıdır.

Sonuçlar ayrıca, OÖÖA'ların duygusal akıl yürütmelerinde çoğunlukla yüksek düzeyde yargılama ve yüksek ve orta düzeyde detaylandırma olduğunu ortaya koymuştur. Bu çalışmanın sonuçları, hizmet öncesi öğretmen eğitiminin, öğretmen adaylarının duygusal muhakemelerini incelemek için iyi tanımlanmış çevresel vakaları içerecek şekilde revize edilmesi gerektiğini ve böylece çevre eğitiminde çevresel farkındalıklarının artırılması gerektiğini göstermektedir. Bu araştırma, öğretmen adaylarının yaban hayatı konularındaki duygusal akıl yürütmelerini anlamak ve bu anlayışı öğretim uygulamalarına etkili bir şekilde dahil etmelerini sağlamak açısından da önemlidir.