THE RELATIONSHIP BETWEEN PRESCHOOL TEACHER CANDIDATES' COGNITIVE FLEXIBILITY LEVELS AND THEIR BELIEFS ABOUT INTEGRATING ENVIRONMENTAL EDUCATION INTO EARLY CHILDHOOD EDUCATION

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ABSTRACT

THE RELATIONSHIP BETWEEN PRESCHOOL TEACHER CANDIDATES' COGNITIVE FLEXIBILITY LEVELS AND THEIR BELIEFS ABOUT INTEGRATING ENVIRONMENTAL EDUCATION INTO EARLY CHILDHOOD EDUCATION

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In this study, it was aimed to reveal the relationship between pre-service early childhood teachers' beliefs about integrating environmental education into early childhood education and their cognitive flexibility levels. In addition to this goal, it also aimed to reveal how pre-service early childhood teachers' cognitive flexibility levels and their beliefs about integrating environmental education with early childhood education differed according to various variables. Data were collected from freshman, sophomore, junior and senior pre-service teachers at a university through scales. Descriptive analysis, independent sample t-test, ANOVA test, Pearson Correlation test was used to analyze the collected data. When the findings were examined, a statistically significant relationship was found between pre-service early childhood teachers' cognitive flexibility levels and their beliefs about integrating environmental education into preschool education. However, it was revealed that the cognitive flexibility levels of pre-service early childhood teachers did not differ significantly according to variables such as gender, grade level, taking environmental education course, internship experience, personal development

training. Similarly, it was understood that the beliefs of integrating environmental education with early childhood education did not differ significantly according to these variables.

Keywords: Teacher Beliefs, Cognitive Flexibility, Pre-Service Teachers

ÖZ

OKUL ÖNCESİ ÖĞRETMEN ADAYLARININ BİLİŞSEL ESNEKLİK DÜZEYLERİ İLE ÇEVRE EĞİTİMİNİN ERKEN ÇOCUKLUK EĞİTİMİNE ENTEGRASYONUNA İLİŞKİN İNANÇLARI ARASINDAKİ İLİŞKİNİN İNCELENMESİ

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Bu çalışmada, okul öncesi öğretmen adaylarının çevre eğitiminin erken çocukluk eğitimine entegre edilmesine yönelik inançları ile bilişsel esneklik düzeyleri arasındaki ilişkinin ortaya konulması amaçlanmıştır. Bu amaca ek olarak, okul öncesi öğretmen adaylarının bilişsel esneklik düzeyleri ile çevre eğitiminin erken çocukluk eğitimi ile bütünleştirilmesine yönelik inançlarının çeşitli değişkenlere göre nasıl farklılaştığını ortaya koymak da hedeflenmiştir. Veriler bir üniversitede öğrenim gören birinci, ikinci, üçüncü ve son sınıf öğretmen adaylarından farklı ölçekler aracılığıyla toplanmıştır. Toplanan verilerin analizinde betimsel analiz, bağımsız örneklem t-testi, ANOVA testi, Pearson Korelasyon testi kullanılmıştır. Bulgular incelendiğinde, okul öncesi öğretmen adaylarının bilişsel esneklik düzeyleri ile çevre eğitiminin okul öncesi eğitime entegre edilmesine yönelik inançları arasında istatistiksel olarak anlamlı bir ilişki bulunmuştur. Ancak okul öncesi öğretmen adaylarının bilişsel esneklik düzeylerinin cinsiyet, sınıf düzeyi, çevre eğitimi dersi alma durumu, staj deneyimi, kişisel gelişim eğitimi alma durumu gibi değişkenlere göre anlamlı bir farklılık göstermediği ortaya çıkmıştır. Benzer şekilde, çevre

eğitimini okul öncesi eğitimle bütünleştirmeye yönelik inançlarının da bu değişkenlere göre anlamlı farklılık göstermediği anlaşılmıştır.

Anahtar Kelimeler: Öğretmen inançları, Bilişsel Esneklik, Öğretmen Adayları

To the future I dreamed of...

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CHAPTER 1

INTRODUCTION

This chapter consists of three parts. Firstly, there is the introduction section, in which the subject of the thesis is explained superficially, and secondly, the importance of the research section follows this section. The importance of the research section includes the research questions. Finally, this chapter includes explanations of important terms used in the thesis.

1.1. Introduction

In the developing world, uncertainty, insecurity and swift change continue at an increasing tempo. All over the world, environmental concerns stand out as areas where these changes are clearly recognized (Davis, 1998). One of the major tasks for society, then, is to prepare citizens with the necessary attitudes, values, knowledge and skills to reconsider and transform existing patterns of behavior and to ensure a healthy, just and sustainable future for everyone. In this way, the environment that leads to the imagined future can be created and protected (Davis, 1998; Kaur, 2013). Environment can be defined in different ways. According to Enno (1980), the environment consists of all the conditions, situations, and influences that surround a person's social system. There is a close relationship between the person and the environment, which tends to change constantly. According to another definition, the environment is a multidimensional, complex system of constantly changing relationships. The environment includes not only a person's immediate environment but also various issues related to human activities and relations, production and consumption, basic life functions, and their impact on natural resources such as soil, water, atmosphere, and forests (Ardoin et al., 2022; Kaur, 2013). The problems arising in this bidirectional relationship between the environment and humans harm

both humans and nature. In order for this harm-being-harm relationship to change positively and to protect the environment, people living today must have the knowledge, ability, point of view, motivation, and dedication to work individually and jointly towards the solution of existing problems and at the same time to work towards the prevention of new issues (UNESCO-UNEP, 1976; Parra, 2020).

Based on these definitions, the changes and uncertainties occurring in the environment have created the need to provide education on environmental issues. Environmental education refers to an approach with philosophical foundations that aims to create an environmentally literate citizen, including the protection and sustainability of the environment (Ardoin et al., 2022; Monroe et al., 2008; UNESCO, 1978). Environmental education encourages the development of attitudes, tendencies, and skills necessary for socialization and the efforts to preserve the sustainability of human-nature interaction in the long term (Monroe et al., 2008; UNESCO, 1978).

At the Stockholm United Nations Conference on the Human Environment in 1972, environmental education was described as "one of the most critical elements of an all-out assault on the world's environmental crisis" (UNESCO-UNEP, 1976, p.2). In the intervening years, environmental education has become a subject in which the purpose of environmental education is determined from different perspectives (Cutter Mackenzie et al., 2014; Lieflander & Bogner, 2018). According to Sauvé (2005), the primary goals of environmental education are to increase public awareness and knowledge of environmental issues and to provide the skills necessary to make meaningful decisions and take responsible actions. Environmental education should teach individuals to think critically and improve their problem-solving and decision-making skills in formal and informal learning settings (Leal Filho et al., 2018; UNESCO, 1978). Lifelong participation in environmental education is essential in decision-making, not only individually but also socially, as scientific and social conditions regarding environmental and sustainability issues change frequently and require constant critical thinking (Stanišić & Maksić, 2014; Lieflander & Bogner, 2018).

In the process of including environmental education in formal education, it has been stated that early childhood is the most suitable starting period. Early experiences of

children in the active learning process are essential to support children's learning in holistic development areas and to ensure the permanence of this learning (Green, 2015; Rooney & Blaise, 2022; Torquati et al., 2017). In addition to the holistic development of children, early childhood education and environmental education share parallel philosophical perspectives. The main focus of early childhood education can be explained as reasonable, representative, and inclusive ways for children to build strong relationships by interacting with each other and the environment (Davis, 1998; Rooney & Blaise, 2022). Considering the main objectives of environmental education, it may be possible to raise individuals with strong connections with the environment and take important steps for the future by providing environmental education in early childhood. In other words, early childhood education is a very important platform for developing the goals of environmental education: "social justice" and 'ecological responsibility' for the future (Davis, 1998). Chawla (1998) revealed that early-life exposure to environmental experiences served as ancestors to later-life involvement. This suggests that children have the capacity to cultivate a sense of responsibility toward the environment, and these formative learning encounters persist into adulthood. During the initial stages of development, their instinctual motivation and curiosity about the world should be effectively used by educators to encourage children to learn about their surroundings (Pleyvak & Mayfield,2010; Larimore, 2016; Tran Ho et al., 2023).

Learning about the environment contains "knowledge and skills from all disciplines" (Grant & Littlejohn, 2005; Tran Ho et al., 2023). Research has found that using the environment as an integrative context for learning is the most applicable way to deliver environmental education (Lieberman & Hoody, 1998; Lonning et al., 1998; Tran Ho et al., 2023). Since the general structure of early childhood education is suitable for a holistic approach, it will be possible to integrate environmental education into the early childhood education program (Plevyak & Mayfield, 2010; Rooney & Blaise, 2022). Teachers can integrate environmental education with science, mathematics, language, social studies, music and art sciences. If teacher succe integrating environmental education with these subject areas, children can develop academic skills such as scientific process skills, outdoor experiences, use of

senses and arithmetic, while developing environmental awareness with the effort of teacher (Ardoin & Bowers, 2020; Engleson & Yockers, 1994; Hammond, 1997; Plevyak & Mayfield, 2010).

Effective environmental education should develop concrete attitudes, values, knowledge, and skills that directly or indirectly benefit and aim to protect the environment. The effectiveness of environmental education is also affected by the competence and attitudes of the professional providing the education (Ardoin & Bowers, 2020; Nousheen et al., 2020). Likewise, according to May (2000), successful environmental education is affected by teaching circumstances, teacher competencies, and teaching practices. Since teachers are an essential element in education, they should be considered the primary facilitators of learning and drivers of achieving learning goals. Twenty-first-century educators need to be able to not only plan lessons and monitor classroom activities but also build trusting relationships with students and the school community, use technology to enhance instruction, and regularly evaluate and improve their methods of instruction. Positive expectations, attitudes, and beliefs toward the teaching process are also essential for teachers (Li & Huang, 2023; Nousheen et al., 2020). Eßling and her colleagues (2023) particularly emphasize the significance of evaluating teacher beliefs and that they have more than just a theoretical understanding; they can influence behavior and decisions made in the classroom. This explains that the beliefs that teachers have can influence their actions.

Teacher competencies are influenced by teachers'beliefs and attitudes. Teachers' competence beliefs and attitudes regarding environmental education also affect their competence in providing environmental education (Fishbein & Ajzen, 1975; Moseley et al., 2009; Torquati et al., 2017). Additionally, teachers' attitudes, behaviors, and beliefs are critical to understanding and enhancing the instructional process since they affect students' learning environments, motivation, and accomplishment (Moseley et al., 2009; Nousheen et al., 2020; Richardson, 1996; Roehrig et al., 2007). Thus, they are intimately related to teachers' coping mechanisms for dealing with difficulties in their everyday work and overall well-being (OECD, 2009; Nousheen et al., 2020; Richardson et al., 2018).

Teachers' educational efficacy beliefs can be considered related to their cognitive status and knowledge level (Dyment et al., 2013; Richardson et al., 2018; Valcke, 2010). Teachers may be motivated to look for several options while seeking solutions or perspectives on view if they believe in multiple solutions and various sources of knowledge (Dyment et al., 2013; Elen et al., 2011; Richardson et al., 2018). The concept of cognitive flexibility is related to finding different solutions and making necessary adaptations for the teaching profession. This term was first defined by Spiro et al. (1987) as "the ability to spontaneously restructure one's knowledge, in many ways, in the adaptive response to radically changing situational demands" (p.116). Also, "cognitive flexibility" involves selecting and using suitable information, thus understanding the condition and making decisions (Spiro et al., 1988). In other words, cognitive flexibility refers to the individual's ability to avoid focusing on a specific way to solve a problem and to be aware of different solutions. For this reason, an individual with a high level of cognitive flexibility also has a high capability to adapt to unusual situations and change their cognition (Martin & Anderson, 1998). Accordingly, Elen and his colleagues (2011) emphasized that cognitive flexibility can result in creativity. Being aware of the setting and explicitly taking it into account allows for "outside the box" thinking while intentionally and purposely ignoring certain limitations.

Flexibility is reflected as an assurance of human cognition and was recognized in the early stages of human creativity and intelligence (Clement, 2022). According to Martin and Rubin (1995), cognitive flexibility has three main components. These components are the awareness, willingness, and self-efficacy. Awareness encompasses available options and alternatives in any given situation. Willingness represents the enthusiasm to be flexible and adapt to the situation. Self-efficacy is related to a person's self-confidence and belief in being flexible (Martin & Rubin, 1995; Martin & Anderson, 1998). Also, in every situation, a person has a choice about how to think and behave. A person goes through some cognitive stages and becomes aware of their options before adapting their behavior or thinking to the current situation. Compared to people who think that their options are limited, people who are aware of different alternatives can be described as people with high cognitive flexibility. In other words, people with high cognitive flexibility do not

think that their alternatives are limited and they realize and shape their possibilities according to the situation they are in. These people tend to respond differently and change their behavior depending on the situation (Martin & Rubin, 1995; Martin & Anderson, 1998). They also claimed that intrinsic motivation affects resilience. A person needs a reason or motivation to make a change or adapt. Willingness provides this motivation to the person and makes it easier for her/his to adapt to the changing situation. In some cases, although people are aware of alternatives and willing to change, they also need to believe in their self-efficacy for the flexibility in order to change their behavior (Martin & Rubin, 1995; Martin & Anderson, 1998).

According to Martin and Rubin (1995), cognitive flexibility has three dimensions. These are the awareness, willingness and self-efficacy. Awareness dimension includes the awareness of the changes in one's environment and the conditions that can be alternative to these changes. In order to have the cognitive flexibility to adapt to changing situations, individuals are expected to be aware of changing situations and to care about the existence of appropriate alternatives to these situations (Martin & Rubin, 1995; Ionescu, 2012). The willingness dimension is related to the person's intrinsic motivation. Although the person is aware of the changes in his/her environment, he/she may not be sufficiently motivated to adapt to them. The person's willingness to adapt to changing conditions is also a part of cognitive flexibility (Martin & Rubin, 1995; Ionescu, 2012). Another element that ensures that cognitive flexibility is a whole is self-efficacy. This element, which enables change to take place by supporting the person's willingness and awareness, is an indicator of the person's inner confidence and belief. In some cases, the belief that one has the necessary competence to adapt to this change may be weak. In this case, it may not be possible for one's cognitive flexibility to emerge (Martin & Rubin, 1995; Ionescu, 2012). Cognitive flexibility is realized when these three dimensions work together. Therefore, all three are equally important for a person to be cognitively flexible and work in a coordinated fashion.

Cognitive flexibility involves many cognitive processes performed systematically but not automatically (Clement, 2022; Elen et al., 2011). When these systematic cognitive processes occur, people show some flexible behaviors, such as creating new information and tools for existing knowledge. Also, multitasking and quickly

changing behavior to new rules or new tasks are considered characteristics of a cognitively flexible person (Cheng et al., 2016; Ionescu, 2011). In addition, cognitive flexibility gives people a variety of different competencies. Some are critical thinking, problem-solving, analogy-making, dealing with stress, creative and divergent thinking. Additionally, metacognition and executive functions are directly and indirectly related to cognitive flexibility (Cheng et al., 2016; Clement, 2022; Çuhadaroğlu, 2013). Thus, cognitive flexibility allows people to think differently (Buttelmann & Karbach, 2017).

Cognitive flexibility is quite severe for teachers as a quality/skill that must be owned or as a cognitive factor that affects and forms different educational abilities. Cognitive flexibility can be considered one of the qualities teachers and candidates acquire. The teaching profession involves direct interaction with people since it is one of the professions where it is most common to reach different people, personalities, and behaviors. For this reason, it is necessary for those who practice the teaching profession to have a high level of cognitive flexibility so that they can adapt to such different situations and produce alternatives (Çuhadaroğlu, 2013; Hanushek et al., 2018; Ionescu, 2017). In other words, enlightening the cognitive processes in learning and shaping the interaction with the environment is essential for the teaching profession. In addition, considering that children receiving education in early childhood are active participants in the learning process, interacting with the environment and structuring knowledge in their minds, rather than being passive listeners, teachers should be able to create learning processes and environments in which children are actively involved rather than transferring information in the activities (Barraza et al., 2023; Hanushek et al., 2018; Orakçı, 2021).

Putting it all together, beliefs can be expressed as the external expression of an individual's experiences (Brownlee et al., 2004). According to Blömeke et al. (2017), pre-service teachers' beliefs are organized according to cognitive, educational and psychological determinants. Cognitive factors include the level of knowledge of individuals and emphasize the relationship between pre-service teachers' beliefs and their level of general knowledge. Similarly, educational factors reveal the link between preservice teachers' formal education and related experiences and their

beliefs. Finally, psychological factors suggest that preservice teachers' reactions to the environment form their personality and that personality is a determinant in forming beliefs (Blömeke et al., 2017). Furthermore, research argues that beliefs are constructs that provide stability in the planning and implementation of instructional activities by teachers and pre-service teachers (Dunekacke et al., 2015). In early childhood education, teachers' beliefs become more relevant in the implementation of teaching (Blömeke et al., 2017; Dunekacke et al., 2015). In other words, the unstable nature of early childhood education requires teachers and pre-service teachers to be aware of their own potential. In addition, they are expected to be aware of these changing situations, to have a desire to adapt to these situations and to believe in their potential to adapt. Thus, they may be able to shape the teaching practices they create according to the needs and interests of their children. In addition to children's needs and interest the capability and motivation of teacher may shape the teaching practices. Thus, the psychological potential of the teacher can be defined as cognitive flexibility (Ben-Itzhak et al., 2014). It can be stated that pre-service teachers' beliefs about environmental education consist of their knowledge, experience and other psychological components.

From this point of view, it became necessary to reveal the relationship between pre-service teachers' beliefs about integration environmental education into early childhood education and cognitive flexibility. The aim of this study is to reveal the relationship between pre-service early childhood education teachers' beliefs about integrating environmental education into early childhood education and their cognitive flexibility levels. In addition, it aims to examine how the cognitive flexibility levels and beliefs about integrating environmental education into early childhood education differ according to the educational status and experiences of pre-service teachers, such as taking courses related to environmental education, internship experiences, and personal development training. In addition, the role of gender and grade level in the differentiation of the cognitive flexibility level and beliefs about integrating environmental education into early childhood education was also included in the study. Lastly, it is one of the aims of this study to reveal the general status of cognitive flexibility levels and beliefs about environmental education of pre-service early childhood teacher candidates.

1.2. Significance of the Study

When the literature is examined, it is concluded that interaction with the environment in early childhood is essential for the child's holistic development (Ewert et al., 2005). It has been observed that interaction with the environment in the early years supports children's social, cognitive, physical, emotional, and language development. Hence, early childhood years are valuable periods for developing positive attitudes and behaviors towards the environment. Studies show that early experiences effectively increase children's interest and sensitivity to the environment (Barrable, 2018; Ernst, 2014; Yates et al., 2019). Raising children's environmental literacy from an early age is essential, representing a critical period for developing thinking, behavior, and emotional well-being (Richardson et al., 2018). Several studies provide evidence of significantly positive outcomes in early childhood environmental education. This includes improving children's environmental awareness, knowledge, and positive attitudes towards the natural environment (Ardoin et al., 2020; Meier & Sisk-Hilton, 2017). According to Lwo et al. (2017), teachers influence a child's conception of the environment and play an essential role in identifying and correcting misconceptions related to environmental problems. To achieve a positive impact on future generations, high-quality environmental education starting from an early age and working with a knowledgeable teacher is crucial (Orbanić & Kovac, 2021). In this context, teachers have a great responsibility and vital role in providing adequate environmental literacy in a way that takes into account the child's developmental needs, interests, and abilities (Orbanić & Kovac, 2021; Richardson et al., 2018; Türkoğlu, 2019).

Early childhood teachers have several roles in promoting effective environmental education. They can provide opportunities for children to experience outdoor environments to encourage children's curiosity and hands-on learning experiences. During these experiences, they should facilitate children's active learning by acting as a guide rather than using direct teaching methods (Cutter-Mckenzie & Edwards,2013). To provide these opportunities, teachers are expected to be people who can create these opportunities and maintain control in these environments. Similarly, teachers may be role models encouraging children to spend time in natural

environments and develop sensitivity towards nature (Güner-Alparslan et al., 2017; Plevyak & Mayfield, 2010).

The responsibilities and roles that teachers undertake in environmental education are clearly stated in the literature. In order for teachers to effectively fulfill these responsibilities, they are expected to have personally developed positive environmental attitudes and behaviors (Hryn, 2023; Liulenko, 2023; Nazarenko & Kolesnik, 2018). On the other hand, studies have shown that the experiences teachers gain during their student years before they start their profession are extremely effective in the formation of these attitudes (McConnell, 2001; Ramesh et al., 2023; Torquati et al., 2017). When it is considered that teachers' pre-professional experiences are often the undergraduate years during which teacher education takes place, it can be clearly said that the beliefs and attitudes developed at this stage shape the professional lives of individuals (McConnell, 2001; Ramesh et al., 2023). When the literature is examined, it is seen that environmental education is effective, especially when given by qualified and conscious educators in the early childhood period. The education of teachers, who are seen to have a serious role in environmental education, comes to the fore at this point (Dyment et al., 2013; Meier & Sisk-Hilton, 2017; Tran Ho et al., 2023).

Researchers have suggested that the level of teacher candidates' beliefs and awareness about the importance of being in a relationship with nature and including nature in teaching processes may be decisive for creating a quality educational environment (Ardoin & Bowers, 2020; Çetin, 2019; Richardson et al., 2018). Most of the research conducted with pre-service and in-service early childhood educators has examined their perceptions and beliefs regarding environmental education, outdoor play, and natural learning environments (Ernst, 2014; Güner-Alparslan, 2013; Torquati et al., 2013, Tran Ho et al., 2023). When the findings obtained from the studies were evaluated, it was seen that the frequency of including environmental education in the educational programs increased as the attitudes and efficacy beliefs that support teachers' beliefs in integrating environmental education into early childhood education and are a part of this process increased (Bergan et al., 2024; Dyment et al., 2013). Similarly, pre-service teachers' beliefs and attitudes increased

as their experience and knowledge about environmental education increased, and this increase was reflected in their academic success (Clement, 2022; Tran Ho et al., 2023). Accordingly, the courses that pre-service teachers take about environmental education may differentiate their beliefs about the environmental education. In addition, factors such as internship experiences may also affect their level of knowledge and lead to differentiation in their beliefs. A limited number of studies supporting these ideas in the literature.

Teacher's pedagogical and cultural backgrounds formed their belief related to teaching and learning processes. Since today's pre-service teachers and tomorrow's teachers are nurtured in the same academic and cultural traditions, it is crucial to understand their beliefs and recognize the factors that influence these beliefs. Various experiences, including childhood events, formal education, and practical teaching experiences, shape teachers' pre-service and in-service beliefs (Meier & Sisk-Hilton, 2017; Rimm-Kauffman et al., 2006; Torquati et al., 2017). Pre-service teacher education should emphasize developing teacher candidates' beliefs about early childhood education (Oosterhoff et al., 2020). Research shows that the experiences of new teachers are primarily influenced by the perceptions and expectations formed during teacher training and practicum experiences. Similarly, it is suggested that teacher candidates' beliefs affect their future teaching practices (Li&Hung, 2023; Tran Ho, 2023).

Integrating environmental education into teacher education programs can improve pre-service teachers' knowledge, skills, and dispositions for effective environmental education. Preservice teachers' knowledge of environmental education and other aspects can enhance their educational competencies and self-belief (Meier & Sisk-Hilton, 2017; Torquati et al., 2017). Developing the knowledge, skills, and competencies that pre-service teachers will need while performing their profession will enable them to be effective (Bardach & Klassen, 2019). Teachers' professional roles and responsibilities are based on knowing and understanding students and determining their needs before the instruction process. During the instruction process, they have responsibilities such as making practices toward learning goals and ensuring the motivation of students (Bergan et al., 2024). After instruction,

teacher candidate is expected to participate as a decision-maker in school and parent collaborations. There are cognitive, social, and affective skills that teachers and teacher candidates are expected to have in order to be competent in all these psychological and physical areas (Bardach & Klassen, 2019; Mandal, 2018).

The lively nature of the classroom requires pre-service teachers to be able to adapt and switch between various tasks to meet the unique needs of each student in the school, which requires cognitive flexibility. Therefore, the ability to switch between two tasks and approach challenges from different perspectives has become one of the cognitive skills that pre-service teachers need to navigate with clarity and attention among the various responsibilities of the dynamic educational environment of the twenty first century (Kaur, 2024). Cognitive flexibility is often linked to executive functions, the higher-level cognitive processes that facilitate goal-directed behavior and self-control. It plays a critical role in tasks involving adapting to new information, thinking creatively, and approaching challenges from different perceptions (Kaur, 2024; Spiro et al., 1988). When the research on the use of cognitive flexibility in educational environments is examined, it is seen that some of the studies are based on theoretical foundations. Most of the literature studies are evidence-based (Cheng & Koszalka, 2016). For instance, in a study carried out by Edmunds (2007) investigating the effect of cognitive flexibility on teachers' self-efficacy beliefs, it was seen that the cognitive flexibility system positively affected teachers' self-efficacy. When studies on the relationship between self-efficacy beliefs and cognitive flexibility are examined, it is seen that there is a positive and moderate relationship between education faculty students' self-efficacy perceptions regarding teaching and cognitive flexibility levels (De-la-Peña et al., 2021; Saputra et al., 2022; Özgür & Çuhadar, 2015).

To briefly conclude, there are many studies that argue that there is a relationship between pre-service teachers' teaching efficacy levels and their cognitive flexibility levels (Houser et al., 2018; Stein et al., 2018). Similarly, there are studies trying to reveal the relationship between teaching efficacy, self-efficacy, and other belief levels (Gorrel & Capron,1990; Klassen & Usher, 2010; Aguirre et al., 2021). Furthermore, there are studies in the literature examining the relationship between

prospective teachers' cognitive flexibility and their beliefs about teaching fields such as mathematics education and science education (Blömeke et al., 2017; Schommer Aikins, 2017). On the other hand, there are not enough studies in the field that examine the beliefs and cognitive flexibility levels of pre-service teachers and teachers towards environmental education. Moreover, there is no study that directly reveals the relationship between pre-service teachers' beliefs and their cognitive flexibility levels. Similarly, the factors that may be related to pre-service teachers' beliefs about integrating environmental education into early childhood education are not included in a sufficient number of studies. The importance of this study comes to the forefront with the evidence obtained from the literature.

This study examines the pre-service early childhood education teachers' cognitive flexibility levels and beliefs related to the integration of environmental education into early childhood education. It also intends to investigate how pre-service teachers' cognitive flexibility levels and beliefs related to the integration of environmental education into early childhood education are affected by variables such as gender, taking courses related to environmental education, having internship experience, and experiences related to personal development. Also, the study seeks to the relationship between pre-service teachers' beliefs in integrating environmental education into early childhood education and their levels of cognitive flexibility.

Considering the findings in the literature that teachers' beliefs develop by their experiences during their undergraduate years, as well as the findings that pre-service teachers' cognitive flexibility levels affect their ability to demonstrate skills such as problem-solving, decision-making, and critical thinking and self-efficacy, the importance of this study becomes evident.

Therefore, the following research questions are formulated:

1. What are the general patterns of preservice early childhood teachers' cognitive flexibility and their beliefs in integrating environmental education into early childhood education?
    - **1.1** Do preservice early childhood teachers' cognitive flexibility and their beliefs in integrating environmental education into early

childhood education differ with respect to their background variables, including gender, grade level, taking a course about environmental education, internship experiences, and personal development training/activities?

2. What is the relationship between cognitive flexibility levels of pre-service teachers' and their beliefs in integrating environmental education into early childhood education?

1.3. Definition of Important Terms

Environmental Education: The process of familiarizing values and clarifying terms in order to develop the skills and attitudes necessary to understand the interrelationship between humans, their culture, and their biophysical environment (IUCN, 1970). In this study, the concept of environmental education refers to an educational theme that pre-service teachers are expected to integrate into their course processes and that aims to enable children to understand their roles in their natural environment and to take action towards the environment.

Education for Environmental Education: Education for environmental education refers to the professional development of those who will provide environmental education. It is concerned with how practices such as teaching, in-service training, teacher education activities, and curriculum development in environmental education should be shaped and how they are currently shaped (Robottom, 1987). In this study, it refers to educational activities that are envisaged to support pre-service teachers' processes of integrating environmental education with early childhood education.

Belief: Belief, which refers to "an individual's judgment about the truth or falsity of a proposition, is a judgment that can only be derived from a collective understanding of what people say, intend, and do" (Pajares, 1992, p. 316). In this study, the term belief is used to represent pre-service teachers' beliefs about integrating environmental education into preschool education.

Self-Efficacy Belief: Self-efficacy belief is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated

types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses" (Bandura, 2002, p. 94.)**.** In this study, self-efficacy belief is expressed as a part of pre-service teachers' beliefs about integrating environmental education into early childhood education.

Cognitive Flexibility: Cognitive flexibility is defined as being aware of the options and possibilities available in any situation, having the desire to be flexible and adapt to the new situation, and being self-efficacious to be resilient (Martin & Rubin, 1995). In the current study, cognitive flexibility is interpreted as the capability to unconsciously restructure knowledge in many ways by adapting to drastically changing circumstances.

Personal Development Training: Personal development refers to a planned or plannable process that concentrates on improving certain aspects of an individual's knowledge, skills and behaviors through predetermined goals and evaluation systems (Irving & Williams, 1999). It was used to describe the extracurricular trainings that pre-service teachers received in different subjects and fields.

CHAPTER 2

LITERATURE

This section basically consists of four main titles. First, information regarding environmental education in early childhood is presented under different headings. Second, information containing the examination of pre-service and in-service teachers' beliefs regarding environmental education and other beliefs as one of the variables of the study is included. Third, cognitive flexibility, another variable of the study, is mentioned in that part. All these headings have been progressed by supporting them theoretically. Finally, a report regarding the variables from previous studies conducted in the field is presented in this section.

2.1. Early Childhood Environmental Education

The environment can be defined as the totality of circumstances that an organism needs to live and sustain its life process. The growth and development of living beings are affected by the environment. Similarly, living beings also affect the environment (Ramesh et al., 2023). Environmental education, when expressed in its basic form, is the process that enables individuals to discover the environment and environmental problems, engage in problem-solving processes, and take action to advance the environment (Ramesh et al., 2023). Environmental education aims to increase people's knowledge and awareness about the environment, to provide important skills, and to increase the power of taking responsibility by supporting attitudes and motivation (UNESCO, 1978). In the Tbilisi Declaration, where the concept of environmental education takes its main form, four objectives of environmental education are mentioned. The first of these is awareness. Awareness helps to increase the sensitivity of social groups and individuals towards the environment and environmental problems (Neal & Palmer, 1990). The second

objective is knowledge. Individuals are expected to gain experience about the environment and related problems through environmental education and to transform these experiences into knowledge. Another objective refers to attitudes. The formation of positive attitudes is supported by shaping people's values and thoughts about the environment and its protection. The fourth and last objective, skills, includes acquiring and strengthening the skills that people will need to understand and solve environmental problems (Neal & Palmer, 1990).

The early childhood period is the stage where the child's character is shaped, and the child becomes aware of the situations that occur in his/her environment. In this period, the attitudes and behaviors acquired by the child are expected to settle into his/her character and continue with it when he/she becomes an adult. Thus, environmental education given at an early age not only helps to create and develop environmental awareness but also ensures the growth of attitudes and skills that will determine a responsible and sustainable routine in the future (Lamanauskas, 2023). The period from birth to age 8 is considered early childhood, encompassing various interconnected systems that both influence and are influenced by child development. Early childhood education emphasizes that families, communities, and educational settings are interconnected systems that interact with each other (Bronfenbrenner& Morris,2006). In addition to early childhood education, environmental education also focuses on the relationship between the person and the environment. Environmental education is a holistic process that includes knowledge, skills, behaviors, and attitudes. It focuses on human and natural communities and their two-way relationship. In particular, environmental education in early childhood includes the development of positive emotions such as "joy of closeness to nature," "respect for other creatures," and curiosity towards the environment (NAAEE, 2010, p.2.).

When environmental education is considered holistically, it should involve children, teachers, and the community working in cooperation to find solutions to environmental issues and problems. Environmental education, which is more than just a topic, includes actions, thoughts, attitudes and ethical values. Environmental education is evaluated through three broad and overarching approaches. These approaches can be expressed as education in the environment, education about the

environment, and education for the environment (Davis, 1998). First of all, quality early childhood education programs should provide children with direct interaction with the environment. The main objectives of environmental education in early childhood include providing children with active experiences with the environment and nature and thus developing positive feelings and attitudes towards nature. In addition, education in the environment includes outdoor experiences and opportunities to interact with other living and non-living things in the environment. However, these are insufficient to raise adults with high environmental awareness, who know what to do for the environment and live accordingly (Davis, 1998). At this point, education about the environment and education for the environment gain importance. Education about the environment enables people to understand how the natural systems around them function and recognize this process's complexity. Understanding concepts such as the cycles in the environment to sustain life, how living things grow, and the value of materials in nature are essential for children. Understanding these and other ecological principles is achieved through education about the environment (Davis, 1998). Education for the environment has a more political dimension than the other two topics. Environmental awareness and theoretical knowledge will not benefit humanity if they do not translate into action. In this case, lifestyles need to change, and daily routines need to become sustainable and be reflected in behaviors. Education for the environment aims to support this change. Teachers are of primary importance for education for the environment to achieve its goals. In order to teach appropriate environmental behaviors to children and their families, teachers need to be able to understand the short- and long-term effects of sustainable and unsustainable behaviors. Then, they are expected to make efforts to ensure that these are accepted by society (Davis, 1998).

2.1.1. Integration of Environmental Education in Early Childhood Education

Environmental education and early childhood education are parallel in many areas. These common points facilitate the integration of environmental education into early childhood education. In both areas, holism and interconnectedness with the world are very important. Both areas allow for the implementation of integrated programs and the support of experiences and active learning. Early childhood education and

environmental education emphasize the existence of strong links between educators and learners and between them and the society they live in and argue that this is a part of development. In addition, both areas emphasize that learning is about content and the importance of skills, attitudes, and values. When these common points are considered, it is understood that it is possible to continue an educational program that meets children's needs and simultaneously has environmental effects (Davis,1998).

There are many possible ways to integrate environmental education into early childhood education programs. According to Ardoin and Bowers (2020), outdoor and other environmental activities, which occupy a significant place in early childhood education programs, play an important role in children's physical, social, and emotional development. However, it would not be right to reduce the benefits that children will receive from outdoor activities to only these development areas; it is obvious that children will develop their skills of respecting nature and taking responsibility for protecting the environment, animals, and plants during outdoor activities (Davis, 1998). In addition to outdoor activities, environmental education should be considered a blend of science, history, and social sciences because it covers all natural areas in which humans are involved (Torquati et al., 2017). Therefore, it is possible to integrate environmental education with many subjects taught in kindergarten. For example, when environmental education is included in mathematics education, children develop problem-solving skills and learn in both areas (Torquati et al., 2017). Similarly, children can be brought into contact with the environment through nature-inspired music, movement, and art education activities. Integrated curriculum is used as a symbol of quality in early childhood education, which highlights the complementary relationship between early childhood education and environmental education (Torquati et al., 2017).

On the other hand, it is important to create suitable environments for environmental education to be integrated into early childhood education. Schools, where children spend long periods of the day, are expected to provide opportunities for them to be in the outdoors and natural environments. Efforts towards environmental education can be achieved through well-organized environmental arrangements and activity plans that meet the needs and expectations of children (Cutter-Mckenzie&Edwards,2013;

Davis, 1998). Children need to be in environments where they can freely touch and explore the soil and mud and perhaps get dirty in the process and where they can touch and closely examine the living things around them. In this way, their respect and awareness of these environments can be expected to increase (Davis, 1998). One of the efforts to integrate environmental education with early childhood education is expected to be aimed at teachers and teacher training. If the teacher does not feel competent in environmental education, he/she cannot be expected to create this environment for children. For this reason, strengthening the content of environmental education in teacher training and providing teacher candidates with experience in this process will support children to benefit from the process to the maximum extent (Davis, 1998; Torquati et al., 2017).

2.1.2. The Role of Teachers in Environmental Education in Early Years

An early childhood educator is a professional who teaches and nurtures young children in various environments, including the classroom. The primary objectives of early childhood education are to prepare children for future academic, social, emotional, and physical challenges and to provide protection and care in the absence of their primary caregiver. Teachers have a significant impact on fostering children's intellectual and social development during their formative years. The quality of education delivered by educators greatly influences their students' future expectations and attitudes (Phajane, 2014). In addition, teachers play an influential role in imparting knowledge and sensitization to students and society about the environment because teachers follow the culture, values, and ideology of a society and a nation.

Teachers, who are seen as an important part of society, are expected to take an active role in the implementation of environmental education programs (Kaur, 2013). Another role of teachers in environmental education is to maintain children's curiosity and interest in the environment. They should aim to create impressive experiences for children by following their interests. If the teacher is attentive and creative, he/she can keep children's interest and curiosity and strengthen their learning. It can help to cope with various environmental problems (Bergan et al., 2023).

According to Kaur (2013), teachers should be aware of the goals of environmental education and motivated to realize these goals. In order to provide the necessary motivation, teachers are expected to train themselves and take the initiative in designing the appropriate program. For teachers to train themselves in integrating environmental education, this process needs to start with teacher education (Ramesh et al., 2023). In order for educators to deliver high-quality environmental education, they must possess adequate knowledge and attitudes about the environment. It is the responsibility of teacher education institutions to foster the development of this mindset. Integrating environmental education into courses, especially in undergraduate years, will enable teacher candidates to gain experience and perspective. Thus, it may be possible for them to benefit from these objectives in their professional lives (Ramesh et al., 2023).

To summarize, teachers have a very essential role in ensuring that children have the right attitudes and values towards the environment and can show responsible behavior. The role of teachers does not end with providing information about the environment in the classroom. As a friend and guide, the teacher should shape children's behavior and ideas. Teachers' personal attitudes and beliefs regarding the environment are expected to be developed during their own learning process. Pre-service teachers will reveal their professional character with their attitudes and beliefs when they start their profession.

2.2. Teachers' Beliefs

Beliefs are defined differently in each study in the literature because studies in different fields require interpreting the phenomenon of "belief" in different ways. (Kagan, 1992; Pajares, 1992). According to Harvey (1986), belief is about how a person reflects and represents reality. Rokeach (1968) also defined beliefs as "any simple proposition, conscious or unconscious, inferred from what a person says or does, capable of being preceded by the phrase, 'I believe that . . . ' (p. 113). According to Rokeach (1986), all kinds of beliefs have some cognitive, affective, and behavioral components in order to represent themselves. The cognitive element of belief embodies knowledge, the affective component is about emotions, and the

behavioral component may be triggered when action is needed in that situation. Individuals' belief systems consist of their beliefs, attitudes, and values. Beliefs can turn into values due to their functions (Pajares, 1992). A belief system can be defined as a system that provides an organized representation of each of a person's numerous beliefs and ideas about physical and social reality (Rokeach, 1986).

The literature suggests that various factors, such as their roles, students, subject areas, and professional responsibilities, influence teachers' beliefs. These factors are considered in relation to teachers' perspectives. Furthermore, teachers' beliefs can differ based on their attitudes toward education, their self-efficacy, and other relevant factors (Pajares, 1992). Teachers' beliefs about their profession begin to form when they are still students. During their student years, their attitudes and beliefs about being an effective teacher and how students should behave are shaped (Kagan, 1992). Thus, it can be said that in order to understand teachers' beliefs, pre-service teachers' beliefs must also be considered effectively. According to Pajares (1992), gathering pre-service teachers' beliefs about teaching was essential to gather feedback for teacher training programs, including the curriculum and educational practices. Pajares (1992) also recommended examining pre-service teachers' beliefs to help them articulate their existing beliefs, as reshaping these beliefs can be challenging and time-consuming.

2.2.1. Beliefs about Environmental Education

Teacher beliefs come in two basic forms: teachers' self-efficacy beliefs and content-specific beliefs. Content-specific beliefs can be defined as the belief that a teacher is adapted to a certain academic content. These beliefs can be evaluated as the epistemological conceptions of the subject, judgments about the appropriate instruction of the content, goals, evaluation processes, and beliefs about students (Kagan, 1992). Pre-service and in-service teachers' beliefs about the environment and environmental education are within the scope of content-specific beliefs. In this context, the beliefs of pre-service and in-service teachers about environmental education are essential for understanding their teaching capabilities (Yavetz et al., 2014).

Teachers are the most significant element in children's increasing environmental awareness as the facilitators of a meaningful environmental education process. In this context, teachers are expected to cultivate children's skills such as understanding, noticing, and being a part of the environment, which require a holistic approach and can be addressed from social, cultural, and ethical perspectives (Esa et al., 2010; Yavetz et al., 2014). If teachers do not have sufficient beliefs and attitudes regarding environmental knowledge, skills, and commitment, it is unlikely that they will be leaders in the environmental change that is aimed to start in schools (Cotton, 2006). According to some researchers in the literature, people's environmental attitudes and concerns are shaped by the extent to which they see themselves as part of nature (Yavetz et al., 2014; Schultz et al., 2004). In other words, the environmental attitudes and values of someone who sets themselves apart from nature and sees themselves as superior to other living things in nature are quite different from the attitudes and values of someone who believes that they are a part of nature and that all beings in nature have equal rights. Since this difference shapes their beliefs, the concepts they express and defend as teachers will also be different (Schultz et al., 2004).

In 1997, Shuman and Ham presented a model that aims to explain teachers' commitment to teaching environmental education. This model integrates field theory, theory of planned behavior, lifespan developmental theory, and research findings on how life experiences influence pro-environmental behavior. According to the model, teachers' commitment to implementing environmental education is influenced by their life experiences, which can occur during their childhood, college years, and adulthood. Their theory suggests that teachers' life experiences help shape their beliefs. These three factors combined - life experiences, beliefs, and intentions - affect teachers' likelihood of teaching environmental education (Schuman & Ham, 1997). According to this model, the probability of teachers actually teaching environmental education goes up as their intentions and beliefs to teach increase. When teachers are more dedicated to teaching environmental education, they will be more motivated to overcome the barriers they encounter in implementing environmental education (Schuman & Ham, 1997).

From the perspective of field theory, teaching environmental education is a behavior that is influenced by both the teacher and the school environment. Both people-based

and environmental factors shape this behavior. People-based factors include the teacher's beliefs, personality, philosophy, and other internal attributes. Environmental factors include physical conditions like the size of the classroom and characteristics of students, social factors such as the students' mood, and the school principal's philosophy (Schuman & Ham, 1997). In addition, the theory of planned behavior, which is a component of Shuman and Ham's model, defines that teachers who instruct environmental education have made rational decisions to do it. The role of the Theory of Planned Behavior (TPB) in environmental education is to explain behaviors that may not be within teachers' control. Likewise, life-span development theory tries to explain behavioral changes as a response to life events that occur for a long period. In other words, this theory explains the effect of experiences on related beliefs and behaviors (Schuman & Ham, 1997).

As a result, pre-service and in-service teachers' beliefs about the environment and environmental education are evaluated in the content-specific beliefs category, and their judgments and attitudes regarding the subject are evaluated within the scope of their beliefs. Also, their beliefs about environmental education can be associated with various theories and models. Individuals' experiences, attitudes, and other factors can be expressed as determinants in the construction of these beliefs.

2.2.2. Beliefs about Teacher Efficacy

Teachers' efficacy beliefs, refers to a teacher's overall expectation about their ability to influence students and their confidence in performing specific tasks (Bandura, 1997). A teacher's efficacy has been linked to positive classroom behaviors, such as using praise rather than criticism, effectively handling low achievers, and being task-oriented and enthusiastic. Teachers who believe they can make a difference in students' performance appear to take responsibility for both their students' failures and successes (Kagan,1992; Oh, 2011; Pajares, 1996). In the context of environmental education, their self-efficacy becomes particularly important for effective teaching experiences.

According to Bandura (1997), an individual's efficacy beliefs is based on four main sources of knowledge. The first is mastery experiences, which refer to the person's

experiences through new tasks after successfully completing them and are seen as the most effective source of efficacy development. Achievements in a person's life strengthen the person's belief in self-efficacy. Successful and effective experiences in people's lives play an important role in supporting their self-efficacy beliefs. For teacher self-efficacy, pre-service and in-service teachers develop their efficacy beliefs in their classrooms both as a teacher and as students. Their in-class experiences form self-efficacy beliefs related to teaching (Ahmad, 2011). Second, is the vicarious experience, which means providing experiences by observing others to perform the related task (Bandura, 1997). This source of self-efficacy is weaker than mastery experiences, but the less knowledge a person has about the job, this source plays an important role in the development of self-efficacy (Pajares,1996). The third one is verbal persuasion, which is also an important source of efficacy. It is evident that words have a vital role in developing self-efficacy. According to Pajares (1996), positive verbal persuasions can encourage individuals to increase their self-efficacy beliefs, while negative verbal persuasions can weaken individual self-efficacy beliefs. Lastly, somatic and emotional states considerably affect an individual's self-efficacy level. The fears, joys, and tensions that a person experiences during the process play a positive and negative role in the development of self-efficacy beliefs (Bandura, 1997). The individual has numerous opportunities to develop his or her self-efficacy in relation to the particular task he or she is engaged in. The teacher should be evaluated and supervised in terms of his or her self-efficacy.

When efficacy beliefs are examined through teachers, teacher efficacy beliefs represent the judgment that teachers have the capacity to influence student performance even in situations where students are difficult to cope with or unmotivated (Oh, 2011). Teacher efficacy involves two related but distinct dimensions: Teaching Efficacy or 'Competence' and Personal Efficacy or 'Confidence.' The former relates to teachers' assessment of their ability to create positive change in student commitment and learning; the latter is teachers' knowledge that students are teachable despite their backgrounds. In short, efficacy marks the effort teachers put into their work (Ahmad, 2011). According to UNESCO (2008), a teacher's competence in the 21st century is that a competent teacher must have a solid knowledge of the curriculum of his/her field and integrate technology

into the educational curriculum. Teaching efficacy is used to refer to the products and procedure that result from increasing one's knowledge and skills and the impact of these skills on behavior about teaching and learning situations. In addition, one's attitude and self-perception are also effective in shaping these behaviors (Kaur & Talwar, 2014).

2.3. Cognitive Flexibility

Cognitive flexibility has been defined differently by many different scientists. In the literature, definitions of cognitive flexibility converge in two main views. The first one is those who argue that cognitive flexibility is a specific ability (Bennett & Müller, 2010; Canas, 2006; Diamond, 2006; Jacques & Zelazo, 2005). The other view in the literature is that cognitive flexibility is seen as a property of various cognitive processes rather than an ability (Deak, 2003; Geurts et al., 2009; Martin & Rubin, 1995).

According to Canas (2006), cognitive flexibility is "the human ability to adapt cognitive processing strategies to face new and unexpected conditions in the environment". This definition includes three important conceptual features. The first one is that cognitive flexibility is a skill that involves a learning process. In other words, it can be obtained through experiences. Secondly, cognitive flexibility implicates the modification of cognitive processing strategies. Thus, cognitive flexibility indicates to changes in behaviors rather than changes in responses. Finally, after a person has performed a task for a period of time, he or she will adapt to new and unexpected environmental changes. So, it is quite difficult for a person to show cognitive flexibility in an environment or condition where he or she is in it for the first time (Canas, 2006; Bennett & Müller, 2010).

Martin and Rubin are among the leading scientists in the literature who see cognitive flexibility as more than a skill. According to their approach, cognitive flexibility is defined as a person's awareness of the options and alternatives available in any situation in which he/she is or is likely to be, and his/her willingness to adapt to the situation and self-efficacy to adapt to this changing situation (Martin & Rubin,

1995). The process of people deciding to adapt their behavior consists of several phases, and first, they go through a social cognition process where they become aware of options and alternatives. In this process, they develop scripts; the more scripts they have, the more complex their information processing system is and the more flexible they are. Therefore, the first phase of cognitive flexibility is to become aware of options in different situations (Martin & Anderson, 1998). Cognitive flexibility also contains a person's willingness to be flexible. Even if people are aware of the different options in a situation, this awareness may not cause a change in their behavior. Before people can adapt their behavior, they need the necessary reasons and motivations to do so. If a person has intrinsic motivation, that is, desire, they can be seen to adapt to a new situation (Martin & Anderson, 1998). Cognitively flexible people are also expected to believe in their own competence to adapt to changing situations and develop effective behaviors. Self-efficacy should be regarded as part of cognitive flexibility because although people are aware that there are alternative behavioral options in a given situation and are willing to be flexible, they also need to believe that they have the self-efficacy to produce the desired behavior (Bandura, 1997; Martin & Anderson, 1998).

In this framework, to understand cognitive flexibility, it is necessary to look at different interactions: cognitive-level interactions refer to the interaction of cognitive components such as attention, representations, perception, prior knowledge, and executive functions; interactions at the individual level represent the interaction of sensorimotor mechanisms with cognition and context and are more vulnerable to being influenced by environmental factors (Ionescu, 2012). In summary, thinking about cognitive flexibility in a more brain-body-context interaction framework will help explain that flexibility is a dynamic feature, and that cognitive flexibility underlies changing behaviors (Ionescu, 2012; Martin & Anderson, 1998).

2.3.1. Cognitive Flexibility Theory

Cognitive flexibility theory can be defined as "an approach that provides a foundation of principles to guide random access instruction (special needs of random-access instruction – advanced learning on complex topics), aspects of a

general theoretical orientation to knowledge acquisition, and application in complex content domains" (Spiro & Jehng, 1990, p.163). Cognitive flexibility theory claims that when students interact with multiple representations of the same information in different contexts, they will better understand the complexity of the content. The theory implies that exposure to multiple representations of the same content or phenomenon helps students develop the mental scaffolding necessary to consider new applications of their knowledge in new situations (Cheng&Koszalka, 2016; Spiro et al., 2003).

Cognitive flexibility theory can be explained as a theory of learning and teaching developed based on four key bodies. The first of these purposes is to help students learn difficult but necessary subjects. Sometimes, topics that are central to the curriculum may be considered difficult for instructors and students to teach and learn. It is believed that meaningful learning does not occur when these important subjects, which are considered difficult, are often expressed superficially, and memorization is preferred (Spiro et al., 2003). Secondly, the goal that cognitive flexibility theory aims to achieve is the promotion of teaching knowledge in a flexible way that allows it to find its place in everyday life. They argue that knowledge should be applied flexibly in order to enable people to adapt their prior understanding and experience to new situations (Spiro et al., 2003). Thirdly, cognitive flexibility theory also aims to change and develop the underlying mindset that people use in acquiring and processing knowledge. According to cognitive flexibility theory, by changing the way people think, their ability to acquire complex knowledge can be enhanced (Spiro et al., 2003; Jacobson & Spiro, 1993). The last of the four main goals of cognitive flexibility theory is to develop computer-based learning environments to support flexible learning and complex learning because, for flexible learning to take place, a flexible learning environment needs to be provided (Jacobson & Spiro, 1993).

With today's changing conditions, business life and daily life are becoming increasingly complex and changing faster than ever. For this reason, it has become clearer that the skills described in the first three goals must be taught to students and professionals. However, these skills are still the most difficult to teach. In the 21st

century, with changing mindsets in all organizations, individual initiative and responsibility are required even at lower levels of the job hierarchy (Jacobson & Spiro, 1993). Also, according to Spino et al. (2003), finding a respectable job will require these skills and abilities.

According to Spiro et al. (2003), oversimplification of knowledge that is expected to be complex is a significant factor contributing to learning failure in all settings. Cognitive flexibility theory suggests a set of teaching principles that aim to avoid inappropriate simplification of complex knowledge at the advanced instructional level yet make the understanding of this material cognitively tractable (Jacobson & Spiro, 1993). When complex and deeply structured knowledge is presented in a one-dimensional manner, important conceptual aspects of the domain are often overlooked. Cognitive flexibility theory recommends using multiple ways of representing knowledge using appropriate teaching activities that reflect the multifaceted nature of knowledge (Jacobson & Spiro, 1993).

In addition, a typical teaching approach is to break down a complex topic into small conceptual units, have them learn these units in isolation, and then bring all the units together. However, this approach tends to oversimplify complex material and decontextualize it. As an alternative to this educational method, the theory of cognitive flexibility suggests that the complexity in the field should be reflected through various interactions but presented in a cognitively manageable manner (Jacobson & Spiro, 1993). In addition, according to cognitive flexibility theory, presenting information in multiple contexts helps to elicit a rich and flexible understanding of a complex content area. Conversely, presenting abstracted and simplified elements of information can limit the student's ability to apply acquired knowledge to new situations (Jacobson & Spiro, 1993). The efficiency that students get from their educational processes increases with these principles. Also, they can adapt the knowledge they have in the process to the new situation flexibly and develop themselves professionally and mentally (Spiro et al., 2003).

Cognitive flexibility theory provides a theoretical model that facilitates the design of appropriate learning environments to reinforce advanced knowledge acquisition.

However, most instructional environments are not equipped to effectively demonstrate the principles mentioned above. Therefore, it is necessary to consider the current conditions and constraints of various instructional delivery systems in order to create represent and deliver instruction based on Cognitive Flexibility Theory.

2.3.2. Cognitive Flexibility and Educational Dynamics

Teaching is an experience, and each version of teaching is a performance over time, requiring the skills to make strategic decisions, seize opportunities, and use a variety of resources. Leinhardt and Ohlsson (1990) state that "teaching is socially dynamic, ill-structured, and extremely complex" (p. 22). Teachers are faced with situations that vary greatly from class to class and for each student during the teaching process. One solution they produce does not fit all. For this reason, teachers need metacognitive approaches that support their adaptive skills, and cognitive flexibility is one of the basic meta-cognitions necessary for teaching to be successful (Chieu & Herbst, 2008; Lin et al., 2005).

Metacognition is a multidimensional concept that enables people to think about their own cognitive processes and is expressed as the use of cognitive processes to control and evaluate the cognitive processes that occur. Metacognitive skills, when briefly explained, mean being able to control and regulate the cognitive processes involved in a task, that is, being aware of our own cognitive functioning and controlling it as necessary (Pennequin, 2022). Metacognition does not directly explain the cognitive potential of individuals but reveals their ability to manage the potential they have. Therefore, metacognition is valuable for interpreting certain aspects of individuals' mental functioning (Pennequin, 2022).

According to Pennequin et al. (2022), people's metacognition is related to their problem-solving performance, and the higher people's metacognition, the higher their problem-solving skills. Any situation that is out of routine is defined as a problem for the first time. In other words, any situation where a person cannot directly apply existing knowledge and well-known procedures can be expressed as a

problem. Thus, creative and flexible thinking is required to find a solution to the problem (Clement, 2022). Cognitive flexibility enables an individual to transform thought patterns into behaviors appropriate to the situations and conditions encountered. Deciding on the appropriate behavior and thought to solve a problem and putting it into practice is a product of cognitive flexibility and metacognition (Idawati et al., 2020). To sum up, any learning situation can be expressed as a problem-solving situation in which, by its nature, previous knowledge can be transformed, adapted, and used. Therefore, cognitive flexibility is expected to be demonstrated in order to master all the concepts and processes that constitute the new situation (Clement, 2022).

In addition to problem-solving, creative thinking has a link with cognitive flexibility. According to Guilford (1967), the flexible structure of cognition is mentioned as one of the factors of creativity. Besides flexibility, the multiplicity of ideas produced by a person, known as fluency, and the ability to develop new ideas can be defined as the basic components of creativity. When a person's flexibility and creativity are simultaneously stimulated, learning takes place, and the person can adapt existing knowledge and personal experiences to new and unfamiliar situations in an original way. Thus, it can be reinforced that the person's ideation process and creative skills (Clement, 2022).

Developing critical thinking skills is now considered one of the main goals in educational programs. As future adults, students are also encouraged to develop and support their skills, such as applying their knowledge in new and changing conditions, distinguishing, interpreting, and evaluating reliable and good information through critical thinking skills (Halpern, 2013). Cognitive flexibility involves the ability to choose between multiple representations of a situation in response to new circumstances and the current situation. It can be argued that cognitive flexibility plays an important role in critical thinking. Thus, the broader and more diverse an individual's repertoire of possible conceptualizations, the greater their ability to explore different perspectives (Scheibling-Sève et al., 2022).

When considering the impact of cognitive flexibility on educational dynamics, the metacognitive skills, creative and critical thinking skills, problem-solving abilities,

and teaching effectiveness of the educators involved in the educational process should also be taken into consideration. It will be possible for pre-service teachers to develop these skills before starting their professional lives through the experiences they gain during their undergraduate years. Factors such as the courses taken by teacher candidates during their undergraduate years and the teaching methods used in those courses can support the development of pre-service teachers' cognitive flexibility levels (Chieu & Herbst, 2008; Halpern, 2013).

The Teacher Training Undergraduate Program in Early Childhood Education, which has been implemented in Türkiye since 2018, includes compulsory courses aimed at developing the knowledge, experience and skills of prospective teachers (CoHE, 2018). According to the literature, it is expected that the cognitive flexibility levels of pre-service teachers can increase as their experience and knowledge levels increase (Bennett & Müller, 2010; Ionescu, 2012). Although there are no courses specifically aimed at supporting the cognitive flexibility skills of pre-service teachers, it is understood that many courses aim to increase the experiences of pre-service teachers (CoHE, 2018). In the curriculum used for undergraduate education in Türkiye, the aim of the courses called teaching practices are for pre-service teachers to gain various experiences such as making observations in their educational fields, planning and implementing activities, and adjusting teaching environments in appropriate ways (CoHE, 2018; AKU, 2023). It can be said that the experiences that teacher candidates gain through these courses will help them be more prepared for sudden and changing situations that they may experience in their professional lives and be more successful in processes such as managing and adapting to the situations (Clement, 2022). In addition to teaching practice, the teaching principles and methods course is also included in the program as a compulsory course that aims to enable prospective teachers to discover different methods and techniques that can be used in their educational fields and to apply them in different learning environments (CoHE, 2018; AKU, 2023). With the outcomes of this course, it is ensured that pre-service teachers can successfully fulfill their role as facilitator consultants who support active learning of children in environmental education.

In addition to compulsory courses, the program also includes elective courses on professional knowledge that prepare teacher candidates for their professional life.

Some of these courses are critical and analytical thinking course and human relations and communication course. The purpose of the elective course called Critical and Analytical Thinking is to help teacher candidates realize their thinking and understanding systems, understand critical and analytical thinking, and determine the factors that affect their thinking systems. In addition, the benefits of critical and analytical thinking as a skill for teacher candidates and the understanding of its application areas are also determined and evaluated within the scope of this course (AKU, 2023; CoHE, 2018). The positive relationship between critical thinking skill and cognitive flexibility degree is also supported by different studies in the literature (Scheibling-Sève et al., 2022).

In addition to Critical and Analytical Thinking Couse, the Human Relations and Communication Course is also important for pre-service teachers. One of the important characteristics that teacher candidates should have been the human relations and communication course, which is also included as an elective in the early childhood education program. Teacher candidates who take this course are expected to gain skills such as adapting themselves in interpersonal communication and changing their approaches to problems and conflicts arising from communication (AKU, 2023; CoHE, 2018). It is thought that these skills are important for the teachers, who are in the triangle of families, school administration and students, to continue their profession effectively (Clement, 2022; Martin & Rubin,1998). Thus, it can be stated that these courses, which shape the professional development and experiences of pre-service teachers, are related to their cognitive flexibility levels.

2.4. Environmental Education in Türkiye

This section discusses the place of environmental education in the education programs implemented in Türkiye. The content and implementation methods of the program developed in Türkiye and used in early childhood education are evaluated in terms of environmental education. In addition, the undergraduate education program designed for the purpose of pre-service teacher education is also examined according to its coverage of environmental education.

2.4.1. Environmental Education in Early Childhood Education Programs

According to an amendment to the 1982 Constitution, which is still in use in Türkiye, environmental responsibility has been divided between the state and the citizen. In addition to the legal regulations, cooperation agreements between ministries and agreements signed at international platforms aim to provide environmental education to students through various courses at all levels from early childhood education to higher education (Dere & Çinikaya, 2023).

The curriculum used in early childhood education in Türkiye has been updated in different years. The 2013 Early Childhood Education program, which has been used for many years and about which the participants of the current study have knowledge and experience, includes some objectives and indicators for environmental education. The 2013 curriculum has been analyzed in the literature in terms of environmental education integration. As a result of this analysis, it was concluded that objectives and indicators for environmental education were included in the program, but not at a sufficient level. It was found that environmental education was frequently included in the objectives and indicators in the areas of cognitive development and social-emotional development. However, it was found that there were no objectives and indicators for environmental education in areas such as motor development and language development (Özkan & Tuğluk, 2020). One of the learning outcomes in the cognitive development area, "produces solutions to problem situations", supports environmental education. In the field of social emotional development, the outcome named "protects aesthetic values" is expressed as a part of environmental education with its indicators for children to recognize and organize their environment. In addition, in the area of self-care, the outcome named "uses the necessary tools and materials for daily life skills" includes indicators aimed at enabling children to use the necessary materials for environmental cleaning. The sample outcomes and indicators mentioned above show that environmental education is included in the early childhood education program (Özkan & Tuğluk, 2020).

The Early Childhood Education Program, which came into force in 2013, was updated in line with various needs, and the new Early Childhood Education Program

was introduced in 2024 When the objectives and indicators in the updated education program are examined, it is seen that there are lots of objectives and indicators for environmental education in the areas of cognitive development, physical development and health, and social-emotional development. Objectives and indicators such as children's awareness of the environment they live in, paying attention to changes in the environment, and making efforts to protect the environment are included in this new program (MoNE, 2024). In addition, an objective called "making it a habit to protect the assets necessary for sustainable life" was included in the social-emotional development area in this program for the first time. This objective includes indicators such as children respecting living beings, protecting them, also, protecting the resources important for sustainable life and using them efficiently (MoNE, 2024). For this purpose, it is aimed for the new early childhood education program that children recognize and value the components of natural life, respect the right to life of other living beings in nature and take responsibility for protecting them, limit unnecessary consumption in addition to protecting nature, understand the importance of resources and use them efficiently. In this way, the goals of environmental education will be achieved, and responsible and aware citizens will be raised for the future of the world (MoNE, 2024). In addition, objectives and indicators that aim to develop recycling and reuse habits are also included in the social-emotional development area. These goals and indicators aim to help children understand the purpose and importance of recycling and reuse. It is clear that the Early Childhood Education Program in 2024 includes various goals and indicators for children, who are a part of the society we live in, to raise awareness about sustainable living, to become familiar with their environment, and to become individuals who can become aware of the natural life around them and take responsibility for protecting it (MoNE, 2024).

2.4.2. Environmental Education in Pre-Service Teacher Education Programs

In our country, there is no established and standardized environmental education policy regarding higher education. The curriculum and course content of the education faculties of universities were determined by the Council of Higher Education in 2018. However, in 2023, universities have arranged their curriculum

and course content according to their own conditions (AKU, 2023; CoHE, 2018). Since the study group includes teacher candidates who are students of both programs, environmental education has an important place in both undergraduate programs.

When the early childhood education program taught in all education faculties in the country since 2018 is examined, it is seen that pre-service early childhood education teachers have a compulsory course called "Environmental Education in Early Childhood". The content of this course, which is in the sixth semester, consists of topics such as basic concepts related to environmental education and the importance of environmental education. In addition to these issues, it includes knowledge and experience in planning environmental education activities in early childhood. Similarly, experience in the implementation and evaluation of these activities in the follow-up to the planning is also important. When pre-service teachers complete the course, it is aimed that they will have knowledge about topics such as living creatures in nature, recycling, environmental pollution, natural disasters and have the competence to convey that knowledge to individuals in early childhood years (CoHE, 2018). In the early childhood education undergraduate program updated in 2023, the semester in which this course is included has been changed in sixth semesters from the third semester, but its educational content and compulsory status have remained the same (AKU, 2023).

Various elective courses related to environmental education have also been planned. The first of these courses is the Sustainable Development and Education course. Within the scope of this course, pre-service teachers are informed about the sustainability concept, which is a part of environmental education, and the fields of utilization of this concept. They are also supported to explore the environment and develop a different perspective on environmental education (AKU, 2023; CoHE, 2018). In addition to this course, some of the elective courses that aim to develop pre-service teachers professionally and prepare them for the teaching profession are considered important for effective environmental education (Demir & Yalçın, 2014). Elective courses such as Out-of-School Learning Environments and Museum Education enable prospective teachers to acquire experience in planning, implementing and evaluating activities using different methods and materials (AKU,

2023; CoHE, 2018). With this experience and knowledge of pre-service teachers who will work in early childhood education institutions, it may be possible to develop their perspectives on environmental education (Demir & Yalçın, 2014).

2.5. Studies Related to Environmental Education

This section includes studies on pre-service and in-service teachers' beliefs about environmental education. In addition to beliefs, there are some examples of environmental awareness, teaching efficacy, and related factors about these topics. These studies are classified as studies conducted abroad and studies conducted in Türkiye.

2.5.1. Conducted Studies in Abroad

There are many studies in the literature examining pre-service teachers' beliefs about environmental education, revealing that their beliefs are affected by experiences. In a study conducted by Trauth-Nare (2015) to see how a field-based science course would affect pre-service teachers' self-efficacy beliefs for environmental education, it was observed that there was a significant difference between the data collected before and after the course. The number of participants in the study is thirty-eight and includes prospective teachers from different educational branches such as mathematics teaching, social science teaching, and English language teaching. In addition to the obtained quantitative data, field trips carried out with students during the course, and their opinions about these activities collected by researcher. According to the results of the qualitative data these experiences of the students positively affect their self-efficacy beliefs. Course content and related activities was also included in the analysis of the study, and it was concluded that pre-service teachers' self-efficacy beliefs increased in terms of curriculum development (Trauth-Nare, 2015).

A quantitative study was conducted to evaluate prospective teachers' beliefs, knowledge, and awareness of environmental education. The participants of a study aiming to assess the knowledge, awareness, and beliefs of pre-service teachers

towards environmental education were 26 pre-service teachers enrolled in a science education course for teacher education (Singh, 2022). At the end of this course, which included various interactive and computer-based activities to assess the content knowledge regarding environmental education, the beliefs, knowledge, and awareness levels of pre-service teachers were analyzed. According to the analysis, there was a statistically significant difference between the scores of the pre-service teachers before and after the course. The result of the difference between the scores prior to and after the course, pre-service teachers' awareness and beliefs increase when they are exposed to various activities and contents related to environmental education (Singh, 2022).

Some studies in the literature aimed to reveal how pre-service teachers' beliefs about integrating environmental education into early childhood education and their self-efficacy beliefs related to environmental education were affected by the use of different teaching methods (Richardson et al., 2014) In a study conducted for this purpose, it was examined to what extent pre-service teachers' self-efficacy beliefs in environmental education changed with the use of inquiry-based teaching methods. In an experimental study planned by Richardson et al. (2014), pre-service teachers' content of a science course was updated with inquiry-based pedagogies and environmental education content. Scales were applied to students taking this course for a semester at various time periods. It was found that pre-service teachers' self-efficacy beliefs in environmental education increased in the first half of the semester and then decreased towards the end.

There is a study in the literature that evaluates how pre-service teachers' efficacy beliefs affect their environmental education course content planning. According to this study, it is assumed that teaching efficacy beliefs also affect pre-service teachers' pedagogical content knowledge (Richardson et al., 2018). The content knowledge of the education methods course taken by pre-service teachers was developed, and findings were created by evaluating the before and after results of the students who took this course. According to the results of the study, pre-service teachers' self-efficacy beliefs improved as they gained experience during the course. It was observed that the lesson plans about environmental education prepared by pre-

service teachers with advanced self-efficacy beliefs were more comprehensive (Richardson et al., 2018).

Environmental education programs adopt participatory, experience-oriented, holistic approaches to teaching and learning. There are studies in the literature that approve this idea. One of these studies was conducted within the scope of a course on environmental education for first-year teacher candidates. For this study, which planned to measure teacher candidates' attitudes and perceptions toward the environment, students were asked to fill out a questionnaire at the beginning of the course and at the end of the semester. In addition, three teacher candidates were interviewed again one semester after the course was completed to test the permanence of their attitudes and perceptions. The results of the study showed that there were improvements in the teacher candidates' self-efficacy towards the environment. In addition to the findings, it was mentioned that the students' internship experiences also iincreased their experiences and had a positive effect on their perceptions of environmental education (Tomas et al., 2015).

In addition to studies conducted with prospective teachers preparing to start their duties, numerous studies in the literature have aimed to reveal the situations of teachers working in the field. In a study investigating the self-efficacy beliefs of teachers towards environmental education, an information workshop was organized for teachers regarding the environment and environmental education during the summer term. The participating teachers teach at different levels of education and work in urban, rural and suburban schools, and the majority have over 5 years of professional experience (Moseley et al., 2010). According to the results of this experimental study, it was revealed that the self-efficacy beliefs of the teachers who participated in the eight-week training increased significantly after the workshop. In addition, according to the results of the retention test applied after a while, the self-efficacy beliefs of the teachers that increased after the workshop remained stable when measured again after a while (Moseley et al., 2010).

Likewise, according to a study conducted in Hong Kong, the self-efficacy beliefs and perspectives of teachers working in second-level schools towards environmental

education were investigated. According to the results of the study, when teachers have more positive attitudes towards the environment, they include more environmental education in their course content. It was also understood that when they think that their abilities and competences are high, their willingness to include environmental education content increases (Ko& Lee, 2003). Teachers are more inclined to teach more environmental education if they have more positive attitudes towards environmental education, more skills in teaching environmental education and fewer constraints. In addition, researchers argue that differences in the teaching of environmental education, the methods teachers use, and the extracurricular activities also occur according to teachers' attitudes, skills, and beliefs (Ko& Lee, 2003).

The importance of environmental education in early childhood has been presented in the literature by a number of studies. A professional development program that provides opportunities for educators to learn and share ideas about environmental education when implementing environmental education in early childhood may support environmental education. One study supporting this finding was conducted in Austria in 2013 (Dyment et al., 2013). A professional development program consisting of three sessions was organized for this study. 99 teachers and administrators with different levels of experience participated in the program. At the beginning of the program and end of the program, teacher candidates were asked to fill out the questionnaires which includes two scales and a form that served the study. When the findings of the study were examined, it was concluded that the teachers' understanding, knowledge, and self-confidence levels towards the environment increased significantly (Dyment et al., 2013).

2.4.2. Conducted Studies in Türkiye

Studies examining pre-service teachers' self-efficacy beliefs toward environmental education have an important place in the literature. For instance, Gülçiçek's (2021) study, which tried to reveal the relationship between pre-service early childhood teachers' self-efficacy beliefs towards environmental education and their attitudes toward a sustainable environment, was carried out with 129 early childhood teacher

candidates. According to the results of this quantitative study, which included two different scale applications, a significant relationship was found between pre-service teachers' self-efficacy beliefs towards environmental education and their attitudes toward sustainable environment. The study also examined how preservice teachers' self-efficacy beliefs toward environmental education varied according to whether they had previously taken environmental education courses and according to their grade level and found no significant differences between the two groups in either analysis (Gülçiçek, 2021).

In the study conducted by Fettahlıoğlu (2018), the effect of argumentation application, one of the alternative education applications applied in environmental sciences course of science teacher candidates, on the participants' environmental education self-efficacy beliefs and perspectives was investigated. The environmental education self-efficacy belief scale was used as a data collection tool in the study, also, drawings drawn by pre-service science teachers during the practices were used to determine students' perspectives on environmental problems. According to the results of this research, which was organized with mixed method, it was seen that the self-efficacy beliefs of teacher candidates towards environmental education differed significantly between the first and last application. In addition, it was concluded that their perceptions regarding environmental problems differed according to their beliefs (Fettahlıoğlu, 2018).

A study was conducted by Tanık-Önal (2020) to determine the self-efficacy beliefs and attitudes of preschool teacher candidates towards environmental education and to examine the relationship between these two variables. In the mixed method research, data was first collected from 114 pre-service early childhood teachers through scales.

Then, the analyses were detailed with semi-structured interviews with 35 volunteer teacher candidates. In the analysis of the data obtained from the research, it was concluded that the self-efficacy beliefs and attitudes of early childhood teacher candidates towards environmental education differed significantly according to their status of taking courses related to environmental education. In addition, it was also among the results obtained that the obtained data did not differ according to

background variable like gender of participants. Similarly, it was seen that the findings obtained from the interviews were consistent with the results of the quantitative research (Tanık- Önal, 2020).

Research, which compared the knowledge and self-efficacy beliefs of teacher candidates regarding environmental education, included 512 pre-service teachers continuing their education in different branches at the faculty of education. The study was conducted quantitatively with a personal data form and two different scales. According to the findings of the study, the level of knowledge of pre-service teachers regarding the environment varies according to their department and gender. A significant difference was found between the self-efficacy perceptions of early childhood teacher candidates and other groups. However, no significant relationship was found between the knowledge and self-efficacy beliefs of teacher candidates regarding the environment (Can & Özdemir, 2022).

There are studies in the literature examining the beliefs, attitudes, and perspectives of teachers continuing their profession in Türkiye regarding environmental education in early childhood. For one of these studies, in-service training was designed to develop early childhood teachers' environmental awareness, knowledge, attitudes, and skills to integrate environmental education into teaching. 30 teachers participated in this training, and an experimental study environment was created with the presence of 30 teachers who did not participate in the training. Teachers in the experimental group responded to a scale measuring their attitudes toward environmental problems before, and after the training they attended. In addition, qualitative data were also provided through interviews conducted at the end of the training. According to the analysis results of the obtained data, it was revealed that teachers' attitudes towards the environment increased after the training. In addition, the findings of the qualitative data were interpreted as teachers' environmental awarenes (Kotaman et al., 2022).

When the importance of teachers in the quality of environmental education in early childhood education is considered, it is possible to come across findings in the literature that support this. For example, a study conducted by Güzelyurt, and Özkan

(2018) aims to increase the awareness of early childhood teachers about environmental education and to reveal deficiencies by obtaining in-depth information. The sample of the study consists of 14 early childhood teachers working in kindergartens and data was collected from these participants through interview forms. When the findings of the study are examined, it is determined that early childhood teachers do not have sufficient knowledge about environmental education and there are many negative factors that cause restrictions on the processes of including environmental education practices in educational programs (Güzelyurt & Özkan, 2018).

One of the studies examining the beliefs of prospective teachers in integrating environmental education into preschool education in Türkiye was conducted within the scope of a thesis. 470 prospective teachers participated in this study using mixed methods. After collecting quantitative data from these participants, interviews were conducted with 9 volunteer prospective teachers and qualitative data were obtained.

As a result of the analyses, it was understood that the perceptions of prospective teachers regarding environmental education could be considered neither sufficient nor insufficient. The interviews revealed the problems that could justify the insufficiency of these perceptions. However, it was revealed that the beliefs of prospective teachers regarding integrating environmental education into early childhood education were at a sufficient level. The sources of this were the prospective teachers' lessons, practices and internship experiences. Finally, it was revealed that there was a positive and significant relationship between the perceptions and beliefs of prospective teachers (Güner, 2013).

2.6. Studies related to Cognitive Flexibility

This section covers studies related to the cognitive flexibility levels of pre-service and in-service teachers and the factors that are effective in determining these levels are also included in this section. These studies are classified as studies conducted abroad and studies conducted in Türkiye.

2.6.1. Conducted Studies in Abroad

In the literature, the cognitive flexibility levels of prospective teachers and teachers have been frequently examined and associated with different variables. Some of these studies consider cognitive flexibility as a skill. For example, in a study investigating the importance of cognitive flexibility in developing multicultural personalities of prospective teachers, it was argued that the cognitive flexibility factor is an important component of personal development. In this context, an experimental study was conducted with 33 pre-service teachers. According to the results of the experimental study, it was understood that the cognitive flexibility levels of prospective teachers increased almost 5 times. The criteria defined for this measurement, cognitive abilities, adaptation abilities, thinking and emotional flexibility, were also found to increase almost 5 times when evaluated individually. These findings prove the development of cognitive flexibility as a basic competence of the prospective teachers' multicultural personalities, which is the hypothesis of the authors (Savchuk et al., 2020).

Mindfulness, one of the common themes today, is also one of the areas where its relationship with cognitive flexibility is investigated. Descriptive quantitative research was conducted for a study examining the relationship between the cognitive flexibility levels of pre-service teachers and their mindfulness. Data were collected through two different scales for this study conducted on 100 pre-service teachers. The findings obtained from the analysis of the data showed that mindfulness has a significant and positive relationship with cognitive flexibility. Furthermore, it was revealed that the cognitive flexibility levels and mindfulness levels of female teacher candidates differed from those of male teachers. In addition, mindfulness levels can be mentioned to explain 30% of the cognitive flexibility levels of pre-service teachers (Kaur, 2024).

The professional self-efficacy beliefs of pre-service teachers are open to evaluation in different areas. For example, an article aims to reveal the relationship between prospective teachers' mathematical thinking skills, their teaching beliefs, and cognitive flexibility levels. This study, which is a case study on the development of

cognitive flexibility by primary school pre-service teachers under the influence of the content of the mathematics teaching course, was conducted by Whitacre and Rumsey in 2018. When the study results were examined, it was revealed that the strategies acquired by the prospective teachers within the scope of this course significantly improved their cognitive flexibility. In addition, the effect of the experiences provided by the strategy they acquired is also mentioned. The reasoning styles and flexibility of the pre-service teachers who were exposed to different activities during the course were positively affected by this situation (Whitacre & Rumsey, 2018).

The relationship between academic activities and cognitive flexibility levels has a valuable place in the literature. An article in the field mentions a study that aims to develop cognitive flexibility as a component of complex thinking through the academic activities of teachers and students. In this study, a course's content was updated to see the potential effect of educational activities on the development of cognitive flexibility. The students who attended this course also constituted the participants of this study. When the study's findings are examined, it is seen that the uncertain motivation and relatively low emotional intelligence of the first and second-year students also led to their low cognitive flexibility (Tikhonova & Rezepova, 2017).

In studies based on cognitive flexibility, in-service teachers are included as well as pre-service teachers. For example, a study was conducted to measure the effect of an innovative model such as environmental integration learning in order to increase the cognitive flexibility of teachers and their students. Different teaching materials were developed in this study, which was carried out with the participation of two different teacher groups. In the evaluations made after the study, a significant difference was found between the pre-application pre-test results of the teachers and the post-application test results. It was observed that the environmental integration learning method of the teachers caused an effective and significant increase in their cognitive flexibility after preparing and using the teaching materials (Kasirah et al., 2021).

Today, curriculum changes are taking place to adapt to changing conditions. A study aimed at analyzing the role of cognitive flexibility and self-efficacy beliefs in

teachers' ability to adapt to this innovative attitude was conducted for this purpose (Dumbi & Indrasari, 2024). The study collected data from 322 teachers using the teacher innovative behavior scale, cognitive flexibility scale, and teachers' sense of efficacy scales. The findings presented that cognitive flexibility levels have a predictive effect on innovative behavior skills. In addition, it was revealed that teachers' self-efficacy beliefs are also related to cognitive flexibility levels and that this relationship supports innovative behavior. Considering the fact that innovative behaviors for teachers will increase when their cognitive flexibility is increased, it was concluded that teachers are expected to increase their cognitive flexibility levels in order to adapt to the age we live in (Dumbi & Indrasari, 2024).

There is also a study in the literature that emphasizes the complexity of teaching practice and mentions the importance of cognitive flexibility to cope with it. In this study conducted with teachers using web-based learning environments, an innovative course was designed for teachers to teach geometry with web-based learning environments. The data collected from teachers before and after this course was examined in detail. At the end of the course, the attitudes of the prospective teachers towards web-based learning environments were positively affected. Similarly, it was understood that their cognitive flexibility was also supported (Chieu & Herbst, 2008).

When looking at the studies on the place and importance of cognitive flexibility in environmental education teaching, a study investigating the relationship between teachers' environmental education learning strategy teaching materials and the effect of this relationship on cognitive flexibility levels was encountered. Two groups of teachers participated in this study conducted with a quantitative approach. Some of these teachers provided environmental education with related teaching materials, while others continued their teaching without using these materials. When the cognitive flexibility levels of the teachers were measured after the application, it was observed that there was a significant increase in the cognitive flexibility of the teachers in the first group who had access to innovative teaching materials. In addition, a significant difference occurred between the two groups. In this case, it

was concluded that the inclusion of innovative learning material in the process effectively increased the cognitive flexibility of the teachers (Kasirah et al., 2023).

2.6.2. Conducted Studies in Türkiye

In Türkiye, it is extremely common to examine the relationship between the cognitive flexibility levels of teacher candidates and their various competencies. A study conducted by Öztürk et al., in 2020 aimed to examine the relationship between the cognitive flexibility levels of pre-service teachers and their techno pedagogical education competencies. When the findings of the quantitative research conducted with 616 teacher candidates were examined, it was concluded that the cognitive flexibility levels and competencies of pre-service teachers were high. In addition, a moderately statistically significant relationship was found between the two variables. In addition, it was revealed that variables such as gender, internet access, and computer access in the study significantly affected the cognitive flexibility scores (Öztürk et al., 2020).

Another example of studies conducted in Türkiye was conducted by Kazu and Pullu (2023). This study, which tried to reveal the relationship between the cognitive flexibility levels and self-efficacy perceptions of teacher candidates continuing their education in various departments of the faculty of education, followed a quantitative method. Data were collected with two frequently preferred scales for the cognitive flexibility and self-efficacy perceptions of teacher candidates. The data were evaluated according to the gender of the teacher candidates, their academic success status, and their departments. The cognitive flexibility levels and self-efficacy perceptions of the study group were found to be high and their academic success significantly differ accordingly their flexibility levels (Kazu & Pullu, 2023).

The academic self-efficacy of teacher candidates and their cognitive flexibility levels are also one of important issues that find their place in the literature. In this context, the relationship between the academic self-efficacy and cognitive flexibility levels of physical education teacher candidates was examined by Pepe in 2021. When the results of this study, which was conducted quantitatively with 192 teacher candidates

selected voluntarily from a total of 480 teacher candidates, were examined, it was found that the academic self-efficacy levels of teacher candidates were above average. In addition, it was understood that their cognitive flexibility levels were also above average. The cognitive flexibility levels of teacher candidates were evaluated with alternative and control factors, and a moderately significant positive relationship was found between them and their academic self-efficacy. It is thought that this situation is a result of the teacher candidates' ability to transfer their experiences in academic life to their educational life (Pepe, 2021).

The cognitive flexibility levels of teachers who continue their professional lives are also evaluated under different headings in the literature. In a study conducted for this purpose, teachers' job satisfaction and cognitive flexibility levels were evaluated in terms of various variables. The study, in which 520 teachers participated voluntarily, was conducted quantitatively using three different scales. As a result of the analyses, it was revealed that the ages of the teachers caused significant differences in their cognitive flexibility levels. In addition, their seniority and institutions also had a determining effect on their cognitive flexibility levels. In addition, it was revealed by the study that there were positive and significant relationships between teachers' cognitive flexibility and job satisfaction. As a result, it can be stated that teachers with high cognitive flexibility also have high job satisfaction (Üzümcü & Müezzin, 2018).

CHAPTER 3

METHODOLOGY

In the third chapter of the thesis, the design and scales of the research are mentioned. Also, the data analysis process was obtained using the mentioned scales, and the participants' demographic information is included in this section. In addition to these informative titles, the limitations and validity information of the study are also obtained.

3.1. The Design of the Study

The current study uses quantitative research methodology with an exploratory correlation design. In correlational research models, relationships between two or more variables are examined without trying to influence them (Fraenkel et al., 2012). Correlational research is occasionally referred to as descriptive research because it explains an existing relationship between variables. Unlike descriptive studies, correlational research tells the degree to which two or more variables are related and uses a correlation coefficient. The primary purpose of correlational research is to clarify our understanding of essential phenomena by identifying relationships between variables (Fraenkel et al., 2012).

3.2. Purpose of the Study

The current study primarily aims to determine the cognitive flexibility levels of pre-service early childhood education teachers and their beliefs about the integration of environmental education into early childhood education. This aim is achieved by analyzing and interpreting the data obtained from the scales that constitute the data collection tools of the study and answered by the pre-service teachers who constitute the study group.

Additionally, the aim of the study is to understand the relationship between early childhood teacher candidates' cognitive flexibility levels and their beliefs about integrating environmental education into early childhood education. Environmental and internal conditions are important in determining the cognitive flexibility levels of pre-service early childhood education teachers.

Factors such as the gender of the participants and whether they receive any training on personal development can be effective in determining this level. Likewise, numerous factors may influence the beliefs of teacher candidates enrolled in undergraduate programs related to integrating environmental education into early childhood education.

This study endeavors to assess the influence of the variable of cognitive flexibility on such beliefs. In addition to cognitive flexibility, participants' demographics may affect their beliefs about integrating environmental education into early childhood education. This study hypothesizes that early childhood education teacher candidates' gender, grade levels, internship experiences, taking courses on environmental education, and, completing a personal development course/training can affect their cognitive flexibility and, indirectly, their beliefs. The following research questions were determined to investigate above mentioned issues:

R.Q.1: What are the general patterns of preservice early childhood teachers' cognitive flexibility and beliefs in integrating environmental education into early childhood education?

> **R.Q.1.1:** Do preservice early childhood teachers' cognitive flexibility and their beliefs in integrating environmental education into early childhood education differ with respect to their background variables including gender, grade level, taking courses on environmental education, internship experiences, and personal development training?

R.Q.2: What is the relationship between cognitive flexibility levels of pre-service teachers' and their beliefs in integrating environmental education into early childhood education?

3.3. Population and Sample

The target population of this research consists of university students enrolled in undergraduate programs in early childhood education at different universities in Türkiye. However, the accessible population of the research consists of teacher candidates studying in Afyonkarahisar province. The target population from which a study would want to generalize is the target population. However, the group the researcher can generalize is called the accessible population. Although the first is the ideal plan for the study, the second creates achievable and realistic choices (Fraenkel et al., 2012).

The sample of this research consists of all teacher candidates who pursue their undergraduate education in the early childhood education program at Afyon Kocatepe University. Convenience sampling was used in the sampling stage. Convenience sampling can be expressed as including people who are suitable for the study (Fraenkel et al., 2012). The convenience sampling method selects the sample from easily accessible and easy-to-implement components due to time, money, and labor limitations (Fraenkel et al., 2012). The data was collected from 200 teacher candidates who are students of Afyon Kocatepe University. Although the number of students registered in the program appears to be 314 in official documents, the number of students actively continuing their education is 249. 49 of these students either completed the forms incompletely or did not volunteer to participate in the study. The process of collecting data lasted for a total of three weeks. The data collection process took place in the spring semester of the 2023-2024 academic year.

Concluding a population after examining a sample is only partially satisfactory because researchers can never be sure their sample is flawlessly representative (Fraenkel et al., 2012). Also, there are different ideas about the generalizing process for the sample size. According to Fraenkel (2012), to establish a relationship, there must be at least 50 subjects in the study groups. Likewise, Thompson (2004) suggested an absolute minimum of five participants for each variable included in the scale but at least 100 participants for any analysis. As a result, considering that one of the scales in the study “Beliefs About the Integration of Environmental Education into Early

Childhood Education" contains eighteen items and the other "Cognitive Flexibility Scale" contains twelve items, it became clear that care should be taken to ensure that the minimum number of participants in the study is more than 100 people. Thus, teacher candidates who were continuing their education at Afyon Kocatepe University were deemed sufficient for the study. By eliminating some of the participants as mentioned above, it was possible to conduct the study with 200 participants.

According to demographic data from 200 preservice teachers participating in the study, 83.5% were women, and 16.5% were men. Their ages ranged from 18 to 36. In addition, 57 students were freshman (28.5%), 45 were sophomore (22.5%), 44 were junior (22%), and 54 were senior (27%). When the ages of the participants were analyzed, it was seen that 74 (37%) of the 200 participants were under the age of 20, 79 (39.5%) were between the ages of 20 and 23, and 47 (23.5%) were over the age of 23. In this case, it was concluded that the age distribution of the participants was not determinative for the study.

Table 1 Background Information of the Sample Group

Gender	**N**	**%**
Female	167	83.5
Male	33	16.5
Grade Level	**N**	**%**
1st Year	57	28.5
2nd Year	45	22.5
3rd Year	44	22
4th Year	54	27
Age	**N**	**%**
Under 20 years	74	37
21-22 years	79	39.5
Above 23 years	47	23.5

Background information of the sample group is presented in Table 1. Furthermore, 104 (52%) participants took at least one course on environmental education. Out of

all the participants, 16 (8%) attended extracurricular training related to environmental education. The majority of participants (69.5%) have internship experience. Out of all participants with internship experience, 71 (35.5%) worked with children aged 60-72 months, 54 (27%) worked with children aged 48-60 months, and 15 (7.5%) worked with children aged 36-48 months. In addition, 52 (26%) participants received personal development training. The demographic statistics of the participants are included in Table 2.

Table 2 Demographic Statistics of the Participants

Related Items	Yes (N)	Yes (%)	No (N)	No (%)
Taking a course about the environment	104	52%	96	48%
Participating an extracurricular activity about environmental education	16	8%	184	92%
Having an internship experience with children	139	69,5%	61	30,5%
Participating a personal development course/training	52	26%	148	74%

3.4. Instruments

Three different instruments were used in this study. These are Demographic Information Form, Cognitive Flexibility Scale, and Belief Scale About the Integration of Environmental Education into Early Childhood Education. Detailed information about measurement tools is given below.

3.4.1. Demographic Information Form

The purpose of the demographic information form is to collect categorical personal information such as gender, grade level, and age regarding the participants in the study. The personal information form used in the study contains seven questions, most of which have multiple-choice answers. These questions start by taking basic

information such as the participant's age, gender, and grade level. Then, it is investigated whether the individuals took any courses on environmental education during their undergraduate education. The Early Childhood Education curriculum includes a compulsory course called Environmental Education in Early Childhood and elective courses on sustainability and environmental education (CoHE, 2018). Similarly, the education program implemented at Afyon Kocatepe University and updated in 2023 includes various elective and compulsory courses in the field of environmental education (AKU,2023). In addition to the environmental education courses, the form also includes a question that aims to find out whether the pre-service teachers have participated in training that includes environmental education and that they can use in their professional lives, such as orienteering and map reading training. Additionally, the form aims to find out the internship experience of teacher candidates and, if they have experience, in which age group they work with children. A question aiming to learn about the personal development pieces of training received by pre-service teachers to improve themselves in various topics was also included in the form. Variables from the demographic information form were included in the study.

3.4.2. Cognitive Flexibility Scale (CFS)

The Cognitive Flexibility Scale (CFS) is a 12-item scale that uses a 6-point Likert-type rating to determine a person's level of cognitive flexibility. Martin and Rubin developed a scale in 1995 that measures three components of cognitive flexibility. In the original scale, cognitive flexibility refers to "one's (a) "awareness that there are options and alternatives available in any given situation," (b) "willingness to be flexible and adapt to the situation," and (c) "self-efficacy to be flexible." In any situation, an individual can choose how to behave" (Martin & Rubin, 1995, p. 623). Based on these statements, the items were arranged using three dimensions of cognitive flexibility (awareness, willingness, and self-efficacy). (Martin & Rubin, 1995). However, they did not use these dimensions as subscales; Alphas of the dimensions were not calculated, and no subscale determination studies were conducted within the scope of construct validity studies (Martin & Rubin, 1995; Martin & Anderson, 1998).

The original scale was developed with three different studies. In the first study, the survey respondents were 142 women and 105 men, a total of 247 college students. Then, in study two, there were a total of 275 participants, 158 women and 117 men. Cronbach's alpha coefficients obtained in different studies on the original scale vary between .72 and .87. As a result of two applications performed one week apart, the test-retest reliability coefficient of the scale was reported to be .83. (Martin & Rubin, 1995). A study was conducted to measure the concurrent validity of the CFS. A sample of 678 (344 females and 322 males) responded to the questions, and the coefficient alpha of this study was measured at .81 (Martin & Anderson, 1998). Another study was proposed for the construct validity of the CFS. In that study, participants completed self-report survey items while their friends' answered questions about them. The coefficient alpha for this study was .72. This study found that participants and their friends had similar perceptions of cognitive flexibility (Martin & Anderson, 1998). In the last study on the criterion-related validity of the scale, a total of 101 participants, 72 women and 29 men, took part. The average age of the participants is 26. The coefficient alpha value obtained at the end of the study is = .73 (Martin & Anderson, 1998). Based on the study, there is a positive correlation between cognitive flexibility and self-efficacy in communication situations. In summary, the final version of the scale was reached with two studies to shape the scale and three studies to ensure its validity. Therefore, these studies provide additional support for the scale to measure cognitive flexibility (Martin & Anderson, 1998).

The Cognitive Flexibility Scale is a 12-item scale, and the responses to each item are summed up to obtain the total score. High scores on the scale indicate a good level of cognitive flexibility, while low scores indicate a low level of cognitive flexibility. In order to score the scale, the scores for item 2, "I avoid new and unusual situations," 3, "I feel like I never get to make decisions," 5, "I seldom have choices when deciding how to behave," and 10 "I have difficulty using my knowledge on a given topic in real life situations" should be reversed. As the scale uses a 6-point Likert-type rating, 1 is for strongly disagree and 6 for strongly agree. So, the lowest score that can be obtained from the scale is 12, while the highest score is 72 (Martin &Rubin, 1995).

The scale was adapted to Turkish culture and translated into Turkish by Altunkol in 2011. After obtaining the necessary expert opinions regarding translating the scale into Turkish and consulting the opinions of the researchers who developed the scale, the scale was first used to evaluate a sample of 484 university students, 247 women, and 237 men aged between 17 and 25. The students' average score from the scale was calculated as 53.67, and its standard deviation was 8.97. The mean and standard deviations obtained were consistent with the mean and standard deviation values obtained in the scale's development, validity, and reliability studies (Altunkol, 2011). In repetition studies conducted to calculate the validity coefficients of the scale, it was observed that the correlation coefficients varied between .37 and .55. Similarly, Cronbach's Alpha coefficient was found to be .81. Thus, it was found that the Turkish version of the scale has a homogeneous structure. To determine the continuity coefficient of the scale, test-retest applications were carried out with 90 Psychological Counseling and Guidance students at two-week intervals. The number of correlations in the data obtained from the applications was found to be .73 (Altunkol, 2011). In order to test the criterion-related validity of the Turkish version of the scale, its relationship with dysfunctional attitudes and irrational beliefs was examined. It was determined that there was a negative significant relationship at the level of -.14 between the scores obtained from the cognitive flexibility scale and irrational beliefs. Also, there was a significant negative relationship (-.23) between dysfunctional attitudes and cognitive flexibility scores. To sum up, the data obtained from the study indicate that individuals with low levels of cognitive flexibility and rigidity in their thoughts and attitudes will first have high levels of irrational beliefs and then dysfunctional attitudes (Altunkol, 2011).

The items in the original version of the scale were examined in three dimensions, but alpha values for these dimensions were not calculated. They found it appropriate to calculate the scale as a total score (Martin& Rubin, 1995). This may be because the items in the scales are not suitable to be classified under one heading. For example, in item 3, "I feel like I never get to make decisions." In the statement, it is not clear whether the obstacle to decision-making is a lack of self-efficacy or willingness (Altunkol, 2011). When examining the items in the Turkish form, the 1st, 5th, and 9th items can be categorized under the awareness dimension, while the 2nd, 3rd, 6th,

and 11th items can be grouped under the willingness dimension. The 4th, 7th, 8th, 10th, and 12th items can also be classified as part of the self-efficacy dimension. However, it has been found that it is more appropriate to use the scale as a total score rather than as subscales, as in the original form (Altunkol, 2011). The scale is used in various studies by taking the total score instead of using subscales. Some examples of the items in the scale are stated in Table 3.

Table 3 Examples of Items in Each Dimension of CFS

Dimension	Sample Items
Awareness	Item 5. I seldom have choices when deciding how to behave. Item 9. My behavior is a result of conscious decisions that I make.
Willingness	Item 3. I feel like I never get to make decisions. Item 11. I am willing to listen and consider alternatives for handling a problem.
Self-Efficacy	Item 7. In any given situation, I am able to act appropriately. Item 12. I have the self-confidence necessary to try different ways of behaving.

3.4.3. Beliefs About the Integration of Environmental Education into Early Childhood Education (BIEE)

Güner-Alparslan, Olgan, and Çakıroğlu (2017) developed a scale to assess early childhood education teacher candidates' beliefs about integrating environmental education into early childhood education programs before starting their teaching careers. The scale has a 5-point Likert-type scoring, with a minimum score of 18 and a maximum score of 90 (Güner-Alparslan et al., 2017). According to the scores obtained from the scale, the strength of pre-service teachers' beliefs about integrating environmental education into early childhood education is determined (Güner, 2013).

The scale consists of 18 items and three factors. The factors of the scale were determined as ‘development-learning,’ ‘environmental outcomes,’ and ‘learning

environment.' The first of these factors is "Contributions of integrating environmental education into early childhood education to children's development and learning" (Development-Learning) and consists of 6 items. These are the first 6 items of the current list of items on the scale. The second factor is called "Contributions of integrating environmental education into early childhood education to children's acquisition of environmental knowledge, skills, attitudes, and behaviors" (Environmental Outcomes), which consists of 7 items. The environmental Outcomes factor includes items between 7 and 13 on the scale list. Finally, "Learning Environment Requirements for the Integration of Environmental Education into Early Childhood Education" (Learning Environment) consists of 5 items (Güner, 2013). The last five items constitute the third factor, which is the learning environment. Consequently, it was seen that the first 13 items aimed to measure the contribution of environmental education integrated with early childhood education to the development and learning of children. In addition, the 5 items from the 14th to the end of the scale aim to measure the process of integrating early childhood education and environmental education. Some examples of the items related to the factors in the scale are stated in Table 4.

In developing the scale, the researchers first created a pool of 56 items with the support of experts. The scale, shaped by expert opinions, was first applied to 332 preschool teacher candidates. The pilot study sample consisted of 299 females and 33 males, 199 juniors, and 133 seniors. Then, exploratory factor analysis (EFA) was performed to determine the construct validity. After conducting the EFA, the KMO value was calculated to be 0.921, which indicates a respectable value. By evaluating the data obtained from the factor analysis and considering the recommendations in the literature, 38 of the 56 items in the pool were eliminated, and the remaining 18 items were collected under three factors (Güner, 2013).

In addition to exploratory factor analysis, confirmatory factor analysis was performed with a sample that includes 470 pre-service early childhood educators (411 women, 29 men, 256 juniors, and 214 seniors). All items contributed significantly to the factor structure, with estimates ranging from .41 to .49 for Environmental Consequences, .44 to .52 for Developmental Learning, and .38 to .43

for the Learning Environment factor (Güner, 2013). In addition, Cronbach Alpha values range from .74 to .92 for each factor, with a total value of .91. The first factor is "Development-Learning," which has six items and a Cronbach alfa value of .87. Likely, the second factor is "Environmental Outcomes," which has seven items and a Cronbach Alfa value of .92; lastly, the third factor is "Learning Environment" which has five items, and a Cronbach alfa value is.74. Additionally, it was observed that the three factors of the BIEE scale were highly associated with each other and ranged between 0.72 and 0.75. (Güner-Alparslan et al., 2017).

Table 4 Examples of Items in Each Factor of the BIEE Scale

Factors	Sample Items
Development-Learning	Item 2. Early childhood education integrated with environmental education enhances children's critical thinking skills. Item5. Early childhood education integrated with environmental education improves children's problem-solving skills.
Environmental Outcomes	Item 9. Early childhood education integrated with environmental education Improves children's curiosity and interest in the environment and environment-related topics. Item11. Early childhood education integrated with environmental education Helps children develop respect for the integrity of the natural environment.
Learning Environment	Item 15. When integrating environmental education with early childhood education, it is essential to use various learning materials and equipment. Item 18. When integrating environmental education with early childhood education, the schoolyard should be used as a learning environment.

3.5. Data Collection Process

The data collection process for the research began with obtaining the necessary permissions from the Middle East Technical University Human Subjects Ethics Committee (0046-ODTUİAEK-2024) and then from the early childhood education program of the university where the participants attend. In addition, permissions were obtained from the developers of the scales for the scales planned to be used, and current versions of the scales were obtained.

After obtaining permission for the scales to be used to collect data, the scales were sorted and compiled into a single file. First of all, the final version of the data collection tool was created by bringing together the Demographic Information Form, Cognitive Flexibility Scale, and Beliefs About the Integration of Environmental Education into Early Childhood Education Scale. It approximately takes 15 minutes to complete the entire form. The researcher collected data using hard copies of forms. Data collection times were scheduled based on the participants' course schedules, and the researcher met with the instructors of the relevant courses. Data was collected in the participants' classrooms to ensure they could comfortably participate in the study. The researcher attended the participants' classes as planned, explained the study's purpose, distributed the forms to volunteer students, and asked them to respond to the questions. To maintain the confidentiality of the participants' information, the participants requested that no names be written on the forms. The researcher collected the surveys immediately after the participants completed them and ensured that all the information provided was kept confidential. Data collection from freshman, sophomore, junior, and senior year students was completed at the end of the process, which took approximately three weeks.

3.6. Analysis of the Data

The data set was checked for errors in the preparation phase of the analysis and no errors were encountered. The normal distribution of the data obtained from the participants was also tested. IBM SPSS 29.0.2 package program was used to analyze the data. First, a descriptive analysis was conducted to investigate the general pattern of preservice early childhood education teachers' levels of cognitive flexibility and beliefs about integrating environmental education into early childhood education. These descriptive statistics provide information about the means, medians, standard deviations, and minimum and maximum values of the data obtained from the participants. Then, whether the preservice teachers' cognitive flexibility and belief levels of integrating environmental education into early childhood education differ according to their demographic characteristics (gender, grade level, taking courses about environmental education, and having experiences related to internship and attending different kind of personnel development trainings) were examined using

Independent Sample Groups T-Test and one-way analysis of variance (ANOVA) methods. While revealing the demographic characteristics of the students, frequency and percentage calculations were made in order to see the difference between groups. The Pearson Correlation Coefficient is calculated to establish the relationship between teacher candidates' cognitive flexibility levels and their beliefs about integrating environmental education into early childhood education to address the second research question of the study. For the analysis of all study, the significance level of .05 was used to determine the significance of the findings.

3.7. Reliability

Reliability refers to the extent to which the scores obtained from a scale are consistent for each participant from one application to another and with the scores obtained from different kinds of instruments (Fraenkel et al., 2012). The reliability coefficient value was calculated to understand the suitability of the scales used in the current study for the sample. The Cronbach alpha value, which is one of the various ways that can be used for this calculation, was examined. For an ideal scale, a Cronbach's alpha value above .7 is considered acceptable; however, values above .8 are preferred (Pallant, 2020).

According to Martin and Rubin (1995), the Cognitive Flexibility Scale, whose Cronbach's alpha coefficient is reported to vary between .72 and .87, has a good internal consistency. In the Turkish adaptation of the scale, Cronbach's alpha coefficient was found to be .81 (Altunkol, 2011). In the present study, Cronbach's alpha coefficient was found as .81. Thus, it can be concluded that the scale has sufficient consistency to be used in the study. Related information can be viewed in the Table 5. In the reliability coefficient measurements for the factors of the Cognitive Flexibility scale, Cronbach's alpha coefficient did not give ideal results. The reason for this may be that the Awareness factor contains only three items. Similarly, the fact that the willingness dimension consists of four items makes it difficult to obtain meaningful values. Inter-item correlation values for these factors were included in the calculation. According to Pallant (2020), it is sometimes difficult to obtain a good Cronbach's alpha value for scales with a small number of

items. In this case, it may be more appropriate to report the mean inter-item correlation for the items. Briggs and Cheek (1986) suggest a range between .2 and .4 for inter-item correlation. The mean inter-item correlation for the Awareness factor is .23, with values that range from .11 to .48. Similarly, the mean inter-item correlation for the Willingness factor is .18, with values ranging from .06 to .53. Furthermore, the mean inter-item correlation for the Self-Efficacy Factor is .37, with values range between .13 and .54.

According to Güner-Alparslan et al. (2017), the BIEE Scale has a high level of internal consistency with Cronbach Alpha values ranging from .74 to .92 for each factor and a total value of .91. In the current study, the Cronbach's alpha coefficient was found as .94 for total value. The Cronbach's alpha value obtained for the Development-Learning factor, which is one of the 3 sub-dimensions of the BIEE scale, is .91. Similarly, the Cronbach's alpha value of the Environmental Outcomes factor was found to be .91. In addition, the Cronbach's alpha value of the factor titled Learning Environment was .80. Thus, it can be concluded that the reliability coefficient of the scale used to determine pre-service teachers' beliefs about the integration of environmental education into early childhood education is sufficient.

Table 5 Reliability Coefficients of the Measurement Tools and Their Factors

	Mean Inter-Item Correlation	**Cronbach's Alpha Value**
Cognitive Flexibility Scale		.81
Awareness	.23	
Willingness	.18	
Self- Efficacy	.37	
Beliefs About the Integration of Environmental Education into Early Childhood Education Scale		.94
Development-Learning		.91
Environmental Outcomes		.91
Learning Environment		.80

3.8. Limitations

It was assumed that the participants responded honestly to the items of the measurement tools and revealed their true beliefs regarding the integration of

environmental education into early childhood education and their levels of cognitive flexibility. However, two limitations can be given to the current study. First, this study was analyzed based on the assumption that participants responded accurately and honestly to all items in the scales. Secondly, collecting the data only from preservice teachers studying at the university in Afyonkarahisar province may make it difficult to generalize the findings. Likewise, the number of participants in the study can also be seen as a barrier to the generalization of the results. Fraenkel and Wallen (2012) highlighted the importance of considering both the nature of the sample and environmental conditions to ensure generalizability. The participants in this study were pre-service early childhood teachers enrolled in a teacher education program in Afyonkarahisar. Convenient sampling was used, which could pose a threat to generalizability. To address this, detailed characteristics of the participants were provided to enable generalization to contexts with similar demographic information and experiences.

CHAPTER 4

RESULTS

In this study, four analysis methods were used to answer the research questions of the study. To decide on the appropriate analysis method, preliminary analyses were conducted to ensure that the necessary assumptions were met. First, descriptive statistics were determined for the study variables. Secondly, independent sample t-test analyses were conducted for different variables, at this stage One-way ANOVA test was conducted for the grade level variable, which is a categorical variable with more than two groups. Finally, Pearson Correlation analysis was conducted. In this section, the findings obtained from these analyses are presented in detail.

4.1. General patterns of preservice early childhood teachers' cognitive flexibility and beliefs in integrating environmental education into early childhood education

Descriptive statistics were used to analyze the data collected using the demographic information form, two scales related to the "Cognitive Flexibility Scale" and "Beliefs about Integration of Environmental Education into Early Childhood Education." The mean, standard deviation, minimum and maximum values, and total values obtained from the sub-dimensions of these two scales are shown in Table 6.

When looking at the cognitive flexibility scores of pre-service early childhood education teachers, overall mean score was 53.28, with a standard deviation of 8.14. Concerning the sub-dimensions of the scale, the mean of the Awareness factor was found to be 13.11 (SD = 2.46), and the mean of the Willingness factor was found to be 17.30 (SD=3.11), for the Self-Efficacy factor mean score was found to be 22.87 (SD=3.99). In the adaptation study, in the interpretation of the data obtained from the 6-point Likert-type scale consisting of 12 items, the group below half a standard

deviation of the mean obtained later was categorized as people with low cognitive flexibility and the group above half a standard deviation of the mean was categorized as people with high cognitive flexibility (Altunkol, 2011). When the values obtained in the current study were analyzed, it was seen that 63 of the participants (31.5%) had low cognitive flexibility. It was concluded that 78 (39%) of the participants had moderate cognitive flexibility and 59 (29,5%) had high cognitive flexibility. These results may indicate that the participants' cognitive flexibility levels were generally at an average level. In other words, it was perceived that the participants' awareness of having different options and alternatives in changing situations was at a moderate level, and similarly, they were willing to adapt to changing situations at a moderate level. However, it was noteworthy that people's level of self-confidence in adapting to changing situations was small compared to the other two factors.

Table 6 Descriptive Statistics of Measurement Tools

Name of The Scale	**Min**	**Max**	***M***	***SD***
Cognitive Flexibility Scale	24	72	53.28	8.14
Awareness	7	18	13.11	2.46
Willingness	5	24	17.30	3.11
Self-Efficacy	6	30	22.87	3.99
Beliefs about Integration of Environmental Education into Early Childhood Education Scale	54	90	81.13	8.16
Development-Learning	16	30	26.73	3.17
Environmental Outcomes	20	35	32.20	3.53
Learning Environment	15	25	23.03	2.38

M: Mean, *SD*: Standard Deviation

In addition to cognitive flexibility levels, their beliefs regarding integrating environmental education into early childhood education, the overall mean score was found 81.96 with a standard deviation value of 8.16. Regarding the subdimensions of the scale, the mean values were 26.73 (SD=3.17) for the Development-Learning, 32.20 (SD=3.53) for Environmental Outcomes, and 23.03 (SD=2.38) for the Learning Environment. When these values are evaluated on a 5-point Likert-type

scale, the total score that participants can get from the first factor (Development-Learning) is maximum of 30, the total score they can get from the second factor (Environmental Outcomes) is maximum of 35, and the total score they can get from the last factor (Learning Environment) is maximum of 25. Considering that the minimum score that can be obtained from the 18-item 5-point Likert-type scale is 18 and the maximum score is 90, the fact that the sample mean is above 80 and nearly to the maximum value can be interpreted as the participants' general beliefs are above average and almost high belief level. This indicates that participants may have strong beliefs about integrating environmental education into early childhood education in the sub-dimensions of the scale. When evaluated specifically for descriptive statistical factors, it was seen that the participants' beliefs about obtaining the learning environment required in the process of integrating environmental education into early childhood education were greater than their beliefs that this integration contributed to environmental results and development-learning.

Table 7 demonstrates that pre-service teachers make conscious decisions when deciding on their behavior and that they can act appropriately to the environment/situation. The fact that the item expressing that their behavior consists of conscious decisions has the highest mean score (M=4.81) on the scale also strengthens this finding. Likewise, the item stating that they act appropriately in any situation has the second-highest mean score (M=4,73). These two findings complement each other. On the other hand, people's tendency to avoid entering new and unexpected situations has emerged. The item with the lowest mean score (M=3.92) on the scale is "I avoid new and unusual situations." This can be summarized as pre-service teachers having the cognitive flexibility to make conscious decisions in familiar situations. Still, they also tend to avoid new and unknown situations.

To summarize, there is only one item that received less than 4 points in the overall score of the 12 items that make up the scale. This item is the second item of the scale and is reversed and included in the analysis. This item indicates that pre-service teachers' avoidance of new and unfamiliar situations is lower than others. It was understood that the mean score of all items except the second item was above 4. This situation reveals the general situation of pre-service teachers' cognitive flexibility levels.

Table 7 Descriptive Statistics for the Cognitive Flexibility Scale

		Strongly Disagree		Disagree		Slightly Disagree		Slightly Agree		Agree		Strongly Agree	
	M	F	%	F	%	F	%	F	%	F	%	F	%
1. I can communicate an idea in many ways.	4.50	4	2	4	2	22	11	67	33.5	64	32	39	19.5
2. I avoid new and unusual situations.	3.92	8	4	20	10	45	22.5	58	29	45	22.5	24	12
3.I feel like I never get to make decisions.	4.18	9	4.5	21	10.5	30	15	46	23	52	26	42	21
4.I can find workable solutions to seemingly unsolvable problems.	4.50	3	1.5	3	1.5	24	12	61	30.5	79	39.5	30	15
5.I seldom have choices when deciding how to behave.	4.35	4	2	10	5	32	16	54	27	66	33	34	17
6. I am willing to work at creative solutions to problems.	4.53	5	2.5	5	2.5	20	10	60	30	70	35	40	20
7. In any given situation, I am able to act appropriately.	4.73	4	2	3	1.5	21	10.5	36	18	87	43.5	49	24.5
8. My behavior is a result of conscious decisions that I make.	4.81	3	1.5	4	2	11	5.5	42	21	90	45	50	25
9. I have many possible ways of behaving in any given situation.	4.26	4	2	12	6	35	17.5	57	28.5	61	30.5	31	15.5
10. I have difficulty using my knowledge on a given topic in real-life situations.	4.36	7	3.5	15	7.5	27	13.5	38	19	76	38	37	18.5
11. I am willing to listen and consider alternatives for handling a problem.	4.67	5	2.5	2	1	21	10.5	39	19.5	92	46	41	20.5
12. I have the self-confidence necessary to try different ways of behaving.	4.47	5	2.5	9	4.5	22	11	55	27.5	69	34.5	40	20

Table 8 Descriptive Statistics for the Beliefs About Integration of Environmental Education into Early Childhood Education Scale

		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	M	F	%	F	%	F	%	F	%	F	%
1.Facilitates children's learning in other subject areas.	4.43	1	0.5	1	0.5	11	5.5	85	42.5	102	51
2. Enhances children's critical thinking skills	4.38	0	0	3	1.5	10	5	95	47.5	92	46
3. Increases children's motivation for learning	4.46	0	0	1	0.5	11	5.5	82	41	106	53
4. Facilitates children's lifelong learning	4.47	0	0	0	0	16	8	75	37.5	109	54.5
5. Improves children's problem-solving skills	4.48	0	0	1	0.5	11	5.5	79	39.5	109	54.5
6.Supports children's whole development	4.52	0	0	0	0	12	6	73	36.5	115	57.5
7.Facilitates children's understanding of the relationship between human and the environment.	4.66	3	1.5	0	0	6	3	56	28	135	67.5
8.Encourages children to adopt pro-environmental behaviors.	4.63	0	0	1	0.5	8	4	55	27.5	136	68
9. Improves children's curiosity and interest in the environment and environment-related topics.	4.53	2	1	2	1	12	6	55	27.5	129	64.5
10. Encourages children to play an active role in protecting and improving the environment.	4.60	0	0	1	0.5	6	3	65	32.5	128	64
11. Helps children develop respect for the integrity of the natural environment.	4.58	0	0	4	2	5	2.5	61	30.5	130	65
12. Facilitates children's understanding of environmental concepts.	4.56	0	0	2	1	8	4	66	33	124	62
13.Helps children develop environmental awareness and sensitivity.	4.63	0	0	1	0.5	7	3.5	56	28	136	68
14. Sustainability needs to be considered in the selection of learning materials.	4.42	2	1	2	1	16	8	70	35	110	55
15. It is essential to use various learning materials and equipment.	4.56	0	0	2	1	13	6.5	56	28	129	64.5
16. There should be a democratic learning environment.	4.58	0	0	0	0	13	6.5	58	29	129	64.5
17. It is essential to use nature-related materials.	4.71	2	1	0	0	4	2	45	22.5	149	74.5
18. The schoolyard should be used as a learning environment.	4.77	1	0.5	0	0	6	3	31	15.5	162	81

According to the descriptive results in Table 8, it is seen that pre-service teachers agree on the importance of the school garden for the environment and early childhood education. This is supported by the item "The school garden should be used as a learning environment", which received the highest mean score (M= 4.71) and 81% of the participants marked "strongly agree" when filling out the scale. On the other hand, the participants' belief that environmental education integrated with early childhood education will improve children's critical thinking skills is not very high. 47.5% of the pre-service teachers stated that they agreed with this idea. The remaining 46% stated that they strongly agreed. The low mean score of this item compared to the others (M=4.38) emphasizes the confusion of the participants.

As a result, all these results indicate that preservice teachers have high beliefs in integrating environmental education into early childhood education. On the other hand, they do not have the same cognitive flexibility skills that will support them in implementing this. When evaluating a group of participants who are conscious and confident about environmental education in terms of cognitive flexibility, it can be concluded that although their awareness and willingness of cognitive flexibility is higher, their ability to put it into practice is lower.

4.2. Preservice early childhood teachers' cognitive flexibility and their beliefs in integrating environmental education in early childhood education with respect to their background variables

An independent sample t-test was performed to investigate this research question. Independent sample t-test is used to compare the mean score of two different groups of participants on continuous variables. In other words, it is appropriate to use it in studies that aim to compare the mean scores of a continuous dependent variable and two-group categorical independent variables (Pallant, 2020). In the current study, continuous variable is "Cognitive Flexibility Level" and "Belief About Environmental education into Early Childhood Education". The independent categorical variables of the study were determined as gender, whether they had taken courses on environmental education, whether they had internship experience or not, and whether they had received personal development training or not. According to Pallant

(2020), an independent sample test has five main assumptions regarding the level of measurement, random sampling, independence of observations, normal distribution, homogeneity of variance. The results based on each assumption are given below.

To satisfy the first assumption, the dependent variable must be measured at the interval or ratio level and must be continuous rather than categorical (Pallant,2020). In this study, the mean scores of the cognitive flexibility scale and the mean scores of the environmental education and early childhood education integration belief scale were used as continuous variables. Thus, level of measurement assumption was met. The second assumption, that the data used in the independent samples t-test is randomly selected, is not often met in real-life research (Pallant, 2020). It was assumed that random sampling was done since all students at the freshman, sophomore, junior and senior levels who continue to study at Afyon Kocatepe University participated in the research.

The third assumption, independence of observation, emphasizes that the observations and measurements that structure the data are not affected by each other (Pallant, 2020). During the data collection process of the study, it was ensured that the participants' answers were not influenced by other factors. Thus, there is no violation of this assumption. For parametric tests such as T-tests, it is assumed that the scores on dependent and independent variables obtained from the sample are normally distributed (Pallant, 2020). In this study, two groups were determined separately for the independent sample t-test: gender, whether they took courses on environmental education, had internship experience, and participated in personal development training. Skewness-Kurtosis values for the four variables mentioned above are given in Table 9.

As seen in Table 9, for all groups' skewness and kurtosis values are between -2 and 2, the mean scores in all variables are normally distributed for the cognitive flexibility scores (Pallant, 2020). The mean scores obtained as a result of assessing the cognitive flexibility scale in terms of participants' gender, taking environmental education-related courses, having internship experience, and their personal development history show a normal distribution. So, an independent sample t-test

can be used for these variables. There is no violation of the normality of the distribution assumption.

Table 9 Skewness- Kurtosis Values for Independent Variables (CF Scale)

Groups	***Cognitive Flexibility Scale***		
	Skewness	Kurtosis	N
Gender			
Female	-.470	.869	167
Male	-.141	.337	33
Environmental Education Course			
Taken	.219	-.446	104
Not Taken	-.645	.812	96
Internship Experience			
Experienced	-.134	.535	139
Not Experienced	-.821	.982	61
Personal Development Course/Training			
Taken	-.539	.796	52
Not Taken	-.422	.956	148

Furthermore, it was determined that the dependent variable, BIEE Scale scores, showed a normal distribution according to the independent variables such as gender taking environmental education-related courses, having internship experience, and having personal development history. The Table 10 presents the skewness-kurtosis values used to test the normality assumptions of the BIEE scale and its sub-dimensions like "Development- Learning, Environmental Outcomes, Learning Environment". The normality analysis indicates that there is no violation for the normality assumption of the BIEE scale and its factors. In this case, it is appropriate to use an independent sample t-test to compare the mean scores of BIEE Scale and its three factors "Development- Learning, Environmental Outcomes, Learning Environment" according to these variables.

Table 10 Skewness-Kurtosis Values for Independent Variables (BIEE Scale)

Groups	***BIEE Total Score***			***Development Learning***		***Environmental Outcomes***		***Learning Environment***	
	Skewness	Kurtosis	N	Skewness	Kurtosis	Skewness	Kurtosis	Skewness	Kurtosis
Gender									
Female	-1,068	,896	167	-,662	-,162	-1,331	1,134	-1,339	1,436
Male	-,204	-1,326	33	-,233	-1,437	-,328	-1,429	-,609	-,428

Table 10. (continued)

Environmental Education Course									
Taken	-1,203	1,424	104	-,948	,484	-1,415	1,545	-1,467	2,115
Not Taken	-,660	-,289	96	-,228	-,989	-,999	,268	-,984	,167
Internship Experience									
Experienced	-1,046	,538	139	-,796	-,005	-1,269	,803	-1,191	,799
Not Experienced	-,293	-,977	61	-,036	-1,311	-,535	-1,390	-1,268	1,341
Personal Development Course/Training									
Taken	-1,138	1,115	52	-,595	-,671	-1,275	,947	-1,350	1,813
Not Taken	-,754	-,247	148	-,575	-,257	-1,104	,442	-1,148	,529

As a final assumption, the homogeneity of variance was explored using the Levene's test of equality variance. According to Pallant (2020), if the Sig. value of Levene's test is greater than 0.05; it should be used in the first row in the table that refers to the assumed equal variances. In Table 11, Sig. for all variables, Levene's value was found to be greater than 0.5 for Cognitive Flexibility Scores. In this case, the homogeneity of variance assumption is not violated. For the gender variable, Sig. value is higher than the 0.5, so it means that the homogeneity of variance assumption is not violated for this variable. Similarly, other variables' like taking an environmental education course, having an internship experience and taking personal development course Sig. values are higher than 0.5.

Table 11 Results of Levene's Test for Dependent Variables (CF Scale)

	Cognitive Flexibility Scale	
	Levene's Test	Equality of Means
Grouping Variable	**F**	**Sig.**
Gender	.311	.578
Taking Environmental Education Course	1.293	.257
Internship Experience	.072	.789
Taking Personal Development Course/Training	.288	.592

The homogeneity of variance assumption is not violated for BIEE Scale Scores and its three subdimensions: development- learning, environmental outcomes, learning environment. As can be seen in the Table 12, the results of Levene's homogeneity test for the BIEE Scale gave a sig. value above 0.05 for all factors and total score. This may provide evidence that this assumption is not violated according to the variables of gender, taking environmental education courses, having internship experience, and participating in personal development courses.

Table 12 Results of Levene's Test for Dependent Variables (BIEE Scale)

	BIEE Total Score		**Development Learning**		**Environmental Outcomes**		**Learning Environment**	
	Levene's Test of Equality of Means							
Grouping Variable	**F**	**Sig.**	**F**	**Sig.**	**F**	**Sig.**	**F**	**Sig.**
Gender	,104	,747	,034	,854	,024	,877	5,144	,024
Taking Environmental Education Course	,046	,831	,064	,801	1,192	,276	1,877	,172
Internship Experience	5,408	,021	1,432	,233	3,834	,052	,025	,873
Taking Personal Development Course/Training	1,397	,239	,946	,332	1,984	,161	,122	,727

Note: The *p* value was tested at the 0.05 significance level.

All assumptions required for the test have been checked, and no problems have been encountered. Then, an independent sample t-test analysis was performed to compare the cognitive flexibility scores and BIEE scores for different variables. Analysis results are given in Table 13 If the Sig value (2-tailed) column is less than or equal to 0.05, there is a significant difference in the mean scores of the dependent variable for each of the two groups (Pallant, 2020).

Table 13 The Results of the Independent Sample T-Test for the Cognitive Flexibility Scale

Grouping Variable	***n***	***M***	**SD**	***df***	**Mean Difference**	**t**	**p**
Gender							
Female	167	52,98	8,03	198	-1,88	-1,212	,227
Male	33	54,85	8,68				

Table 13. (continued)

Environmental Education Course							
Taken	104	54,71	7,33	198	2,97	2.607	0,10
Not Taken	96	51,74	8,73				
Internship Experience							
Yes	139	53,61	7,94	198	1,07	,850	,397
No	61	52,55	8,63				
Personal Development Course/Training							
Taken	52	55,75	8,58	198	3,34	2,578	0,11
Not Taken	148	52,42	7,84				

Note: The *p* value was tested at the 0.05 significance level.

Independent sample t-test was applied to see the significance of the difference in the mean scores between groups in terms of cognitive flexibility. The results revealed that there was no statistically significant difference in mean scores between groups regarding cognitive flexibility scores (see Table 13). There was no significant difference in scores for females (M=52.97, SD=8.02) and males (M=54.84, SD=8.67); t (198) =-1.212 *p*=.227 two-tailed). Likewise, there was no significant difference in scores for pre-service early childhood teachers who took a course about environmental education (M= 54.70, SD= 7.32) and participants who did not take a course about environmental education (M=51.73, SD=8.72); t (198) = 2.607 *p*= 0.10 two-tailed). Similarly, there was no significant difference in scores for pre-service early childhood teachers who had an internship experience (M= 53,60, SD=7.93) and participants who did not have an internship experience (M=52.54, SD=8.62); t (198) = .850 *p*= .397 two-tailed). Lastly, there was no significant difference in scores for preservice teachers who took personal development training (M= 55.75 SD=8.57) and participants who did not take any personal development training (M= 52,41, SD=7.83); t (198) =2.578 *p*= 0.11 two-tailed). Independent sample t-test results demonstrated that there was no statistically significant difference between the groups in terms of cognitive flexibility scores. It was concluded that the cognitive flexibility scores of the sample did not differ according to background variables such as gender, taking course about environmental education, grade level or participating personal development training.

To summarize the findings, it was understood that the cognitive flexibility levels of pre-service teachers did not change depending on their gender. Whether teacher candidates have internship experience or not has no effect on their cognitive flexibility levels. Additionally, it was concluded that whether people received personal development training or not did not have a statistically significant effect on their level of cognitive flexibility. Overall, it can be concluded that all groups have similar levels of cognitive flexibility.

Table 14 The Results of the Independent Sample T-Test for the BIEE Scale Total Score

Grouping Variable	*n*	*M*	SD	*df*	Mean Difference	t	p
Gender							
Female	167	82,32	8,16	198	2,10	1,353	,178
Male	33	80,22	8,09				
Environmental Education Course							
Taken	104	82,92	8,12	198	1,98	1,719	0,87
Not Taken	96	80,94	8,13				
Internship Experience							
Yes	139	82,09	8,72	198	,398	,317	,752
No	61	81,69	6,79				
Personal Development Course/Training							
Taken	52	81,14	9,22	198	-1,13	-852	,395
Not Taken	148	82,26	7,78				

Note: The *p* value was tested at the 0.05 significance level.

All assumptions necessary for the analysis have been verified, and no issues have been encountered. Then, an independent sample t-test analysis was performed to compare the BIEE Scores for different variables categorical variables with two groups. Analysis results are given in Table 14. If the two-tailed Sig value is less than or equal to 0.05, there is a significant difference in the mean scores of the dependent variable for each of the two groups (Pallant, 2020).

According to analysis results for total BIEE Scores, there was no significant difference in scores for males (M= 80.22, SD=8.09) and females (M=82.32,

SD=8.16); t (198) = 1.353 *p*=.178 (two-tailed). Also, there was no significant difference in scores for pre-service early childhood teachers who took a course about environmental education (M=82.92, SD=8.12) and who did not take a course related to environmental education (M=80.94, SD=8.13); t (198) = 1.719 *p*=0.87 (two-tailed).

Likewise, there was no significant difference in scores for pre-service early childhood teachers who had an internship experience (M=82,09, SD=8.72) and participants who did not have an internship experience (M=81.69, SD=6.79); t (198) = .317 *p*= .752 two-tailed). Lastly, there was no significant difference in scores for preservice teachers who took personal development training (M= 81.14 SD=9.22) and participants who did not take any personal development training (M= 82.26, SD=7.78); t (198) =-.852 *p*= .395 (two-tailed). Independent sample t-test results revealed that there was no statistically significant difference in mean scores between groups regarding total beliefs about integrating environmental education into early childhood education.

The results of the independent sample t-test conducted to compare the mean differences between the groups in the development-learning factor scores of the BIEE scale are given in Table 15. According to analysis results for BIEE Scale's first factor Development and Learning; there was no significant difference in scores for females (M=26,78, SD=3,20) and males (M=26,55, SD=3,60); t (198) = 1725 *p*=,709 (two-tailed). Also, there was no significant difference in scores for early childhood teacher candidates who took at least a course about environmental education (M=27,11, SD=3,22) and who did not take any related course (M=26,34, SD=3,11); t (198) = 1,725 *p*=,0,86 (two-tailed). Similarly, there was no significant difference in scores for pre-service early childhood teachers who had an internship experience (M=26,90, SD=3,29) and who did not have an internship experience (M=26,38, SD=2,92); t (198) = 1,055 *p*=,293 (two-tailed). Finally, there was no significant difference in scores for preservice teachers who took personal development training (M=26,49, SD=3,47) and participants who did not take any personal development training (M=26,83, SD=3,09); t (198) = -669 *p*=,504 (two-tailed). Independent sample t-test revealed that there was no statistically significant difference between

the mean scores of the first factor of the BIEE scale, which aims to reveal the degree to which pre-service teachers believe that the integration of the environmental education into the early childhood education contributes to children's development and learning.

Table 15 The Results of the Independent Sample T-Test for the Development-Learning Factor of BIEE Scale

Grouping Variable	*n*	*M*	SD	*df*	Mean Difference	t	p
Gender							
Female	167	26,78	3,20	198	,227	,374	,709
Male	33	26,55	3,60				
Taking Environmental Education Course							
Taken	104	27,11	3,22	198	,772	1,725	0,86
Not Taken	96	26,34	3,11				
Internship Experience							
Yes	139	26,90	3,29	198	,516	1,055	,293
No	61	26,38	2,92				
Taking Personal Development Course/Training							
Taken	52	26,49	3,47	198	-,344	-,669	,504
Not Taken	148	26,83	3,09				

Note: The *p* value was tested at the 0.05 significance level.

According to analysis results for BIEE Scale's second factor environmental outcomes; there was no significant difference in scores for females (*M*=32,30, *SD*=3,60) and males (*M*=31,73, *SD*=3,19); t (198) = ,841 *p*=,401 (two-tailed). Also, there was no significant difference in scores for pre-service early childhood teachers who took at least a course about environmental education (*M*=32,50, *SD*=3,46) and who did not take any related course (*M*=31,89, *SD*=3,61); t (198) = 1,212 *p*=,227 (two-tailed). Similarly, there was no significant difference in scores for pre-service early childhood teachers who had an internship experience (*M*=32,13, *SD*=3,80) and who did not have an internship experience (*M*=32,37, *SD*=2,87); t (198) = -,425 *p*=,671 (two-tailed). Finally, there was no significant difference in scores for preservice teachers who took personal development training (*M*=31,81, *SD*=4,01) and participants who did not take any personal development training (*M*=32,34, *SD*=3,35); t (198) = -,531 *p*=,353 (two-tailed). Independent sample t-test found that

there was not a meaningful difference between the mean scores of the second factor of the BIEE scale, which aims to reveal the extent to which pre-service preschool teachers believe in the short- and long-term effects of the integration of environmental education into the early childhood education process on the environment. (See Table 16).

Table 16 The Results of the Independent Sample T-Test for the Environmental Outcomes Factor of BIEE Scale

Grouping Variable	*n*	*M*	SD	*df*	Mean Difference	t	p
Gender							
Female	167	32,30	3,60	198	0,57	,841	,401
Male	33	31,73	3,19				
Environmental Education Course							
Taken	104	32,50	3,46	198	,605	1,212	,227
Not Taken	96	31,89	3,61				
Internship Experience							
Yes	139	32,13	3,80	198	-,232	-,425	,671
No	61	32,37	2,87				
Personal Development Course/Training							
Taken	52	31,81	4,01	198	-,531	-,931	,353
Not Taken	148	32,34	3,35				

Note: The *p* value was tested at the 0.05 significance level.

Independent sample t-test was applied to check the mean differences between the groups for the third factor of the BIEE scale, learning environment scores (see, Table 17). According to analysis results for BIEE Scale's second factor environmental outcomes; there was a significant difference in scores for females (*M*=23,25, *SD*=2,23) and males (*M*=22,00, *SD*=2,87); t (198) = 2,935 *p*=0,04 (two-tailed). Female respondents' beliefs about integrating environmental education into early childhood education were more positive than male respondents. This finding can be interpreted as a relationship between the participants' beliefs that the learning environment is effective in the process of integrating environmental education into early childhood education and their gender. The magnitude of the differences in means (mean difference = 1.30) is very small (eta squared = .004).

Table 17 The Results of the Independent Sample T-Test for the Learning Environment Factor of BIEE Scale

Grouping Variable	*n*	*M*	SD	*df*	Mean Difference	t	p
Gender							
Female	167	23,25	2,23	198	1,30	2,935	0,04
Male	33	22,00	2,87				
Environmental Education Course							
Taken	104	23,32	2,24	198	,599	1,786	0,76
Not Taken	96	22,72	2,51				
Internship Experience							
Yes	139	23,07	2,38	198	,114	,311	,756
No	61	22,96	2,42				
Personal Development Course/Training							
Taken	52	22,85	2,53	198	-,249	-,646	,535
Not Taken	148	23,10	2,34				

Note: The *p* value was tested at the 0.05 significance level.

On the other hand, there was no significant difference in scores for pre-service early childhood teachers who took at least a course about environmental education (M=23,32, SD=2,24) and who did not take any related course (M=22,72, SD=2,51); t (198) = 1,786 p=,0,76 (two-tailed). Similarly, there was no significant difference in scores for pre-service early childhood teachers who had an internship experience (M=23,07, SD=2,38) and who did not have an internship experience (M=22,96, SD=2,42); t (198) = ,311 *p*=,756 (two-tailed). Finally, there was no significant difference in scores for preservice teachers who took personal development training (M=22,85, SD=2,53) and participants who did not take any personal development training (M=23,10, SD=2,34); t (198) = -,646 *p*=,535 (two-tailed).

The findings indicate that preservice teachers' beliefs in integrating environmental education into early childhood education were not influenced by gender, internship experience, or personal development training. The findings also showed that whether the participants took environmental education courses or participated in extracurricular activities related to environmental education did not provide a

statistically significant result. When the findings were examined in detail for the factors that make up the scale, it was concluded that there was a small relationship between the gender of the participants and their beliefs in the determinacy of the learning environment in the integration phases of environmental education into early childhood education. Apart from this, it was seen that the other components and the total result were not related to the demographic variables of the participants.

In order to compare the means of the dependent variables with some of the independent variables in the study (gender, taking courses related to environmental education, internship experience and participation in personal development training), Independent Sample t-test was applied, and the results of this test were evaluated. However, since it was not possible to apply this test for an independent variable consisting of more than one group such as grade level, it was decided to analyze the ANOVA test as a second option. For the One-Way Between-Groups ANOVA test there should be a categorical variable with more than two categories like grade levels. Also, there should be a continuous dependent variable like the Cognitive Flexibility Score and BIEE score (Pallant, 2020). One-way between Groups ANOVA test has five main assumptions regarding the level of measurement, random sampling, independence of observations, normal distribution, and homogeneity of variance. The results based on each assumption are given below (Pallant, 2020).

For the first assumption, level of measurement, there is one continuous dependent variable (Cognitive Flexibility Score/ BIEE Score) and one independent categorical variable with more than two groups (4 Grade Level) for this analysis. So, this assumption was met. For the second assumption, it was assumed that random sampling was done since all the sample groups, the freshman, sophomore, junior, and senior levels, who continue to study at Afyon Kocatepe University, participated in the research. To meet the third assumption, which is the independence of observations, the data collection process occurred once for each participant. Thus, participants were enabled to fill out the scales without being affected by environmental factors or other stimuli. In this case, it can be said that this assumption is not violated. The results of the normality test are given below in Table 18. For the CFS variable, all skewness and kurtosis values of the grade variable are between -2

and 2; the mean scores in these variables are normally distributed (Pallant, 2020). When the skewness and kurtosis values were analyzed, it was concluded that the assumption of normality of the distribution was not violated.

Table 18 Skewness- Kurtosis Scores for Dependent Variables

Variables	Freshman			Sophomore			Junior			Senior		
	Skewness	Kurtosis	N	Skewness	Kurtosis	N	Skewness	Kurtosis	N	Skewness	Kurtosis	N
Cognitive Flexibility Scale	-,627	8,61	57	-,38	,509	44	-,160	1,298	44	,146	-,670	54
BIEE Scale	-,969	,162	57	-,72	,586	44	-,569	-1,200	44	-1,179	1,193	54
Developmen t-Learning	-,607	-,570	57	,108	-,896	44	-,505	-1,395	44	-1,040	,795	54
Environment al Outcomes	-1,19	,697	57	-,97	,608	44	-,914	-,781	44	-1,487	1,620	54
Learning Environment	-1,20	,343	57	-,95	,635	44	-1,73	1,232	44	-1,290	1,481	54

Also, the last assumption, the homogeneity of variance, was explored using the Levene's test of equality variance. According to Pallant (2020), if the Sig. value of Levene's test is greater than 0.05; it should be used in the first row in the table that refers to the assumed equal variances. It means that the assumption of homogeneity of variance is not violated. Table 19 includes Levene's test results calculated according to grade variable for the Cognitive Flexibility Scale. According to Levene's test values, there is no violation of the last assumption. Thus, it can be applied to One-Way Between-groups ANOVA for comparing means for different categories like Grade Levels. If the p-value is less than or equal to 0.05 (e.g. 0.03, 0.001), there is a significant difference among the mean scores on the dependent variable for the four groups (Pallant, 2020).

Table 19 Levene's Test Results for the Dependent Variables

Variable	Levene's Test	df1	df2	Sig.
Cognitive Flexibility Scale	,670	3	195	,571
BIEE Scale	,644	3	195	,588
Development-Learning	,929	3	195	,428
Environmental Outcomes	,848	3	195	,469
Learning Environment	,188	3	195	,904

Note: The *p* value was tested at the 0.05 significance level.

A one-way between-groups ANOVA was conducted to explore the impact of grade level on Cognitive flexibility scores as measured by the Cognitive Flexibility Scale (CFS). Participants were divided into four groups according to their grades (Group1: Freshman, Group2: Sophomore, Group3: Junior, Group4: Senior). There was no statistically significant difference at the p<.05 level in CFS scores for the four grade groups (F (3,195) = 2.539, p=.05. The existent difference in means scores is calculated using eta squared by dividing the sum of squares between groups (411.886) by the total sum of squares (13184.412). The resulting eta squared value is .03, which in Cohen's guide, terms would be considered a small effect size (see Table 20). The results of the test, which investigated the impact of grade level on cognitive flexibility, are presented in Table 20.

Table 20 ANOVA Results of Cognitive Flexibility Scores According to Grade Level

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	411,886	3	137,295	2,096	,102
Within Groups	12772,527	195	65,500		
Total	13184,412	198			

Note: The *p* value was tested at the 0.05 significance level.

A one-way between-groups ANOVA was conducted to examine the impact of grade levels on preservice teachers' beliefs about integrating environmental education into early childhood education (BIEE) scores. Participants were divided into four groups according to their grades (Group1: Freshman, Group2: Sophomore, Group3: Junior, Group4: Senior).

There was no statistically significant difference at the *p*<.05 level in CFS scores for the four grade groups F (3, 195) = 2.539 *p*=.05. The difference in mean scores is calculated using eta squared by dividing the sum of squares between groups (498.142) by the total sum of squares (13252.754), which was found to be 0.03. This indicates a small effect based on Cohen's Criteria (Pallant, 2020). The results of the test, which examined the impact of grade level on BIEE Score, are shown in Table 21.

Table 21 ANOVA Results of BIEE Scores and Dimensions by Grade Level

		Sum of Squares	df	Mean Square	F	Sig.
BIEE TOTAL SCORE	Between Groups	498,142	3	166,047	2,539	,058
	Within Groups	12754,612	195	65,408		
	Total	13252,754	198			
DEVELOPMENT-LEARNING	Between Groups	70,215	3	23,405	2,354	,073
	Within Groups	1939,132	195	9,944		
	Total	2009,347	198			
LEARNING OUTCOMES	Between Groups	69,513	3	23,171	1,881	,134
	Within Groups	2402,608	195	12,321		
	Total	2472,121	198			
LEARNING ENVIRONEMNT	Between Groups	37,243	3	12,414	2,253	,083
	Within Groups	1074,255	195	5,509		
	Total	1111,497	198			

Note: The *p* value was tested at the 0.05 significance level.

To summarize the findings obtained from the ANOVA test, it was implied that the participants' belief scores regarding integrating environmental education into early childhood education did not significantly differ according to their grade level. Similarly, the three factors (development-learning, environmental outcomes, learning environment) in the scale were also analyzed according to the participants' grade levels. It was revealed that the participants' beliefs regarding development- learning factor did not differ significantly based on their grade level. Likewise, it was also figured out that participants' belief regarding environmental outcomes did not differ accordingly their grade level. Similarly, when the participants' beliefs about the learning environment were examined, it was understood that there was no difference according to their grade levels. As a result, the three factors in the scale (development-learning, environmental outcomes, learning environment) were also analyzed according to the grade levels of the participants and the findings showed that the three factors did not differ significantly according to the grade level.

4.3. Predictive relationship between cognitive flexibility levels and beliefs about integrating environmental education into early childhood education

This research question aims to understand the predictive relationship between cognitive flexibility and beliefs about integrating environmental education into early childhood education. For this purpose, correlation analysis was performed. Correlation analysis is used to identify the strength and direction of the relationship between two continuous variables (Pallant, 2020).

Preliminary for the analysis, the assumptions required for correlation analysis were tested. Level of measurement, related pairs, independence of observation, normality of distribution, linearity, and homoscedasticity are the main assumptions for the correlation. For the level of measurement, there should be two continuous variables for testing. Cognitive flexibility level and pre-service teachers' beliefs related to the integration of environmental education into early childhood education are the variables for this case. In order to meet the related pairs assumption, all sample groups should have a score for both variables (Pallant, 2020). In the current study, the sample answered all the measurement tools at the same time, and there is no missing data. The third assumption is the independence of observation. Participants were able to complete scales without being influenced by different environmental factors or other stimuli, thus there is no violation of this assumption for this study Table 22.

Table 22 Descriptive Statistics for Variables

Variable	N	Mean	SD	Skewness	Kurtosis
Cognitive Flexibility Score	200	53,28	8,15	-,386	,755
BIEE Total Score	200	81,97	8,17	-,915	,411
Development-Learning	200	26,74	3,18	-,591	-,373
Environmental Outcomes	200	31,71	3,54	-1,192	,777
Learning Environment	200	23,03	2,39	-1,205	,912

Forth assumption is the normality of distribution. For this assumption, descriptive statistics are given in According to Skewness- Kurtosis values of the variables, these values should be between -2 and +2 for the normality of distribution (Pallant, 2020). In the normality test, the distribution normality assumption is not violated as seen in the related table.

A scatterplot chart was created to check whether linearity and homoscedasticity assumptions were violated. Graph 4.1. can be accessed below. According to the graph, participants are concentrated in a certain area in the form of a straight line. In this case, there is no violation of either assumption of linearity or homoscedasticity. Additionally, the relationship was positive as BIEE mean scores increased with CFS mean scores The line represented that the variability of mean scores on both dependent variables was almost similar.

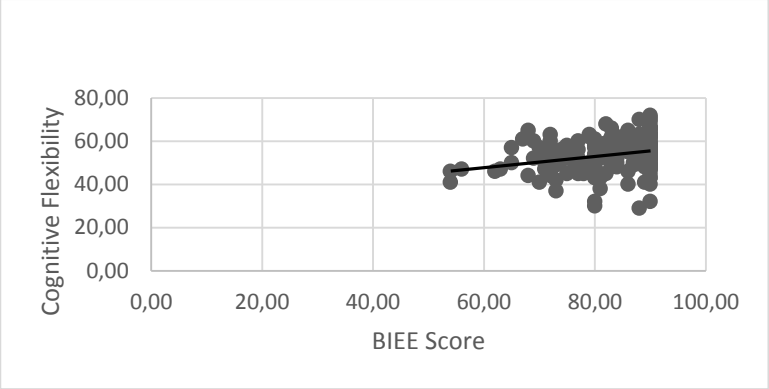

Figure 1. *Scatterplot for the BIEE Scores and Cognitive Flexibility Levels*

The effect of cognitive flexibility level on teacher candidates' beliefs in integrating environmental education into early childhood education was investigated using the Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality and linearity. There was a small positive correlation between the two variables, r=.28 n= 200, p<.001, with high levels of cognitive flexibility associated with higher levels of BIEE scores. Considering the coefficient of determination (r^2=7.5), it can be said that 7.5% of the total variance in BIEE scores is due to cognitive flexibility. In other words, an increase in pre-service teachers' belief in integrating environmental education into

early childhood education is associated with a considerable cognitive flexibility level (see Table 23).

In addition, it was also examined whether there was a relationship between the sub-dimensions of the scale of beliefs about integrating environmental education into early childhood education and cognitive flexibility scale. In this direction, the normality of the distribution of the scores was checked. According to the results obtained, since the score distributions of the sub-dimensions of BIEE scale and cognitive flexibility scale were normal, the relationship between the sub-dimensions of BIEE scale and cognitive flexibility scale was examined with Pearson Product-Moment Correlation test and the results of the analysis are presented in Table 23.

Table 23 Pearson Product-Moment Correlation Between Cognitive Flexibility Scores and BIEE Scores

	BIEE Total Score	**Development -Learning**	**Environmental Outcomes**	**Learning Environment**	**CFS Scores**
BIEE Total Score	1				
Development-Learning	,908**	1			
Environmental Outcomes	,933**	,773**	1		
Learning Environment	,833**	,631**	,683**	1	
CFS Scores	,275**	,253**	,262**	,218**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Moreover, the Cognitive Flexibility scale showed a statistically significant correlation between the following variables: Cognitive Flexibility Score and Development-Learning (r=,253, *p*=<.001); Environmental Outcomes and Cognitive Flexibility Score (r=,262, *p*=<.001); Learning Environment and CFS Scores (r=,218, *p*=<.001). According to these results, pre-service teachers with high cognitive flexibility scores believe that integrating environmental education into early childhood education enables children to develop and learn. They also believe that it will contribute to children's achievement of environmental outcomes. Participants

also believe in the importance of organizing the learning environment in the process of integrating environmental education into early childhood education. The positive relationship between these beliefs and cognitive flexibility supports each other. Furthermore, when the relationship between the dimensions was examined in detail, it was perceived that the highest relationship was found between the total scores of Cognitive Flexibility Scale and BIEE Scale (r=,275). Similarly, the lowest correlation was found between the cognitive flexibility scale scores and the learning environment (r=,218), the third dimension of the BIEE Scale.

Participants believe that integrating environmental education into early childhood education promotes children's development and learning and also contributes to children's achievement of environmental outcomes. Participants also believe in the importance of organizing the learning environment in the process of integrating environmental education into early childhood education, believing that this integration supports children's development and learning and contributes to their achievement of environmental outcomes. This can be interpreted that the sub-dimensions of the BIEE scale support each other. In addition, the fact that the relationship between Cognitive Flexibility and the BIEE scale and its dimensions is positive and significant can be understood as pre-service teachers' beliefs increase at a similar level with their cognitive flexibility.

4.4. Summary

In this section, the data obtained from the scales filled in by the participant group were analyzed. First of all, descriptive statistical findings were obtained. These findings were evaluated separately for both the total values of the scales and the sub-dimensions of the scales. As a result, participants' beliefs about the importance of creating a conducive learning environment for integrating environmental education into early childhood education were stronger than their beliefs about the impact of this integration on environmental outcomes and developmental learning. This is supported by the fact that the item on the BIEE Scale that was rated as "strongly agree" the most was "The school garden should be used as a learning environment". According to the findings, pre-service teachers make conscious decisions when

deciding on their behaviors and act in accordance with the environment/situation. This can be summarized as that pre-service teachers have the cognitive flexibility to make conscious decisions in familiar situations.

Independent sample t-test and one-way ANOVA test were conducted to understand to what extent the cognitive flexibility levels of pre-service teachers differed according to their gender, grade level, taking environmental education course, internship experience and participation in personal development training, which is one of the aims of the study. According to the findings obtained from the t-test results, it was understood that the cognitive flexibility levels of the participants were not statistically significantly affected by variables such as gender, taking courses on environmental education and having internship experience. In addition, it was concluded that the cognitive flexibility levels of the participants were not affected by their participation in any personal development training. The findings show that pre-service teachers' beliefs about the integration of environmental education into early childhood education were not affected by gender, internship experience or personal development training. The findings also revealed that whether the participants took an environmental education course or not did not provide a statistically significant result.

The effect of cognitive flexibility on pre-service teachers' beliefs about the integration of environmental education into early childhood education was examined. According to the results of the analysis, a positive relationship was found between the participants' cognitive flexibility levels and their beliefs. When the findings were evaluated in terms of the factors and sub-dimensions of the scales used in the study, it was seen that the factors in the BIEE Scale had a significant relationship with each other. In this case, it can be concluded that the participants believe that integrating environmental education into early childhood education will contribute to children's development, education and improvement of environmental outcomes.

According to the participants, integrating environmental education into early childhood education supports children's development and learning and also contributes to children's achievement of environmental outcomes. Participants also

believed in the importance of organizing the learning environment in the process of integrating environmental education into early childhood education. The fact that these beliefs have a significant relationship with cognitive flexibility levels can be interpreted as the pre-service teachers' beliefs that they can cope with unexpected situations that may arise in the process of integrating environmental education into early childhood education increase as their cognitive flexibility levels increase.

CHAPTER 5

DISCUSSION AND CONCLUSION

The final section of this study is presented in three phases. First, the study's main findings are reviewed and associated with previous studies' findings with related literature. Next, possible implications are provided for strengthening pre-service early childhood teachers' beliefs about integrating environmental education into early childhood education as well as their cognitive flexibility levels. Finally, recommendations for future studies are provided.

5.1. Main Findings of the Study

5.1.1. General Patterns of Pre-Service Early Childhood Education Teachers' Cognitive Flexibility Levels and Beliefs about the Integration of Environmental Education into Early Childhood Education

First, the current study aimed to reveal the cognitive flexibility levels of teacher candidates who are pursuing their education. When the findings obtained from the study were evaluated, pre-service early childhood teachers were found to have moderate cognitive flexibility levels. Similarly, in his study conducted with pre-service teachers who were continuing their undergraduate education, Kaur (2024) found that the cognitive flexibility levels of teacher candidates were at a moderate level. Likewise, Körükçü (2020) found that the cognitive flexibility levels of preservice teachers were moderate. Additionally, in their study with university students, Lange and DeWitte (2019) concluded that the students' cognitive flexibility levels were at moderate levels. On the other hand, in the study conducted by Kazu & Pullu (2023) with education faculty students, it was concluded that pre-service teachers had high cognitive flexibility levels. Another study in the field concluded

that pre- service teachers exhibit a high level of cognitive flexibility (Öztürk et al., 2022).

Cognitive flexibility is defined as a person's awareness of the available options and alternatives in any situation the desire to adapt flexibly between these alternatives, and the self-sufficiency necessary to achieve this adaptation (Martin & Rubin, 1995). Based on this definition, it can be concluded that as the level of cognitive flexibility of teacher candidates increases, their competence in being aware of the changes that occur in the environment and cognitively adapting to these changes becomes stronger. In this case, it's believed that it will also affect the ability of pre-service teachers to cope with sudden changes that they will experience in their education process or professional life (Grote et al., 2021; Kasirah et al., 2021).

The studies in the related literature revealed that the cognitive flexibility of pre-service teachers was at a medium and high level. This result supports the findings obtained in the current study. It can be concluded that the level of cognitive flexibility contributes to the development of various competencies that teachers should have. For instance, it was seen that skills such as problem-solving (Esen-Aygün, 2018), developing a positive attitude towards teaching (Onen & Kocak, 2015), mindfulness and attention awareness (Kaur, 2024), growth mindset (Grote et al., 2021), multicultural personality (Savchuk et al., 2020) have positive and significant relationships with cognitive flexibility. These skills and characteristics can be complementary and supportive for pre-service teachers to successfully advance in the teaching profession.

Secondly, this study aimed to reveal the beliefs of pre-service teachers regarding integrating environmental education into early childhood education. The findings showed that the beliefs of pre-service teachers were at a stronger level. Also, it was concluded that the learning environment, one of the factors determining these beliefs, was quite high, and other factors had average and above values. When the findings obtained were interpreted, it was concluded that their confidence in having or creating a learning environment where environmental education could be included in the process was greater than their belief in the environmental effects of

environmental education integrated into early childhood. Similarly, it was detected that their beliefs about the developmental and educational effects of the integration process were less than their belief about the learning environment.

Pre-service teachers' beliefs about integrating environmental education into early childhood education constitute a totality of their knowledge, competencies, and responsibilities. If teachers do not have this knowledge, capabilities, and attitudes, it will not be possible to conduct a proper environmental education (Plevyak et al., 2001). Self-efficacy belief can also be considered to be one of the factors that constitute effective environmental education (Moseley, 2010). According to Bandura (1994), self-efficacy belief is defined as the confidence and belief that individuals have in themselves that they can accomplish a duty. Therefore, self-efficacy beliefs can be interpreted as determining factors in individuals' planning and achieving goals.

When the literature is examined, many studies were found regarding the beliefs of pre-service teachers toward environmental education. The findings of these studies support the present study. In the study conducted with pre-service elementary school teachers and measuring their competence and knowledge about sustainability education, it was revealed that pre-service teachers had high efficacy beliefs about sustainable education (Effeney & Davis, 2013). Similarly, another study conducted with pre-service teachers receiving undergraduate education in early childhood and primary education revealed that pre-service teachers have strong attitudes toward the environment and that these attitudes form the basis of the environmental awareness they will convey to their students in their professional lives (Lamanauskas & Petkeviciene, 2023). Likewise, in the study conducted by Tanık Önal (2020), it was revealed that teacher candidates' self-efficacy beliefs and attitudes towards environmental education were at medium and high levels. In addition, it was observed that there was a positive relationship between their beliefs and attitudes. In addition to attitudes, some studies conducted with pre-service teachers revealed that their beliefs about environmental education positively relate to their perceptions of environmental education (Güner, 2013). As can be understood from the literature, the interrelatedness of beliefs, attitudes and perceptions reveals their relationships with each other.

However, another study in the literature found that teachers perceive environmental education as less important than other topics and feel inadequate in implementing environmental education activities (Torquati et al., 2013). This can be interpreted as teachers' lack of theoretical knowledge preventing them from seeing themselves as competent in this field. In his study with early childhood teachers and pre-service teachers, Türkoğlu (2019) found that pre-service teachers had much more theoretical knowledge than in-service teachers. Despite this difference, it was also found that both groups had positive attitudes towards environmental education. It can also be explained by the fact that pre-service teachers who are still continuing their undergraduate education do not yet have enough practical knowledge, and their theoretical knowledge is very recent (Gelfo, 2019; Türkoğlu, 2019). It may be concluded that the fact that the knowledge of pre-service teachers is fresh and up-to-date makes them feel competent and ensures that their beliefs are high. Thus, variables such as pre-service teachers' self-efficacy beliefs, attitudes, knowledge, and skills can be determined as factors affecting their beliefs about integrating environmental education into early childhood education (Clement, 2020; Gelfo, 2019; Trauth-Nare, 2015).

5.1.2. Cognitive Flexibility Levels of Pre-Service Early Childhood Education Teachers Based on Background Variables

One of the study's aims was to examine pre-service teachers' cognitive flexibility levels according to variables such as gender, grade level, taking courses related to the environmental education, internship experience, and personal development programs. According to the findings obtained from the data collected for this purpose, no significant difference was found between the cognitive flexibility levels of pre-service teachers and their gender. In addition, it was concluded that the cognitive flexibility levels of pre-service teachers did not show a significant difference according to the internship experience of the individual. It was also concluded that cognitive flexibility levels did not differ significantly according to the person's grade level. Moreover, it was also found that cognitive flexibility levels did not significantly differ according to whether or not the pre-service teacher took courses on environmental education. Unexpectedly, the fact that the pre-service

teachers had previously participated in personal development training did not cause a significant difference in their cognitive flexibility levels.

When looking at the studies investigating the differentiation of cognitive flexibility level according to gender in the related literature, it was realized that a common conclusion could not be reached. In the findings obtained from the current study, it was observed that the cognitive flexibility levels of pre-service teachers did not differ significantly according to their gender. However, when the mean values were considered, it was found that the cognitive flexibility levels of male respondents were higher than females. Similarly, in the studies conducted with pre-service teachers, it was concluded that the cognitive flexibility levels of pre-service teachers did not differ significantly according to gender (Çelikkaleli, 2014). In the study in which the scale used in this research was adapted, it was concluded that the cognitive flexibility levels of male pre-service teachers were higher than female pre-service teachers (Altunkol, 2011). In addition, in a study conducted with university students, it was concluded that male participants had higher levels of cognitive flexibility than female participants (Carter, 1985). In another study, men showed higher levels of general cognitive flexibility (Algharaibeh, 2020). On the other hand, it was observed that different results were obtained in studies conducted only with pre-service teachers. Kazu and Pullu (2023) found that female pre-service teachers had higher levels of cognitive flexibility than male pre-service teachers. Similarly, in studies conducted with pre-service teachers pursuing their education at the faculty of education, it was concluded that the cognitive flexibility levels of female pre-service teachers were higher than male pre-service teachers (Esen-Aygün, 2018; Pepe, 2021). However, since the concept of cognitive flexibility is a personal formation, it is a common finding in the literature, as in the current study that gender does not differentiate the level of cognitive flexibility. The reason for the different results obtained in some studies may be that the sample studied has different cognitive and emotional characteristics (Öztürk et al., 2023). It can be regarded as normal for such different results to emerge in studies conducted in social sciences. Variables such as the number of participants and applicants' different background characteristics may affect these findings (Whitacre & Rumsey, 2018).

When the studies in the related literature on the extent to which pre-service teachers' grade levels differentiate their cognitive flexibility levels were examined, the results were similar to the current study. The findings obtained from the study found that the cognitive flexibility levels of pre-service teachers did not differ significantly according to their grade levels. Studies examining whether pre-service teachers' cognitive flexibility differs significantly according to grade level also support this statement. For instance, the study conducted by Yaşar Ekici and Balcı in 2018 found that the cognitive flexibility levels of pre-service early childhood teachers did not differ statistically significantly according to their grade levels. The literature suggests that cognitive flexibility develops rapidly in the early years and continues through adolescence (Buttelmann & Karbach,2017). Especially in studies conducted with primary school students, it has been observed that the cognitive flexibility levels of students increase as their grade level increases (Magalhães, 2020; Xuejun, 2007). The development of cognitive flexibility that begins in early childhood peaks in young adulthood and then begins to weaken in later adulthood. Kupis et al. (2021) argue that brain dynamics that begin to mature in childhood and brain dynamics that begin to slow down in older age are negatively associated with people's levels of cognitive flexibility. This means that neurological mechanisms in the human brain are influential in determining the level of cognitive flexibility.

According to the findings trying to reveal how the cognitive flexibility levels of pre-service teachers differed according to the status of taking courses on environmental education, the status of taking courses on environmental education did not cause a significant difference in the cognitive flexibility levels of pre-service teachers. There was no significant difference between the cognitive flexibility levels of pre-service teachers who took environmental education courses and those who did not. When the studies conducted in the literature regarding this finding are examined, it is found that there is a significant relationship between pre-service teachers' academic achievement and their cognitive flexibility levels (Magalhaes et al., 2020). Similarly, in a study measuring the relationship between university students' cognitive flexibility levels and their course success, it was found that as the cognitive flexibility levels of the participants increased, their course success also increased (Naveh-Benjamin et al., 1998). In the current study, since the course achievement of

pre-service teachers was not examined in detail, no conclusion could be reached to support this data. Research shows that cognitive flexibility development demands in-depth comprehension and exposure to multiple perspectives (Carvalho, 2000). The perspectives presented in courses such as environmental education that pre-service teachers attend positively influence their development of cognitive flexibility. In addition to the course content, the way the courses are taught also affects the level of cognitive flexibility (Minh & Herbst, 2008). According to the study of Minh and Herbst (2008), web-based instructions positively affect students' cognitive flexibility levels. Therefore, the courses students take at university (Naveh-Benjamin et al., 1998) and the teaching methods they prefer for these courses (Minh & Herbst, 2008) can increase students' cognitive flexibility, which is positively related to their academic performance (Zheng et al., 2024).

Another aim of the current study was whether the cognitive flexibility levels of pre-service teachers differ significantly according to their internship experiences. In order to reach the answer to this issue, pre-service teachers were asked questions about whether they had internship experience, and their cognitive flexibility levels were evaluated in the light of this question. As a result of the analysis, it was concluded that the cognitive flexibility levels of pre-service teachers did not differ significantly according to their internship experiences. According to Soleas and Hung (2020), classroom activities and internship experiences that pre-service teachers go through during their undergraduate education determine their mindset and motivation toward their future profession and shift them away from idealistic thinking and towards more resilient and pragmatic perspectives. Thus, studies have shown that internship experiences that integrate field education support cognitive development more than non-internship courses (Simmons & Fisher, 2016). In addition, there are studies that suggest that teacher candidates' problem-solving skills and ability to produce alternatives improve with their practicum experiences (Gillett-Swan & Grant-Smith, 2017; Pratiwi, 2020). Considering the importance of cognitive flexibility in individuals' acquisition of skills such as recognizing alternatives, creative thinking, and problem-solving, it will be possible for prospective teachers to develop their cognitive flexibility in areas where they actively use these skills (Buttelmann & Karbach, 2017). Similarly, in a study conducted with teachers, it was

concluded that the more years teachers spend in the profession, the higher their level of cognitive flexibility (Üzümcü & Müezzin, 2018). This can again be explained by the fact that teachers gain the comfort of responding to changes that may occur as their experience increases (Cai et al., 2022). This situation has revealed a finding that is not supported by this study.

Since the pre-service teachers in the current study did not yet have enough internship experience and thus professional experience, the contribution of this situation to their cognitive flexibility could not be clearly determined. However, another study conducted with prospective teachers shows that although pre-service teachers are aware of the importance of cognitive flexibility in overcoming difficulties during their internship practices, they do not successfully use this skill effectively (Esen-Aygün, 2018). These findings emphasize the importance of cognitive flexibility in teacher education and their professional development, especially in adapting to new teaching environments, designing new teaching methods and engaging students effectively (Miles et al., 2006; Scott & Sulsberger, 2019).

One of the objectives of this study was to understand how personal development training, which is one of the variables thought to affect the cognitive flexibility levels of teacher candidates, shapes the cognitive flexibility levels of individuals. In the questionnaire filled out by the teacher candidates were asked whether they had attended any personal development training or not. Some of the teacher candidates reported that they had attended courses in different personal development areas such as foreign language and diction courses, orienteering trainings and computer courses. However, it was concluded that the participation of individuals in these courses did not significantly differentiate their cognitive flexibility levels. When previous studies on this subject are examined, it has been observed that individuals who participate in some personal trainings have developed in areas such as self-efficacy, resilience and creativity (Colomeischi, 2022; Houser et al., 2018; Roeser, 2012). Although it cannot be reached the direct effect of personal development training on cognitive flexibility from the literature, the literature suggests that both variables may directly or indirectly affect each other. For example, it has been observed that teachers who participate in personal development programs that promote mental health have

increased teaching self-efficacy, resilience, and social-emotional competence (Colomeischi, 2022). The reason why the current study data does not yield results that are supported in the literature can be interpreted as the fact that the personal growth programs that the pre-service teachers chose to participate in or had the opportunity to participate in were not content-specific to personal well-being, even though they were able to advance their careers (Canas et al., 2005; Houser et al., 2018).

5.1.3. Beliefs about the Integration of Environmental Education into Early Childhood Education Based on Background Variables

This study aimed to reveal how pre-service teachers' beliefs about integrating environmental education into pre-school education differ according to gender, grade level, taking courses related to environmental education, having internship experience and participating any personal development training. As a result of the analyses conducted for this purpose, it was determined that pre-service teachers' beliefs did not differ according to gender. Additionally, it was observed that pre-service teachers did not differ significantly according to their grade level. In addition, whether pre-service teachers had internship experience or not did not create a significant difference in their beliefs. Moreover, pre-service teachers' participation in personal development training did not create a significant difference in their beliefs. Finally, in the present study, whether pre-service teachers had previously attended a course related to environmental education did not cause a statistically significant difference in their beliefs related to environmental education.

First, the findings of this study, which examined whether the beliefs of pre-service teachers regarding integrating environmental education into early childhood education would differ according to gender, revealed that the beliefs of pre-service teachers did not differ significantly according to their gender. In addition, when the subfactors like "Development- Learning, Environmental Outcomes and Learning Environment" constituting the factors of the scale used to measure pre-service teachers' beliefs about integrating environmental education into early childhood education were examined in detail, it was seen that the scores obtained from the

“learning environment” factor differed significantly according to gender. So, female pre-service teachers have a strong belief about the importance of learning environment in integrating environmental education into early childhood education. Also, female pre-service teachers have a positive belief about integrating environmental education into early childhood education than males. On the other hand, it was seen that the scores of the “development-learning” and “environmental outcomes” sub-scales did not differ according to gender. The literature reveals mixed findings regarding pre-service teachers’ beliefs about environmental education.

Various studies have shown that female teacher candidates have more positive attitudes towards environmental education than male teachers (Karimvand, 2011; Lee et al., 2013). There are many studies that show that female teacher candidates have higher environmental awareness and beliefs than males (Bergman, 2015; Carrier, 2007). Based on these studies, it can be indicated that women are more protective and possessive due to their traditional gender roles. It can be said that this protectionist approach is also effective in their perspectives towards nature and the environment (Koç & Kuvac, 2016; Tikka et al., 2000). On the other hand, Tanık Önal (2020) concluded in her study that the self-efficacy belief levels of teacher candidates towards environmental education did not differ significantly according to gender. Similarly, in a study aiming to measure environmental education awareness among classroom teacher candidates and secondary school teacher candidates, no significant difference was found in awareness levels according to gender (Patel, 2023). Likewise, Martn-Ezpeleta (2022) found that pre-service teachers’ environmental attitudes did not differ significantly according to gender. There is no consensus in the literature on the effect of gender on beliefs. There are findings supporting the current study as well as results claiming the opposite. This situation can be explained by the fact that gender roles have different consequences on different types of beliefs (Zelezny et al., 2000).

Secondly, as a result of the analyses conducted to understand whether the grade levels of the pre-service teachers had an effect on determining their beliefs about integrating environmental education into early childhood education, it was revealed that the grade levels did not create a significant difference. In addition, when the

factors creating the scale used to measure teacher candidates' beliefs about integrating environmental education into early childhood education were evaluated, it was seen that the scores of the sub-factors titled "development-learning", "learning outcomes" and "learning environments" did not differ significantly according to the grade level. When the studies in the literature were examined, many studies were found that obtained different results from the current result. For instance, second-grade students have a more positive attitude toward environmental education rather than other students (Gülçiçek, 2021). The early childhood environmental education course included in the 2nd grade of the early childhood teacher education curriculum updated in 2018 may be the reason for this difference (Gülçiçek, 2021). One reason for the difference between the findings of the current study and the studies in the literature may be that the studies in the literature present different contents related to environmental education at different grade levels. The fact that the undergraduate curriculum in Türkiye was updated in 2023 and that each university is given flexibility to implement its own curriculum may lead to the fact that pre-service teachers receive relatively different education and therefore their grade levels may be interpreted differently (AKU, 2023). Moreover, as a result of a study conducted with science teacher candidates, it was observed that the attitudes of the teacher candidates towards environmental education increased as their grade levels increased. It was observed that the attitudes of the 4th grade students differed significantly from those of the other grade levels (Keleş, 2017). In addition, a study conducted with pre-service teachers found that juniors had significantly higher efficacy belief scores than sophomores (Balcı et al., 2018). This situation can be supported by comparing the experiences of teacher candidates in the literature. For example, Tschannen-Moran et al. (2007) revealed in his study with teachers that the self-efficacy of teachers who are new to the profession is lower than that of experienced teachers. Expectedly, since junior students have more experience than freshman and sophomore students, it is expected that they will be more confident in their self-efficacy. On the other hand, in another study conducted with university students, it was found that the self-efficacy levels of freshman students differed significantly from those of sophomore, senior, and junior students (Wahyudiati et al., 2020). However, one of the reasons for this difference in the literature is that first-year students may have unrealistic self-efficacy beliefs. Concerning the unrealistic

beliefs of pre-service teachers, Pajares (1992) states that "most pre-service teachers have unrealistic optimism and an egoistic bias" (p. 323). In other words, it is more likely that pre-service teachers' beliefs about themselves are determinative before they have both positive and negative experiences related to their field of study. However, as pre-service teachers' grade level increases, their experiences become determinative on their beliefs (Tschannen-Moran et al., 2007).

Another aim of the current study was to reveal to what extent pre-service teachers' previous environmental education course taking differs their beliefs about integrating environmental education into early childhood education. The findings of the current study revealed that having taken environmental education courses did not cause a significant difference in total belief levels. In addition, when the factors forming the scale used to measure pre-service teachers' beliefs about integrating environmental education into early childhood education were evaluated, it was seen that the scores of the sub-factors titled "development-learning", "learning outcomes" and "learning environments" did not differ significantly according to the status of the pre-service teachers taking environmental education courses.

When the literature is examined, it is seen that taking environmental education courses positively affects the self-efficacy beliefs, attitudes, and perceptions of teacher candidates toward the environment (Sarıbaş et al., 2017; Moseley et al., 2002; Richardson et al., 2017). According to a study, it was observed that the environmental attitudes and self-efficacy beliefs of teacher candidates who took an environmental education course with strengthened content and added different methods increased significantly at the end of the term (Sarıbaş et al., 2017). In another study, it was observed that the environmental self-efficacy beliefs and outcome expectation levels of students who attended courses that included methods that supported the strengthening of teacher candidates' pedagogical and field education knowledge increased significantly (Richardson et al., 2017). It is understood from the literature that changes such as updating the content of environmental education courses and adding different teaching methods can affect the environmental awareness and self-efficacy beliefs of pre-service teachers. The fact that the teacher candidates in the current study took an environmental education

course may be the reason why this course did not reveal a significant difference on their scores. Another reason could be that the experiences they expanded in the course may increase their self-efficacy beliefs at the first time, but when the pre-service teachers re-evaluate their skills and experiences over time, their self-efficacy beliefs can be change (Moseley et al., 2002). On the other hand, in another study, the results obtained differ from the rest of the literature. In a recent study conducted by Obiagu et al., (2024), it was found that the environmental knowledge and environmentally friendly behavior of teacher candidates who took environmental courses were higher than those who did not take environmental education courses. However, the difference between these two groups was not statistically significant. Additionally, Orbanic and Kovac (2021) in their study with pre-service early childhood and primary teachers revealed that taking environmental education courses did not have a statistically significant contribution to determining environmental awareness, behavior and attitudes for both groups. Considering the information in the literature, additional research is needed to clarify other sources that play a role in determining the environmental beliefs of pre-service teachers.

The present study aims to investigate how the beliefs of pre-service teacher candidates in integrating environmental education into early childhood education based on their internship experience. The findings indicate that having internship experience does not significantly impact the overall belief levels of teacher candidates. Additionally, the sub-factors, including "development-learning," "learning outcomes," and "learning environments," show no significant differences in scores based on the internship experience of pre-service teachers.

When the studies revealing the effects of internship experiences on the beliefs of pre-service teachers are examined, it has been seen that the experiences that pre-service teachers gain in school environments through with a collaborating teacher increase their teaching self-efficacy beliefs (Han & Damjanovic, 2014; Trauth-Nare, 2015). A study conducted with pre-service teachers in New Zealand found that when pre-service teachers completed their internships, their teaching efficacy beliefs increased accordingly. The reason for this increase can be shown as the ability of preservice

teachers to synthesize the theoretical knowledge they acquired during their undergraduate years in a scaffolded environment (Berg & Smith,2018).

Although the positive impact of internship experience on pre-service teachers' self-efficacy beliefs has come to light in the literature, there may be various reasons why a significant difference was not found in the current study. Internship experiences fundamentally feed mastery experiences, which are one of the main sources of self-efficacy. However, when teacher candidates show poor performance during these mastery experiences, their self-efficacy beliefs may also decrease (Bandura, 1994). Variables such as the status of the classroom they are in during the internship experience and the status of the supervisor teacher may be important in understanding how these experiences will affect pre-service teachers (Martins et al., 2015). Since the current study does not have detailed information about the internship experiences of pre-service teachers, it will not be possible to interpret their experiences objectively. Also, according to the study, internship experiences are a process that enables pre-service teachers to process new and detailed information and reconstruct their own beliefs. If pre-service teachers' internship experiences are consistent with their previous beliefs, their beliefs will also become robust (Li & Huang, 2023).

Finally, one of the aims of this study was to understand how the participation of pre-service teachers in personal development trainings differentiates their beliefs about integrating environmental education into early childhood education. When the results of the current study were examined, it was seen that pre-service teachers' beliefs related to environmental education did not differ significantly according to their participation in personal development trainings. Studies in the literature show how prospective teachers' beliefs are shaped by personal development training. According to one of these studies, the personal development workshops that prospective teachers attended positively increased their professional development beliefs (Mohammadi & Moradi, 2017). Similarly, Altınsoy (2023) found in his study that teacher candidates' participation in personal development training supported their critical thinking skills, creativity, adaptation skills, and self-confidence. Similarly, personal development training that provides structured field experiences

has also been shown to support pre-service teachers' professional development (McMahan & Garza, 2017). Additionally, there are studies in the literature showing that personal development prevents teachers from creating prejudice and positively affects their self-efficacy beliefs (Geršicová & Barnova, 2018). Studies conducted with teachers also show that personal development training that supports their professional development also transforms their attitudes and beliefs towards students, thus positively affecting the teaching practice (Rosenfeld & Rosenfeld, 2008). Consequently, research in the literature shows that taking part in personal development training improves teacher candidates' psychological well-being as well as their capacity to teach. Thus, the professional development of teacher candidates can be supported. Additionally, these developments will be supportive in preparing teacher candidates for their professions in the long term and in terms of job satisfaction (McMahan & Garza, 2017).

5.1.4. The Relationship Between Pre-Service Teachers' Cognitive Flexibility Levels and Their Beliefs about Integrating Environmental Education into Early Childhood Education

One of the main aims of the study was to reveal the effect of cognitive flexibility level on teacher candidates' beliefs in integrating environmental education into early childhood education. Analyses serving this purpose revealed that there was a positive relationship between pre-service teachers' cognitive flexibility levels and their beliefs about integrating environmental education. The cognitive flexibility levels of pre-service teachers represent 7.5% of the total variance of their beliefs about the integration of environmental education into early childhood education. Moreover, when the relationship between the factors of the beliefs about integrating environmental education into early childhood education scale and cognitive flexibility level was analyzed, there was a statistically significant relationship between all three factors and cognitive flexibility levels. Based on the results, it can be concluded that as the cognitive flexibility levels of pre-service teachers increase, their beliefs in supporting children's development and learning in the processes of integrating environmental education and preschool education also increase.

Similarly, it can be said that their level of belief in the contribution of this integration process to the environment also increases.

When the related studies in the literature were examined, it was realized that there was a significant relationship between pre-service teachers' cognitive flexibility levels and efficacy beliefs (Holzberger & Prestele, 2021; Stein et al., 2018; Pepe, 2021; Wang et al., 2021). In a study conducted with university students, it was revealed that students with high levels of cognitive flexibility have a tendency to be adaptive to different conditions in learning and teaching processes. This inference implies that the thinking processes of human beings can work without any obstacles or pressures. Moreover, high cognitive flexibility is directly related to metacognitive skills that facilitate students' adaptability to new situations and methods. (Idawati et al., 2020). Gnaedinger et al. (2016) also suggested that strong cognitive flexibility is essential for thinking, understanding content, and effectively applying strategies in the learning and teaching process.

Considering the variable structure of learning and teaching processes, the self-confidence of the person with a high cognitive flexibility level in adapting to this variable structure is positively affected (Kazu & Pullu, 2023). In addition, in the study conducted by Pepe (2021) with students studying at the faculty of education, it was revealed that there was a moderate significant relationship between their cognitive flexibility levels and their academic self-efficacy. Bandura (1994) emphasized the numerous influences on self-efficacy, including individuals' cognitive abilities. Those with high self-efficacy also tend to exhibit strong cognitive flexibility (Martin & Rubin, 1995). Additionally, individuals who demonstrate cognitive flexibility are more likely to possess high self-confidence and perceive themselves as prepared, engaged, and insightful (Martin & Anderson 1996; Martin & Anderson 1998). In the core domain of self-efficacy, individuals have beliefs about their abilities and skills to effectively organize, accomplish, and perform the behaviors or actions necessary to demonstrate skill or success in a particular task (Totan et al., 2010). It can be concluded that cognitive flexibility levels play an important role in shaping these beliefs.

As a result, as the cognitive flexibility levels of pre-service teachers increase, their beliefs about integrating environmental education with early childhood education also increase. Similarly, when the factors that constitute the pre-service teachers' beliefs about integrating environmental education into early childhood education are considered, it has been concluded that the beliefs they have about topics such as being aware of the contributions of this integration process to children and the environment and creating a suitable and effective learning environment are related to the level of cognitive flexibility of the pre-service teachers.

5.2. Educational Implications of the Study

This study revealed that early childhood teacher candidates had a moderate level of cognitive flexibility, which was positively associated with their beliefs about integrating environmental education into early childhood education. Cognitive flexibility can be interpreted at first glance as the ability to switch from one thought to another and to think about several things at the same time, adapting thought or behavior in response to changing conditions, goals, or stimuli (Martin & Rubin, 1995). The ability to adapt to diverse classroom situations, known as cognitive flexibility, is an essential skill for teachers (Minh & Herbst, 2008). Study indicates that teachers with greater cognitive flexibility are more successful in engaging students and have a deeper understanding of student engagement (Stein et al., 2018). To cultivate cognitive flexibility in teacher education, web-based interactive technologies and exposure to diverse learning perspectives can be valuable (Minh & Herbst, 2008). These findings highlight the importance of teacher education programs focusing on developing cognitive flexibility to improve teacher effectiveness and professional success.

Among the contributions of the study to the field is that early childhood teacher candidates have high beliefs about integrating environmental education into early childhood education. There are various factors that are effective in the formation and continuity of these beliefs. Efficacy beliefs can be mentioned in pre-service teachers' formation of these beliefs. Bandura (1997) described efficacy beliefs as being formed

from four primary sources of information: “mastery experiences”, “vicarious experiences”, “social persuasion”, and “emotional arousal”. In the case of pre-service teachers, positive experiences are crucial in developing mastery and vicarious experiences, which can be obtained through coursework, observations of experienced teachers, and mentored teaching experiences (Mulholland & Wallace, 2001). Studies have shown that field-based experiences and hands-on workshops can have a significant impact on pre-service teachers’ self-efficacy and readiness for environmental education. According to Trauth-Nare (2015), an intensive field-based course led to improvements in pre-service teachers’ efficacy for ecological teaching. Similarly, Malandrakis (2018) reported a lasting increase in self-efficacy beliefs after an innovative environmental studies course. These experiences offer valuable opportunities for practical application, content knowledge development, and reflection (Trauth-Nare, 2015; Malandrakis, 2018).

The study’s contributions to the field include revealing how taking an environmental education course differentiates beliefs about environmental education. Research in the field shows that environmental education courses contribute positively to preservice teachers’ efficacy beliefs and attitudes toward environmental education (Malandrakis, 2018; Sarıbaş et al., 2017). According to Tanık Önal (2020), some of the factors that influence the self-efficacy beliefs of pre-service teachers include prior environmental education courses and potential teaching plans. The inclusion of creative and innovative educational methods in the content of these courses has a significant impact on the environmental education self-efficacy beliefs of pre-service teachers (Fettahlıoğlu, 2018). Efficacy belief in environmental education refers to teachers’ confidence in their ability to effectively teach this subject. Developing these skills is crucial for achieving the objectives of environmental education in educational programs (Richardson et al., 2014). Research on environmental education has shown that teachers’ efficacy beliefs about environmental education significantly influence their teaching efforts, their students’ goals, and their lesson planning (Tschannen-Moran & Hoy, 2001). So, it can be interpreted that in order for teacher candidates to increase their efficacy in environmental education, the faculty members working in the institutions where they are students should also have high efficacy beliefs. Haryani et al. (2018) found that using problem-based learning

significantly enhances students' metacognitive and reasoning skills, leading to improved problem-solving abilities. Based on the above studies, it is highly recommended that teachers incorporate the problem-solving approach to encourage students to think critically and navigate through problem-solving scenarios. To summarize, not only their own ideas but also the teachers they work with, the experiences they have gained, and the contents of the courses that provide these experiences can be decisive in shaping pre-service teachers' beliefs in integrating environmental education with early childhood education (Richardson et al., 2014).

One of the contributions of this study to the field was to bring to the agenda in the light of the literature that elements that promise experience such as internship experiences, personal development trainings, and course taking status of teacher candidates can affect their cognitive flexibility levels and self-efficacy beliefs. It has been understood that any activity that increases the field experiences of teacher candidates positively changes their self-efficacy beliefs (Brown et al., 2015). Similarly, it is an important finding in the literature that as teachers' professional experiences increases, their cognitive flexibility levels also increase (Üzümcü & Müezzin, 2018). Based on this information, the experiences that prospective teachers will gain before they start their profession can help them start their profession much more prepared and adapt more easily to new situations they encounter in their professional lives. In addition, the early childhood education undergraduate program, which has been implemented in Türkiye since 2023, enables pre-service teachers to acquire school experience in the first year. In the fourth year, they are supported to transform the knowledge they have accumulated throughout their undergraduate education into experience through teaching practice (AKU 2023; CoHE, 2018).

Teachers' personal and professional development is essential to adapt to changes in society and to improve the effectiveness of education. The research has demonstrated that many teachers attempt to improve their communication and pedagogical skills through a variety of channels such as courses, personal development groups and self-learning programs (Herman, 2020). The personal development needs of pre-service and in-service teachers should not be limited to professional development only. The development of teachers, who are in a central position in the triangle of parents,

school and children, and the teacher candidates who will be in this position when they graduate, consists of many cognitive, social and academic dimensions. With the contribution of these trainings, the knowledge levels, personal development and survival skills of teacher candidates can be supported (Kolomiiets, 2021). Taking steps for professional development of pre-service teachers before they start their profession can affect their professional effectiveness. In this case, it would be beneficial for universities and other institutions to provide personal development training opportunities.

5.3. Recommendations for Future Research

This section aims to provide future researchers with suggestions that may guide new research on the education and improvement of pre-service teachers in integrating environmental education into early childhood education and draw attention to significant points that need to be worked on after the current study.

The current study examined the cognitive flexibility levels of pre-service early childhood teachers and revealed the relationship between these levels and their beliefs about integrating environmental education into early childhood education. In the current study, it was revealed that preservice teachers' beliefs about integrating environmental education into early childhood education are positively related to their cognitive flexibility levels. Studies have shown that the cognitive flexibility of pre-service teachers is affected by different factors such as their experience, knowledge level, and self-efficacy beliefs (Stein et al., 2018; Wang et al., 2021). Similarly, the knowledge and experience of prospective teachers positively differentiate their attitudes and beliefs towards environmental education (Richardson et al., 2017; Obiagu, 2024). It may be useful to investigate and reveal other factors that affect pre-service teachers' cognitive flexibility levels and their beliefs about environmental education and that were not included in this study.

In this study, the effect of preservice early childhood educators' internship experiences on their beliefs about integrating environmental education into early childhood education is one of the factors examined. The findings of this study

revealed that the internship experiences of prospective teachers did not statistically significantly differentiate their beliefs about integrating environmental education into early childhood education. This finding is different from the findings in the literature (Berg& Smith,2018; Martins et al., 2015). The study can be renewed with a study group with different demographic characteristics. In this way, a common view can be formed on how prospective teachers evaluate the experiences they have gained from their internship experiences and how they shape their beliefs.

In this study, data were collected from freshman, sophomore, junior, and senior pre-service early childhood teachers attending university in Afyonkarahisar. For the future studies, a study with a larger participant list can be conducted with the participation of early childhood pre-service teachers across the country. The early childhood education undergraduate program, which implemented since 2023, varies from university to university (CoHE, 2023). The fact that teacher candidates are pursuing in different early childhood education curriculums may cause variables such as grade level, taking courses, and participating in personal development training in this study to yield different results with different groups. For this reason, it may be possible to make a general evaluation with the data collected from teacher candidates studying at universities in different locations in the country.

In addition, the academic success of the teacher candidates was not included in the current study. However, variables such as taking courses related to environmental education and internship experiences were examined within the scope of the study. The possibility that the academic success of the teacher candidates may provide a different perspective emerges from the literature (Magalhaes et al., 2020). In a future study different findings can be obtained.

To summarize, this study contributed to the field by examining the cognitive flexibility levels of teacher candidates according to variables such as gender, grade level, taking courses on environmental education, internship experience, and personal development training. Due to the quantitative nature of the current study, the cognitive flexibility levels of teacher candidates could not be investigated in depth. It may be possible to evaluate the cognitive flexibility levels of teacher

candidates and their beliefs about environmental education from a different perspective with future qualitative studies. Similarly, the determination of pre-service teachers' beliefs about integrating environmental education into early childhood education was also included in terms of similar variables. Considering that pre-service teachers' beliefs are part of a long-term procedure that begins in their student years and continues when they become teachers, qualitative studies can be conducted to examine in depth how the mentioned variables differentiate their beliefs. The individual structure of belief systems can provide space for the application of qualitative studies.

REFERENCES

Afyon Kocatepe University, (2023). Early Childhood Education Undergraduate Program. https://obs.aku.edu.tr/oibs/bologna/index.aspx?lang=tr&curOp=showPac&curUnit=10&curSunit=1016#

Ahmad, I. (2011). Effect of Teacher Efficacy Beliefs on Motivation. *Journal of Behavioural Sciences*, *21*, 35–46.

Altunkol, F. (2011). The Analysis of The Relation Between Cognitive Flexibility and Perceived Stress Levels of College Students. (Unpublished master's thesis). Çukurova University, Institute of Social Sciences, Adana.

Ardoin, N. M., & Bowers, A. W. (2020). Early childhood environmental education: A systematic review of the research literature. *Educational Research Review*, *31*, 100353. https://doi.org/10.1016/j.edurev.2020.100353

Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2022). A systematic mixed studies review of Civic Engagement Outcomes in environmental education. *Environmental Education Research*, *29*(1), 1–26. https://doi.org/10.1080/13504622.2022.2135688

Bandura, A. (1997). Self-Efficacy: The Exercise of Control. New York, NY: W.H. Freeman and Co.

Bandura, A. (2002). Social foundations of thought and action. In *The Health Psychology Reader* (pp. 94-106). SAGE Publications Ltd, https://doi.org/10.4135/9781446221129

Bardach, L., & Klassen, R. (2019). *Smart Teachers, Successful Students? A Systematic Review of the Literature on Teachers' Cognitive Abilities and Teacher Effectiveness*. https://doi.org/10.31234/osf.io/nt7v9

Barrable, A. (2019). Refocusing Environmental Education in the Early Years: A Brief Introduction to a Pedagogy for Connection. *Education Sciences*, *9*(1), 61. https://doi.org/10.3390/educsci9010061

Barraza, P., & Rodríguez, E. (2023, September). Executive Functions and Theory of Mind in Teachers and Non-Teachers. *Heliyon*, *9*(9), e19915. https://doi.org/10.1016/j.heliyon.2023.e19915

Begum, S. (2012). A secondary science teacher's belief about environmental education and Its relationship with the classroom practices. International Journal of Social Sciences and Education, 2(1), 10–29.

Bekirler, A., & Bilaloğlu, R. G. (2022). Relationships between preschool teachers' cognitive flexibility, mindfulness, and self-efficacy. *Ege Journal of Education, 23*(3), 301-318. https://doi.org/10.12984/egeefd.1084301

Ben-Itzhak, S., Bluvstein, I., & Maor, M. (2014). The Psychological Flexibility Questionnaire (PFQ): Development, reliability and validity. WebmedCentral Psychology, 5(4), WMC004606.

Bennett J. &Müller U. (2010). The development of flexibility and abstraction in preschool children. *Merrill-Palmer Quarterly*, *56*(4), 455–473. https://doi.org/10.1353/mpq.2010.0004

Bergan, V., Nylund, M. B., Midtbø, I. L., & Paulsen, B. H. (2023). The teacher's role for engagement in foraging and gardening activities in kindergarten. *Environmental Education Research*, *30*(1), 68–82. https://doi.org/10.1080/13504622.2023.2181271

Blömeke, S., Dunekacke, S., & Jenßen, L. (2017). Cognitive, educational and psychological determinants of prospective preschool teachers' beliefs. European Early Childhood Education Research Journal, 25(6), 885–903. https://doi.org/10.1080/1350293X.2017.1380885

Bronfenbrenner, U., & Morris, P. (2006). The bioecological model of human development. In R. M. Lerner & W. Damon (Eds.), Theoretical Models of Human Development (Vol. 1); Handbook of Child Psychology (5th ed.) New York, NY: Wiley.

Brown, A., Lee, J., & Collins, D. (2015). Does student teaching matter? Investigating pre-service teachers' sense of efficacy and preparedness. Teaching Education, 26, 77 - 93. https://doi.org/10.1080/10476210.2014.957666.

Brownlee, J., Berthelsen, D., & Boulton-Lewis, G. (2004). Working with toddlers in childcare: Personal epistemologies and practice. European Early Childhood Education Research Journal, 12(1), 55–70. https://doi.org/10.1080/13502930485209311

Buğa, A., Özkamalı, E., Altunkol, F. and Çekiç, A. (2018). Examination of social problem-solving styles of university students according to their cognitive flexibility levels. Gaziantep University Journal of Educational Sciences, 2(1), 48-58.

Cai, Z., Zhu, J., & Tian, S. (2022). Preservice teachers' teaching internship affects professional identity: Self-efficacy and learning engagement as mediators. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1070763

Can, H., & Özdemir, A. (2022). Examining Pre-service Teachers' Environmental Knowledge and Self-Efficacy Beliefs Regarding Environmental Education. *Osmangazi Journal of Educational Research, 9*(2), 101-118.

Cañas , J. J., AntolÍ, A., Fajardo, I., & Salmerón, L. (2005). Cognitive inflexibility and the development and use of strategies for solving complex dynamic problems: Effects of different types of training. *Theoretical Issues in Ergonomics Science*, *6*(1), 95–108. https://doi.org/10.1080/14639220512331311599

Cañas, J. J., Fajardo, I., and Salmerón, L. (2006). Cognitive flexibility. Int. Encycl. Ergon. Hum. Fact. doi: 10.13140/2.1.4439.6326

Carvalho, A. A. A. (2000). *How to develop cognitive flexibility in a WWW course* (Vol. 1, Ser. 2). Annual Proceedings of Selected Research and Development Papers Presented at the National Convention of the Association for Educational Communications and Technology.

Çelikkaleli, Ö. (2014). The Relation between cognitive flexibility and academic, social, and emotional self-efficacy beliefs among adolescents. Education And Science, 39, 347-354. https://doi.org/10.15390/EB.2014.3467

Çetin, Ş. Ü. (2019, April). Pre-service Early Childhood Educators' Perceptions of Nature and Its Integration to Teaching Practices. *Universal Journal of Educational Research*, *7*(4), 942–953. https://doi.org/10.13189/ujer.2019.070405

Chawla, L. (1998). Significant Life Experiences Revisited: a review of research on sources of environmental sensitivity. Environmental Education Research, 4(4), 369–382. https://doi.org/10.1080/1350462980040402

Cheng, J., & Koszalka, T. (2016). Cognitive Flexibility Theory and its Application to Learning Resources. *Syracuse University RIDLR Project*.

Chieu, V. M., & Herbst, P. G. (2008). Learning to Teach: Web-based Interactive Rich-Media Technologies Supporting Cognitive Flexibility in Teacher Education. *The Association for the Advancement of Computing in Education*.

Chieu, V. M., & Herbst, P. G. (2008). Learning to Teach: Web-based Interactive Rich-Media Technologies Supporting Cognitive Flexibility in Teacher Education. *The Association for the Advancement of Computing in Education.*

Clement, E. (2022). Cognitive Flexibility: The Cornerstone of Learning. John Wiley & Sons.

Cotton, D. R. (2006). Implementing curriculum guidance on environmental education: The Importance of Teachers' beliefs. *Journal of Curriculum Studies*, *38*(1), 67–83. https://doi.org/10.1080/00220270500038644

Council of Higher Education (2018). Early Childhood Education Undergraduate Program https://www.yok.gov.tr/Documents/Kurumsal/egitim_ogretim_dairesi/Yeni-Ogretmen-Yetistirme-Lisans-Programlari/Okul_Oncesi_Ogretmenligi_Lisans_Programi.pdf.

Çuhadaroğlu, A. (2013). Predictors of cognitive flexibility. Cumhuriyet International Journal of Education, 2(1), 86–101.

Cutter-Mackenzie, A., Edwards, S., Moore, D., & Boyd, W. (2014, January 18). *Young Children's Play and Environmental Education in Early Childhood Education*. Springer Science & Business Media.

Davis, M., J. (1998). Young Children, Environmental Education, and the Future. *Early Childhood Education Journal, 26(2), 117–123. doi*:10.1023/a:1022911631454

de-la-Peña, C., Fernádez-Cézar, R., & Solano-Pinto, N. (2021). Attitude toward mathematics of future teachers: How important are creativity and cognitive flexibility? *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.713941

Deák, G. O. (2003). The development of cognitive flexibility and language abilities. *Advances in Child Development and Behavior*, 271–327. https://doi.org/10.1016/s0065-2407(03)31007-9

Demir, E., & Yalçın, H. (2014). Environmental education in Turkey. Turkish Journal of Scientific Reviews, 7(2), 07-18. https://dergipark.org.tr/en/download/article-file/417930

Dere, İ., & Çinikaya, C. (2023). The reflections of the Tbilisi Declaration and UN 2030 sustainable development goals on the environmental education and climate change course curriculum. ODÜSOBİAD, 13(1), 1343-1366. https://doi.org/10.48146/odusobiad.1218188

Diamond, A. (2006). The early development of executive functions. *Lifespan CognitionMechanisms of Change*, 70–95. https://doi.org/10.1093/acprof:oso/9780195169539.003.0006

Dumbi, K., & Indrasari, S. (2024). Encourage Teacher Innovative Behavior: The Interaction Role of Cognitive Flexibility and Teacher Self-Efficacy. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan,* https://doi.org/10.33394/jk.v10i1.10897

Dyment, J. E., Davis, J. M., Nailon, D., Emery, S., Getenet, S., McCrea, N., & Hill, A. (2013). The impact of professional development on early childhood educators' confidence, understanding and knowledge of education for Sustainability. *Environmental Education Research*, *20*(5), 660–679. https://doi.org/10.1080/13504622.2013.833591

Dunekacke, S., Jenßen, L., & Blömeke, S. (2015). Effects of mathematics content knowledge on pre-school teachers' performance: A video-based assessment of

perception and planning abilities in informal learning situations. International Journal of Science and Mathematics Education, 13(1), 267–286. https://doi.org/10.1007/s10763-014-9596-z

Edmunds, D.B. (2007). The Impact of a Cognitive Flexibility Hypermedia System on Pre-service Teachers' Sense of Self-Efficacy.

Elen J., Stahl, E., Bromme, R., & Clarebout, G. (2011). *Links Between Beliefs and Cognitive Flexibility*. Springer Science & Business Media. https://doi.org/10.1007/978-94-007-1793-0_1

Engleson, D. C., & Yockers, D. H. (1994). *A guide to curriculum planning in environmental education*. Madison, WI: Wisconsin Department of Public Instruction.

Enno, V. (1980). Philosophy of school nursing. *Nevada Nurses Association Quarterly Newsletter.*

Erdem, S. (2015). Examining the extent to which classroom teachers' understanding of teaching and learning and their cognitive flexibility predict their self-efficacy perceptions regarding inclusion. (Unpublished Master Thesis). Marmara University, İstanbul.

Ernst. (2014). Early Childhood Educators' Preferences and Perceptions Regarding Outdoor Settings as Learning Environments. International Journal of Early Childhood Environmental Education, 2(1), 97–108.

Eßling, I., Todorova, M., Sunder, C., Steffensky, M., & Meschede, N. (2023, October). The development of professional vision in pre-service teachers during initial teacher education and its relationship to beliefs about teaching and learning. *Teaching and Teacher Education*, *132*, 104250. https://doi.org/10.1016/j.tate.2023.104250

Esa, N. (2010). Environmental knowledge, attitude and practices of student teachers. *International Research in Geographical and Environmental Education*, *19*(1), 39–50. https://doi.org/10.1080/10382040903545534

Ewert, A., Place, G., & Sıbthorp, J. (2005). Early-Life Outdoor Experiences and an Individual's Environmental Attitudes. Leisure Sciences, 27(3), 225–239. https://doi.org/10.1080/01490400590930853

Fang, Z. (1996). A review of research on teacher beliefs and practices. Educational Research, 38(1), 47–65. https://doi.org/10.1080/0013188960380104

Fettahlıoğlu, P. (2018). The effects of argumentation implementation on environmental education self efficacy beliefs and perspectives according to environmental problems. *Journal of Education and Training Studies, 6*(4), 199. https://doi.org/10.11114/jets.v6i4.2925

Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention, and Behavior. Addison Wesley Publishing Company.

Fraenkel, J., Hyun, H., & Wallen, N. (2012). *How to Design and Evaluate Research in Education* (8th ed.). McGraw-Hill Education.

Gelfo, F. (2019). Does experience enhance cognitive flexibility? an overview of the evidence provided by the Environmental Enrichment Studies. *Frontiers in Behavioral Neuroscience, 13*. https://doi.org/10.3389/fnbeh.2019.00150

Geršicová, Z., & Barnová, S. (2018). Personal and social training as a part of class teachers' lifelong learning. Acta Educationis Generalis, 8, 24 - 39. https://doi.org/10.2478/atd-2018-0009.

Geurts, H. M., Corbett, B., & Solomon, M. (2009). The paradox of cognitive flexibility in autism. *Trends in Cognitive Sciences*, *13*(2), 74–82. https://doi.org/10.1016/j.tics.2008.11.006

Grant, T., & Littlejohn, G. (Eds.). (2005). *Teaching green: The elementary years*. Toronto, Canada: Green Teacher.

Green, C. J. (2015). Toward young children as active researchers: A critical review of the methodologies and methods in early childhood environmental education. The Journal of Environmental Education, 46(4), 207–229. https://doi.org/10.1080/00958964.2015.1050345

Grote, K. S., Russell, E. E., Bates, O., & Gonzalez, R. (2021). Bilingual cognition and growth mindset: A review of cognitive flexibility and its implications for dual-language education. *Current Issues in Education*, *22*(2). http://cie.asu.edu/ojs/index.php/cieatasu/article/view/1958

"Guilford, J.P. (1967). Creativity: Yesterday, today, and tomorrow. Journal of Creative Behavior, 1, 3–14."

Gülçiçek, T. (2021). The relationship between pre-service early childhood teachers' environmental education self-efficacy beliefs and their attitudes towards sustainable environment. *Academia Eğitim Araştırmaları Dergisi*, *6*(2), 431–441. https://doi.org/10.53506/egitim.901759

Güner-Alparslan, Olgan, & Çakıroğlu. (2017). Beliefs about Integration of Environmental Education into the Early Years: Scale Development. *Ahi Evran Universitesi Kırşehir Eğitim Fakültesi Dergisi*, *18*(3), 880–890.

Güner, Z. (2013). *Environmental education in early childhood teacher training programs: perceptions and beliefs of pre-service teachers* [M.S. - Master of Science]. Middle East Technical University.

Güzelyurt, T., Özkan, Ö. (2018). Views Of Prospective Preschool Teachers About Environmental Education In Preschool Period: A Case Study *Journal of Turkish Studies, 13*(Volume 13 Issue 11), 651–668. https://doi.org/10.7827/turkishstudies.13425

Halpern, D. F. (2014). *Thought and knowledge: An introduction to critical thinking* (5th ed.). Psychology Press.

Hammond, W. F. (1997). Educating for action: A framework for thinking about the place of action in environmental education. Green Teacher, pp. 50, 6–14.

Harvey, O.J. (1986). Belief systems and attitudes toward the death penalty and other punishments. *Journal of Psychology, 54,* 143-159.

Herman, I.R. (2020). Exploratory Study On Teachers' Personal Development Needs. DOI:10.15405/epsbs.2020.06.23

Herrington, S., & Studtmann, K. (1998). Landscape interventions: new directions for the design of children's outdoor play environments. Landscape and Urban Planning, 42, 191-205.

Holzberger, D., & Prestele, E. (2021). Teacher self-efficacy and self-reported cognitive activation and classroom management: A multilevel perspective on the role of school characteristics. Learning and Instruction. https://doi.org/10.1016/J.LEARNINSTRUC.2021.101513.

Houser, M. M., Worzella, G., Burchsted, S., Marquez, C., Domack, T., & Acevedo, Y. (2018). Wellness skills for medical learners and teachers: Perspective taking and cognitive flexibility. *MedEdPORTAL*. https://doi.org/10.15766/mep_2374-8265.10674

Hryn, O. (2023). Training of future teachers in environmental education in the USA. *Scientific Bulletin of Uzhhorod University. Series: «Pedagogy. Social Work»*, (2(53)), 44–47. https://doi.org/10.24144/2524-0609.2023.53.44-47

Idawati, I., Setyosari, P., Kuswandi, D., & Ulfa, S. (2020). Investigating the effects of problem-solving method and cognitive flexibility on improving university students' metacognitive skills. *Journal for the Education of Gifted Young Scientists*, *8*(2), 651–665. https://doi.org/10.17478/jegys.652212

Ionescu, T. (2011). Exploring the nature of cognitive flexibility. New Ideas in Psychology, 30(2), 190–200. https://doi.org/10.1016/j.newideapsych.2011.11.001

Irving, J. A., & Williams, D. I. (1999). Personal growth and personal development: Concepts clarified. *British Journal of Guidance & Counselling*, *27*(4), 517–526. https://doi.org/10.1080/03069889900760431

IUCN (International Union for Conservation of Nature and Natural Resources) (1970) *International Working Meeting on Environmental Education in the School Curriculum, Final Report,* September, IUCN USA.

Jacobson, M. J., & Spiro, R. J. (1993). Hypertext Learning Environments, Cognitive Flexibility, and the Transfer of Complex Knowledge: An Empirical Investigation. *Journal of Educational Computing Research*, *12*(4), 301-333. https://doi.org/10.2190/4T1B-HBP0-3F7E-J4PN

Jacques, S., & Zelazo, P. D. (2005). On the Possible Roots of Cognitive Flexibility. In *The Development of Social Cognition and Communication* (pp. 53–80). essay, The Development of Social Cognition and Communication. https://doi.org/10.4324/9781315805634

Jonassen, D. H. (1992). Cognitive flexibility theory and its implications for designing CBI. NATO ASI Series, 385–403. https://doi.org/10.1007/978-3-662-02840-7_23

Julia Torquati, Jennifer Leeper-Miller, Erin Hamel, Soo-Young Hong, Susan Sarver & Michelle Rupiper (2017). "I Have a Hippopotamus!": Preparing Effective Early Childhood Environmental Educators, The New Educator, https://doi.org/10.1080/1547688X.2017.1331095

Kagan, D. M. (1992). Implication of research on teacher belief. *Educational Psychologist*, *27*(1), 65–90. https://doi.org/10.1207/s15326985ep2701_6

Karimvand, P. (2011). The nexus between Iranian EFL teachers' self-efficacy, teaching experience and gender. *English Language Teaching*, *4*(3). https://doi.org/10.5539/elt.v4n3p171

Kasirah, I., Nadiroh, & Hafid Abbas. (2023). The effectiveness of Environmental Education Learning Strategy Teaching Materials (SPPLH) in improving teachers' cognitive flexibility. *Jurnal Penelitian Dan Pengembangan Pendidikan*, *6*(3), 483–491. https://doi.org/10.23887/jppp.v6i3.56831

Kasirah, I., Nadiroh, N., & Abbas, H. (2021). Developing environmental integration teaching materials to improve cognitive flexibility. *Linguistics and Culture Review*, *5*(S3), 1558-1573. https://doi.org/10.21744/lingcure.v5nS3.1826

Kaur, M., & Talwar, A. (2014). Teaching Competency of Secondary School Teachers in Relation To Emotional Intelligence. *International Journal of Learning, Teaching and Educational Research*, *3*(1), 83–90.

Kaur, S. (2013). Study of environmental awareness among elementary school teachers. International journal of research in education methodology, pp. 3, 186–190. Https://doi.org/10.24297/ijrem.v3i1.3959.

Klassen, R. M., & Usher, E. L. (2010). Self-efficacy in educational settings: Recent research and emerging directions. *Advances in Motivation and Achievement*, 1–33. https://doi.org/10.1108/s0749-7423(2010)000016a004

Ko, A. C.-C., & Lee, J. C.-K. (2003). Teachers' Perceptions of Teaching Environmental Issues within the Science Curriculum: A Hong Kong Perspective. *Journal of Science Education and Technology*, *12*, 187–204.

Kolomiiets, N.A. (2021). PERSONAL AND PROFESSIONAL DEVELOPMENT OF A TEACHER: CONCEPT AND CONTENT. *Collection of Scientific Papers of Uman State Pedagogical University*. DOI:10.31499/2307-4906.4.2021.250154

Kotaman, H., Karaboğa, İ., Bilgin, S. P., & Tuğrul, B. (2022). Impact of in-service environmental education on early childhood teachers' environmental attitude. *Discourse and Communication for Sustainable Education*, *13*(2), 26–39. https://doi.org/10.2478/dcse-2022-0016

Lange, F., & Dewitte, S. (2019). Cognitive flexibility and pro–Environmental Behaviour: A Multimethod approach. *European Journal of Personality*, *33*(4), 488–505. https://doi.org/10.1002/per.2204

Larimore, R. (2016). Defining Nature-Based Preschools. *International Journal of Early Childhood Environmental Education*, *4*(1), 32–36.

Leal Filho, W., Mifsud, M., & Pace, P. (Eds.). (2018). *Handbook of lifelong learning for sustainable development. World Sustainability Series*. Berlin: Springer International Publishing. https://doi.org/10.1007/978-3-319-63534-7.

Lee, E., Park, N.-K., & Han, J. H. (2013). Gender difference in environmental attitude and behaviors in adoption of energy-efficient lighting at home. *Journal of Sustainable Development*, *6*(9). https://doi.org/10.5539/jsd.v6n9p36

Leinhardt, G., & Ohlsson, S. (1990). Tutorials on the structure of tutoring from teachers. *Journal of Artificial Intelligence in Education*, 2, 21-46.

Li, L., & Huang, J. L. (2023, January 19). Exploring preservice teachers' belief changes during early childhood education teaching practicum in China: A case study. Asia Pacific Journal of Education, pp. 1–15. https://doi.org/10.1080/02188791.2023.2167806

Lieberman, G. A., & Hoody, L. L. (1998). *Closing the achievement gap: Using the environment as an integrating context for learning*. San Diego, CA: State Education and Environment Roundtable and The Pew Charitable Trusts.

Liefländer, A. K., & Bogner, F. X. (2018). Educational impact on the relationship of environmental knowledge and attitudes. *Environmental Education Research*, *24*(4), 611–624. https://doi.org/10.1080/13504622.2016.1188265

Lin, X., Schwartz, D., & Hatano, G. (2005). Toward teachers' adaptive metacognition. *Educational Psychologist*, 40, 245-255

Lonning, R. A., DeFranco, T. C., & Weinland, T. P. (1998). Development of theme-based, inter-disciplinary, integrated curriculum: A theoretical model. School Science and Mathematics, 97(6), 312–319.

Lori A. Caudle & Mary Jane Moran (2012). Changes in Understandings of Three Teachers' Beliefs and Practice Across Time: Moving from Teacher Preparation to In-Service Teaching, Journal of Early Childhood Teacher Education, 33:1, 38–53, DOI: 10.1080/10901027.2011.650784

Magalhães, S., Carneiro, L., Limpo, T., & Filipe, M. (2020). Executive functions predict literacy and mathematics achievements: The unique contribution of cognitive flexibility in grades 2, 4, and 6. *Child Neuropsychology*, *26*(7), 934–952. https://doi.org/10.1080/09297049.2020.1740188

Malandrakis, G. (2018). Influencing Greek pre-service teachers' efficacy beliefs and self-confidence to implement the new 'Studies for the Environment' curricula. Environmental Education Research, 24, 537 - 563. https://doi.org/10.1080/13504622.2016.1272672.

Martin, M. M., & Anderson, C. M. (1998). The cognitive flexibility scale: Three validity studies. Communication Reports, 11(1), 1–9. https://doi.org/10.1080/08934219809367680

Martin, M. M., & Rubin, R. B. (1995). A new measure of cognitive flexibility. *Psychological Reports, 76*(2), 623–626. https://doi.org/10.2466/pr0.1995.76.2.623

May, T. (2000). Elements of Success in Environmental Education Through Practitioner Eyes. *The Journal of Environmental Education*, 31, 11–4. https://doi.org/10.1080/00958960009598639.

McConnell, B. (2001). Teacher education in environmental education – does it work? *Australian Journal of Environmental Education, 17,* 35–39. https://doi.org/10.1017/s081406260000241x

Meier, D., & Sisk-Hilton, S. (2017). Nature and Environmental Education in Early Childhood. *The New Educator*, *13*(3), 191–194. https://doi.org/10.1080/1547688X.2017.1354646

Menon, M. E., & Christou, C. (2002). Perceptions of future and current teachers on the organization of elementary schools: a dissonance approach to investigating job satisfaction. *Educational Research*, *44*(1), 97–110. https://doi.org/10.1080/00131880110107397

Miles, R., Harrison, L., & Cutter-Mackenzie, A. (2006). Teacher Education: A Diluted Environmental Education Experience. Australian Journal of Environmental Education, 22(1), 49–59. doi:10.1017/S0814062600001658

Monroe, M. C., Andrews, E., & Biedenweg, K. (2008). A framework for environmental education strategies. *Applied Environmental Education and Communication, 6*(3-4), 205–216. https://doi.org/10.1080/15330150801944416.

Moseley, C., & Utley, J. (2008). An exploratory study of preservice teachers' beliefs about the environment. *The Journal of Environmental Education*, *39*(4), 15–30. https://doi.org/10.3200/joee.39.4.15-30

Moseley, C., Huss, J., & Utley, J. (2010). Assessing K–12 teachers' personal environmental education teaching efficacy and outcome expectancy. *Applied Environmental Education & Communication*, *9*(1), 5–17. https://doi.org/10.1080/15330150903566398

Naveh-Benjamin, M., McKeachie, W. J., Lin, Y.-G., & Neely, R. K. (1998). Assessment and modification of flexibility of cognitive structures created in university courses. *Contemporary Educational Psychology*, *23*(3), 209–232. https://doi.org/10.1006/ceps.1997.0957

Nazarenko, A. V., & Kolesnik, A. I. (2018). Raising environmental awareness of future teachers. *International Journal of Instruction*, *11*(3), 63–76. https://doi.org/10.12973/iji.2018.1135a

Nousheen, A., Yousuf Zai, S. A., Waseem, M., & Khan, S. A. (2020). Education for Sustainable Development (ESD): Effects of sustainability education on pre-service teachers' attitude towards Sustainable Development (SD). *Journal of Cleaner Production*, *250*, 119537. https://doi.org/10.1016/j.jclepro.2019.119537

Oh, S. (2011). Preservice teachers' sense of efficacy and its sources. *Psychology*, *02*(03), 235–240. https://doi.org/10.4236/psych.2011.23037

Oosterhoff, A.M.G., Oenema-Mostert, I.C.E., & Minnaert, A.E.M.G. (2020). Aiming for agency. The effects of teacher education on the development of the expertise of early childhood teachers. Teaching and Teacher Education, 96,103176. Doi: 10.1016/j.tate.2020.103176

Orakcı, E. (2021). Exploring the relationships between cognitive flexibility, learner autonomy, and reflective thinking. *Thinking Skills and Creativity*, p. *41*, 100838. https://doi.org/10.1016/j.tsc.2021.100838

Özgür, H. & Çuhadar, C. (2015). Investigation The Relationship Between Self-Efficacy Perceptions on Computer Programming and Cognitive Flexibility Levels Of Information Technology Pre-Service Teachers. *9th International Computer & Instructional Technologies Symposium Full Paper Proceedings* (pp. 70-77).

Özkan, B., & Tuğluk, M. N. (2020). An analysis of the 2013 early childhood education curriculum in terms of environmental education. Turkish Studies - Education, 15(3), 1991-1996. https://doi.org/10.29228/TurkishStudies.41743

Öztürk, G., Karamete, A., & Çetin, G. (2020). The relationship between pre-service teachers' cognitive flexibility levels and techno-pedagogical education competencies. International Journal of Contemporary Educational Research, 7(1), 40-53. https://doi.org/10.33200/ijcer.623668

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, *66*(4), 543. https://doi.org/10.2307/1170653

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, *62*(3), 307. https://doi.org/10.2307/1170741

Pallant, Julie. (2020). *SPSS Survival Manual: a step-by-step guide to data analysis using IBM SPSS* (Ed. 7th). Sydney: George Allen & Unwin.

Parra, G., Hansmann, R., Hadjichambis, A. C., Goldman, D., Paraskeva-Hadjichambi, D., Sund, P., Sund, L., Gericke, N., & Conti, D. (2020). Education for Environmental Citizenship and Education for Sustainability. Environmental Discourses in Science Education, 149–160. https://doi.org/10.1007/978-3-030-20249-1_10

Pennequin, V. (2022). Metacognition and flexibility: What are the theoretical links and what links have been observed? *Cognitive Flexibility*, 53–76. https://doi.org/10.1002/9781119902737.ch3

Pepe, Ş. (2021). The relationship between academic self-efficacy and cognitive flexibility: Physical Education and Sports teacher candidates. *Propósitos y Representaciones, 9*(SPE3). https://doi.org/10.20511/pyr2021.v9nspe3.1159

Phajane, M. H. (2014). Exploring the roles and responsibilities of early childhood teachers. *Mediterranean Journal of Social Sciences*. https://doi.org/10.5901/mjss.2014.v5n10p420

Plevyak, & Mayfield. (2010). Environmental Education Within Early Childhood. In Bodzin, Klein, & Weaver (Eds.), The Inclusion of Environmental Education in Science Teacher Education (1st ed., pp. 52–64). Springer Science+Business Media. https://doi.org/10.1007/978-90-481-9222-9

Ramesh, B., Gandipilli, G., & Kuramana, S. (2023). Elements of environmental education, curriculum and teacher's perspective: A Review. *Integrated Journal for Research in Arts and Humanities*, *3*(6), 9–17. https://doi.org/10.55544/ijrah.3.6.2

Richardson, G. M., Byrne, L. L., & Liang, L. L. (2017). Making learning visible: Developing preservice teachers' pedagogical content knowledge and teaching efficacy beliefs in environmental education. *Applied Environmental Education & Communication*, *17*(1), 41–56. https://doi.org/10.1080/1533015x.2017.1348274

Richardson, G. M., Liang, L. L., & Wake, D. G. (2014). Examining the durability of environmental education self-efficacy beliefs in preservice teaching. *Applied Environmental Education & Communication*, *13*(1), 38–47. https://doi.org/10.1080/1533015x.2014.913963

Richardson, G., Liang, L., & Wake, D. (2014). Examining the Durability of Environmental Education Self-Efficacy Beliefs in Preservice Teaching. Applied Environmental Education & Communication, 13, 38 - 47. https://doi.org/10.1080/1533015X.2014.913963

Richardson, V. (2003). Preservice teachers' beliefs. In Raths, J. and McAninch, A. C. (eds.) Teacher Beliefs and Classroom Performance: The Impact of Teacher Education, pp 1–22. Greenwich, CT: Information Age Publishing.

Rimm-Kauffman, S. E., Storm, M. D., Sawyer, B. E., Pianta, R. C., & LaParo, K. M. (2006). The teacher belief q-sort: A measure of teacher's priorities in relation to disciplinary practices, teaching practices, and beliefs about children. Journal of School Psychology, pp. 44, 141–165.

Robertson, C. L., & Krugly□Smolska, E. (1997). Gaps between advocated practices and teaching realities in environmental education. *Environmental Education Research*, *3*(3), 311–326. https://doi.org/10.1080/1350462970030305

Robottom, I. M. (1987). Two paradigms of Professional Development in Environmental Education. *The Environmentalist*, *7*(4), 291–298. https://doi.org/10.1007/bf02240218

Roehrig, G. H., Kruse, R. A., & Kern, A. (2007). Teacher and school characteristics and their influence on curriculum implementation. Journal of Research in Science Teaching, 44(7), 883–907.

Rokeach, M. (1968). *Beliefs, attitudes, and values: A theory of organization and change.* San Francisco: Jossey-Bass.

Rooney, T., & Blaise, M. (2022). Young Children and Environmental Education. *Rethinking Environmental Education in a Climate Change Era*, 15–30. https://doi.org/10.4324/9781003150411-3

Şahin, E. (2024). *Examining The Predictive Effects of Teachers' Cognitive Flexibility, Emotional Regulation Skills and Professional Burnout On Their Psychological Well-Being*(861920) [Master's thesis, Istanbul Topkapı University].

Saputra, B., Etin Solihatin, & Suyitno Muslim. (2022). Cognitive flexibility abilities in learning: A systematic review of the literature. *Asian Journal of Educational Technology*, *2*(2), 54–58. https://doi.org/10.53402/ajet.v2i2.373

Sauve, L. (2005). Currents in environmental education: Mapping a complex and evolving pedagogical field. Canadian Journal of Environmental Education, 10, Spring, pp. 11–37.

Savchuk, B., Kondur, O., Rozlutska, G., Kohanovska, O., Matishak, M., & Bilavych, H. (2020). Formation of cognitive flexibility as a basic competence of the future teachers' multicultural personality. *Space and Culture, India*, *8*(3), 48–57. https://doi.org/10.20896/saci.vi0.1016

Scheibling□Sève, C., Pasquinelli, E., & Sander, E. (2022). Critical thinking and flexibility. *Cognitive Flexibility*, 77–112. https://doi.org/10.1002/9781119902737.ch4

Schommer Aikins, M. (2017). Web of concepts critical to today's world epistemological beliefs cognitive flexibility and balance. Psychology and Behavioral Science International Journal, 7(5). https://doi.org/10.19080/pbsij.2017.07.555724

Schultz, P. W., Shriver, C., Tabanico, J. J., & Khazian, A. M. (2004). Implicit connections with nature. *Journal of Environmental Psychology*, *24*(1), 31–42. https://doi.org/10.1016/s0272-4944(03)00022-7

Scott, J., & Sulsberger, M. J. (2019). Exploring the contributions of an immersive, Environmental Education Workshop on pre-service teachers' Environmental Education Preparedness. *Sustainability*, *11*(22), 6505. https://doi.org/10.3390/su11226505

Shimogori, Y. (2013). Impact of biculturalism on self-efficacy and cognitive flexibility of Japanese adults. The Claremont Graduate University.

Shuman, D. K., & Ham, S. H. (1997). Toward a theory of commitment to environmental education teaching. *The Journal of Environmental Education*, *28*(2), 25–32. https://doi.org/10.1080/00958964.1997.9942820

Singh, M. (2022). Assessing Elementary Preservice Teachers' Knowledge, Awareness,Attitude, and Beliefs Toward Environmental Education. *National Social Science Journal*, *59*(1), 42–58. https://doi.org/10.1080/0047231x.2022.12290560

Spiro, R. J., Collins, B. P., Thota, J. J., & Feltovich, P. J. (2003). Cognitive Flexibility Theory: Hypermedia for Complex Learning, Adaptive Knowledge Application, and Experience Acceleration. *Educational Technology*, *43*(5), 5–10. http://www.jstor.org/stable/44429454

Spiro, R. J., Feltovich, P. J., Coulson, R. L., & Anderson, D. K. (1988). Multiple analogies for complex concepts: antidotes for analogy-induced misconception in advanced knowledge acquisition. *Similarity and Analogical Reasoning*, pp. 498–531. https://doi.org/10.1017/cbo9780511529863.023

Spiro, R. J., Vispoel, W., Schmitz, J., Samarapungavan, A., & Boerger, A. (1987b). Knowledge acquisition for application: Cognitive flexibility and transfer in complex content domains. In B. C. Britton (Ed.), *Executive control processes.* Hillsdale, N.J. Erlbaum.

Stanišić, J., & Maksić, S. (2014). Environmental education in Serbian primary schools: Challenges and changes in curriculum, pedagogy, and teacher

training. *The Journal of Environmental Education*, *45*(2), 118–131. https://doi.org/10.1080/00958964.2013.829019

Thompson, B. (2004). Exploratory and Confirmatory Factor Analysis: Understanding Concepts and Applications. American Psychological Association.

Tikhonova, E., & Rezepova, N. (2017). Academic Discourse and its Implications for Higher Education: Students' Cognitive Flexibility Development and its Backward Input in Academic Discourse Development. *Rural Environment, Education, Personality* , 197–205. https://doi.org/2255-808X

Tomas, L., Girgenti, S., & Jackson, C. (2015). Pre-service teachers' attitudes toward education for sustainability and its relevance to their learning: Implications for pedagogical practice. *Environmental Education Research*, *23*(3), 324–347. https://doi.org/10.1080/13504622.2015.1109065

Torquati, J., Cutler, K., Gilkerson, D., & Sarver, S. (2013). Early Childhood Educators' Perceptions of Nature, Science, and Environmental Education. Early Education & Development, 24(5), 721–743. https://doi.org/10.1080/10409289.2012.725383

Torquati, J., Leeper-Miller, J., Hamel, E., Hong, S. Y., Sarver, S., & Rupiper, M. (2017). "I Have a Hippopotamus!": Preparing Effective Early Childhood Environmental Educators. *The New Educator*, *13*(3), 207–233. https://doi.org/10.1080/1547688X.2017.1331095

Tran Ho, U., Lepage, B. A., & Fang, W.-T. (2022). Environmental education in pre-school teacher training programs in Vietnam: Situations and challenges. *Journal of Early Childhood Teacher Education*, *44*(4), 703–722. https://doi.org/10.1080/10901027.2022.2136552

Trauth-Nare, A. (2015). Influence of an intensive, field-based Life Science Course on preservice teachers' self-efficacy for environmental science teaching. *Journal of Science Teacher Education*, *26*(5), 497–519. https://doi.org/10.1007/s10972-015-9434-3

Tuchman, E., & Isaacs, J. (2011). The influence of formal and informal formative pre- service experiences on teacher self- efficacy. Educational Psychology, 31, 413 - 433. https://doi.org/10.1080/01443410.2011.560656.

UNESCO-UNEP. (1976). The Belgrade Charter: A global framework for environmental education. UNESCO-UNEP Environmental Education Newsletter,1(1), 1–2.

UNESCO. (1978). *Intergovernmental conference on environmental education: Final report*. Paris, France: Author.

Üzümcü, B., & Müezzin, E. E. (2018). Investigation of the Level of Cognitive Flexibility and Job Satisfaction of Teachers. *Sakarya University Journal of Education*, *8*(1), 8–25. https://doi.org/10.19126/suje.325679

Valcke, M., Sang, G., Rots, I., & Hermans, R. (2010). *Taking Prospective Teachers' Beliefs into Account in Teacher Education. International Encyclopedia of Education, 622–628.* doi:10.1016/b978-0-08-044894-7.00668-0

Wang, J., Murad, M., Li, C., Gill, S., & Ashraf, S. (2021). Linking cognitive flexibility to entrepreneurial alertness and entrepreneurial intention among medical students with the moderating role of entrepreneurial self-efficacy: A second-order moderated mediation model. PLoS ONE, 16. https://doi.org/10.1371/journal.pone.0256420.

Whitacre, I., & Rumsey, C. (2018). Documenting the process of a prospective elementary teacher's flexibility development: Scaffolded strategy ranges and sociomathematical norms for mental computation. *Cognition and Instruction*, *36*(4), 330–360. https://doi.org/10.1080/07370008.2018.1491580

Yavetz, B., Goldman, D., & Pe'er, S. (2014). How do preservice teachers perceive 'environment' and its relevance to their area of teaching? *Environmental Education Research*, *20*(3), 354–371. https://doi.org/10.1080/13504622.2013.803038

Yelpaze, I., Yakar, L. (2019). Examining life satisfaction and cognitive flexibility of university students. Turkish Psychological Counseling and Guidance Journal, 9(54).

Zelezny, L. C., Chua, P., & Aldrich, C. (2000). New ways of thinking about environmentalism: Elaborating on gender differences in environmentalism. *Journal of Social Issues*, *56*(3), 443–457. https://doi.org/10.1111/0022-4537.00177

Zheng, W., Akaliyski, P., Ma, C., & Xu, Y. (2024). Cognitive flexibility and academic performance: Individual and cross-national patterns among adolescents in 57 countries. *Personality and Individual Differences*, *217*, 112455. https://doi.org/10.1016/j.paid.2023.112455

APPENDICES

A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

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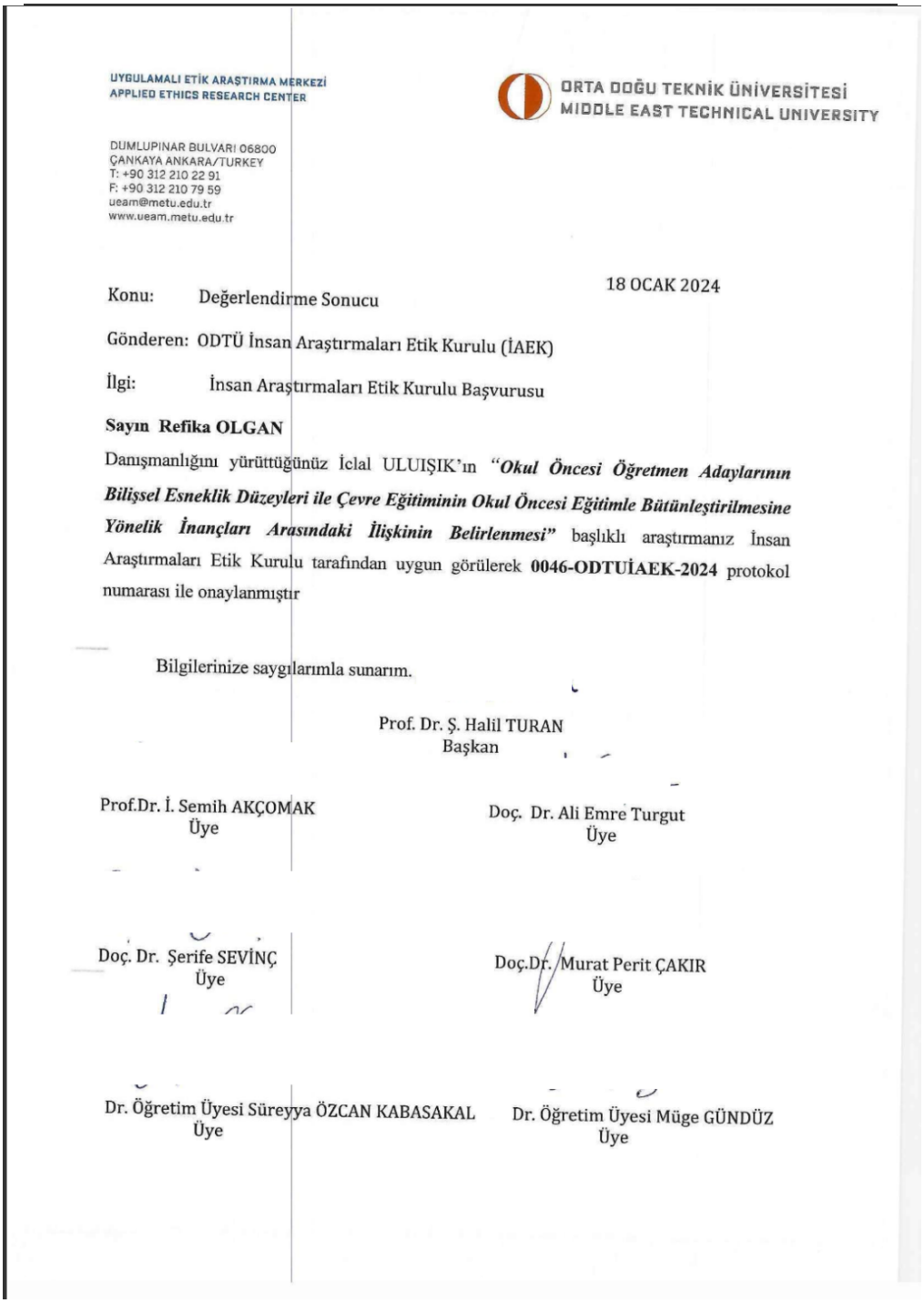

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MIDDLE EAST TECHNICAL UNIVERSITY

18 OCAK 2024

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Refika OLGAN

Danışmanlığını yürüttüğünüz İclal ULUIŞIK'ın ***"Okul Öncesi Öğretmen Adaylarının Bilişsel Esneklik Düzeyleri ile Çevre Eğitiminin Okul Öncesi Eğitimle Bütünleştirilmesine Yönelik İnançları Arasındaki İlişkinin Belirlenmesi"*** başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek **0046-ODTUİAEK-2024** protokol numarası ile onaylanmıştır

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN
Başkan

Prof.Dr. İ. Semih AKÇOMAK
Üye

Doç. Dr. Ali Emre Turgut
Üye

Doç. Dr. Şerife SEVİNÇ
Üye

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Dr. Öğretim Üyesi Süreyya ÖZCAN KABASAKAL
Üye

Dr. Öğretim Üyesi Müge GÜNDÜZ
Üye

B. DATA COLLECTION TOOLS

Demographic Information Form

Sevgili Öğretmen Adayları,
Bu çalışma, okul öncesi öğretmen adaylarının bilişsel esneklik düzeyleri ile çevre eğitimi ile okul öncesi eğitimi bütünleştirme inançları arasındaki ilişkiyi belirlemeye yönelik bir araştırmadır. Bilişsel esneklik kişinin aniden ortaya çıkan beklenmedik durumlara bilişsel olarak uyum sağlama becerisi olarak tanımlanabilir. Bu bağlamda, okul öncesi dönemde çevre eğitimi verme ile ilgili ani gelişebilecek koşullara uyum sağlama ve yeni çözüm yolları üretme becerisi çocuklara rol model olacak öğretmenler için önemlidir. Ölçeklerde yer alan soruları içtenlikle doldurmanız, güvenilir sonuçlara ulaşmamızı sağlayacaktır. Sonuçlar sadece araştırmacılar tarafından bilimsel amaçlı kullanılacak ve üçüncü şahıslarla paylaşılmayacaktır. Lütfen tüm soruları eksiksiz cevaplamaya ve her bir soru için tek bir seçeneği işaretlemeye özen gösteriniz. Çalışmaya katılımınız için teşekkür ederiz.

Arş. Gör. İclal ULUIŞIK
Afyon Kocatepe Üniversitesi, Eğitim Fakültesi

Prof. Dr. Refika OLGAN
ODTÜ, Eğitim Fakültesi

A. KİŞİSEL BİLGİ FORMU

1. Cinsiyetiniz: Kadın…… Erkek ……
2. Yaşınız: ……
3. Sınıfınız: 1. Sınıf ..... 2. Sınıf ..... 3.Sınıf ..... 4.Sınıf **.....**
4. Çevre Eğitimi ile ilgili ders aldınız mı? Evet **.....** Hayır **.....**
Cevabınız evet ise, hangi dersi aldınız?
5. Çevre Eğitimi ile ilgili bir eğitime katıldınız mı? Evet..... Hayır.....
Cevabınız evet ise, eğitimin ismi nedir?
6. Öğretmenlik staj/ deneyiminiz var mı? Evet..... Hayır.....
Cevabınız evet ise, kaç yaş grubu ile çalıştınız? **36-48 Ay**…… **48-66 Ay**…… **66-72 Ay**……
7. Kişisel gelişiminizi desteklemek amacıyla herhangi bir eğitim/çalıştay/kursa katıldınız mı? Evet..... Hayır.....
Cevabınız evet ise, eğitim/çalıştay/kursun ismi nedir?

C. TURKISH SUMMARY / TÜRKÇE ÖZET

GİRİŞ

Sauvé'ye (2005) göre çevre eğitiminin temel hedefleri, toplumun çevre sorunları hakkındaki farkındalığını ve bilgisini artırmak, ve anlamlı kararlar almak ve sorumlu eylemlerde bulunmak için gerekli becerileri sağlamaktır. Çevre eğitimi, bireylere eleştirel düşünmeyi, ve problem çözme ve karar verme becerilerini geliştirmeyi öğretmelidir. Çevre eğitimi, resmi ve gayri resmi yollarla yaşam boyunca görülebilen bir geçerliliğe sahiptir (Leal Filho vd., 2018; UNESCO, 1978). Çevre eğitiminin örgün eğitime dahil edilmesi sürecinde erken çocukluk döneminin başlamak için en uygun dönem olduğu belirtilmiştir. Çocukların aktif öğrenme sürecindeki erken deneyimleri, çocukların bütünsel gelişim alanlarındaki öğrenmelerini desteklemek ve bu öğrenmenin kalıcılığını sağlamak için önemlidir (Green, 2015; Rooney & Blaise, 2022; Torquati vd., 2017). Çevre eğitiminin temel amaçları göz önüne alındığında, erken çocukluk döneminde çevre eğitiminin verilmesi çevreyle güçlü bağları olan bireyler yetiştirmek ve gelecek için önemli adımlar atmak için önemlidir (Davis, 1998).

Etkili çevre eğitimi, çevreyi doğrudan veya dolaylı olarak koruyan ve korumayı amaçlayan somut tutumlar, değerler, bilgi ve beceriler geliştirmelidir. Çevre eğitiminin etkinliği, eğitimi sağlayan profesyonelin yeterliliği ve tutumlarından da etkilenir (Ardoin & Bowers, 2020; Nousheen vd., 2020). Başarılı çevre eğitimi, öğretim koşulları, öğretmen yeterlilikleri ve öğretim uygulamalarından etkilenir (May, 2000). Öğretmenlerin çevre eğitimine ilişkin davranış, inanç ve tutumları, öğretim sürecini anlamak ve geliştirmek için kritik öneme sahiptir. Ayrıca, öğretmenlerin inançları ve tutumları çevre eğitimi sağlama konusundaki yeterliliklerini de etkiler ve davranışa dönüşmesinde belirleyici bir rol üstlenir (Richardson, 1996; Roehrig vd., 2007; Moseley vd., 2009; Nousheen vd., 2020).

Öğretmenlerin eğitimsel yeterlilik inançları, bilişsel durumları ve bilgi düzeyleriyle ilişkili olarak düşünülebilir. Öğretmenler, birden fazla çözüme ve çeşitli bilgi

kaynaklarına inanıyorlarsa, çözümler veya bakış açıları ararken çeşitli seçenekler aramaya motive olabilirler. Bilişsel esneklik kavramı, farklı çözümler bulmak ve öğretmenlik mesleği için gerekli uyarlamaları yapmakla ilgilidir (Dyment et al., 2013; Richardson et al., 2018; Valcke, 2010). Bilişsel esneklik, bireyin bir sorunu çözmek için belirli bir yola odaklanmaktan ziyade farklı çözümlerin farkında olma yeteneğini ifade eder. Bu nedenle, bilişsel esnekliği yüksek bir birey aynı zamanda alışılmadık durumlara uyum sağlama ve bilişlerini değiştirme konusunda da yüksek bir yeteneğe sahiptir (Martin & Anderson, 1998). Ek olarak, bilişsel esneklik insanlara çeşitli yeterlilikler verir. Bunlardan bazıları eleştirel düşünme, problem çözme, benzetme yapma, stresle başa çıkma, yaratıcı ve farklı düşünmedir (Clement, 2022; Cheng et al., 2016; Çuhadaroğlu, 2013). Bilişsel esneklik, öğretmenler için sahip olunması gereken bir nitelik/beceri veya farklı eğitim becerilerini etkileyen ve şekillendiren bir bilişsel faktör olarak oldukça önem arz etmektedir. Bilişsel esneklik, etkili ve kaliteli eğitim için öğretmenlerin ve öğretmen adaylarının edindiği niteliklerden biri olarak düşünülebilir.

Çalışmanın Önemi

İlgili literatür incelendiğinde erken çocukluk döneminde çevre ile etkileşimin çocuğun bütünsel gelişimi için önemli olduğu sonucuna varılmıştır (Ewert vd., 2005). Erken yıllarda çevre ile etkileşimin çocukların sosyal, bilişsel, fiziksel, duygusal ve dil gelişimini desteklediği görülmüştür. Dolayısıyla erken çocukluk yılları çevreye karşı olumlu tutum ve davranışlar geliştirmek için değerli dönemlerdir. Çalışmalar erken deneyimlerin çocukların çevreye olan ilgi ve duyarlılığını etkili bir şekilde artırdığını göstermektedir (Barrable, 2018; Ernst, 2014; Yates vd., 2019). Gelecek nesiller üzerinde olumlu bir etki yaratmak için erken yaşlardan itibaren kaliteli çevre eğitimi ve bilgili bir öğretmenle çalışmak çok önemlidir. Bu bağlamda öğretmenlerin, çocuğun gelişimsel ihtiyaçlarını, ilgi alanlarını ve yeteneklerini dikkate alan bir şekilde yeterli çevre okuryazarlığı sağlamada büyük bir sorumluluğu ve hayati bir rolü vardır (Richardson vd., 2018; Türkoğlu, 2019).

Öğretmenlerin çevre eğitiminde üstlendikleri sorumluluklar ve roller literatürde açıkça belirtilmiştir. Öğretmenlerin bu sorumluluklarını etkili bir şekilde yerine

getirebilmeleri için kişisel olarak olumlu çevresel tutum ve davranışlar geliştirmiş olmaları beklenmektedir (Hryn, 2023; Liulenko, 2023). Öte yandan yapılan çalışmalar, öğretmenlerin mesleğe başlamadan önceki öğrencilik yıllarında edindikleri deneyimlerin bu tutumların oluşumunda son derece etkili olduğunu göstermiştir (McConnell, 2001; Ramesh vd., 2023; Torquati vd., 2017). Benzer şekilde, araştırmacılar, öğretmen adaylarının doğayla ilişki içinde olmanın ve doğayı öğretim süreçlerine dahil etmenin önemine ilişkin inanç ve farkındalık düzeylerinin, kaliteli bir eğitim ortamı yaratmada belirleyici olabileceğini ileri sürmüşlerdir.

Öğretmenlerin mesleki rolleri ve sorumlukları, öğrencilerle tanıştıkları andan itibaren başlar ve etkili bir öğretim süreci oluşturma, öğrencilere motivasyon sağlama, okul-aile iş birliği kurma ve okul etkinliklerinde karar verici olma gibi sorumlulukları içerir. Öğretmenlerin tüm bu alanlarda yetkin olabilmeleri için bilişsel, sosyal ve duygusal becerilere sahip olmaları beklenir (Mandal, 2018; Bardach & Klassen, 2019). Sınıf ortamının dinamik yapısı, öğretmenlerin okulda her öğrencinin kendine özgü ihtiyaçlarını karşılamak için çeşitli görevler arasında uyum sağlamalarını ve geçiş yapmalarını gerektirir; bu da bilişsel esneklik gerektirir (Kaur, 2024). Literatürde bilişsel esnekliğin eğitim ortamlarındaki rolüne ilişkin çalışmalar incelendiğinde, bilişsel esneklik ile öz yeterlik inancı arasındaki pozitif ilişki ön plana çıkmaktadır (Stein vd., 2018; Houser vd., 2018). Ancak, hizmet öncesi öğretmen inançları ile bilişsel esneklik düzeyleri arasındaki ilişkiyi doğrudan ortaya koyan bir çalışma bulunmamaktadır. Benzer şekilde, hizmet öncesi öğretmen inançlarıyla ilişkili olabilecek faktörler, erken çocukluk eğitimine çevre eğitimini entegre etme konusunda henüz alandaki yeterli sayıda çalışmada yer almamaktadır. Bu çalışmanın önemi, literatürdeki kanıtlarla ön plana çıkmaktadır.

Çalışmanın Amacı

Bu çalışma, okul öncesi eğitimi öğretmen adaylarının çevre eğitiminin erken çocukluk eğitimine entegrasyonuna ilişkin bilişsel esneklik düzeylerini ve inançlarını incelemektedir. Ayrıca, öğretmen adaylarının bilişsel esneklik düzeylerinin ve çevre eğitiminin erken çocukluk eğitimine entegrasyonuna ilişkin inançlarının cinsiyet, çevre eğitimi ile ilgili ders alma, staj deneyimi ve kişisel gelişim ile ilgili deneyimler

gibi değişkenlerden nasıl etkilendiğini araştırmayı amaçlamaktadır. Çalışmada ayrıca öğretmen adaylarının çevre eğitimini erken çocukluk eğitimine entegre etmeye yönelik inançları ile bilişsel esneklik düzeyleri arasındaki ilişki de incelenmiştir. Literatürde öğretmenlerin inançlarının lisans yıllarındaki deneyimleriyle geliştiğine dair bulguların yanı sıra kişilerin bilişsel esneklik düzeylerinin problem çözme, karar verme ve eleştirel düşünme gibi becerileri sergileme yeteneklerini ve öz yeterliklerini etkilediğine dair bulgular göz önünde tutulduğunda bu çalışmanın önemi ortaya çıkmaktadır. Bu nedenle aşağıdaki araştırma soruları oluşturulmuştur:

1. Okul öncesi öğretmen adaylarının bilişsel esnekliklerinin ve çevre eğitimini erken çocukluk eğitimine entegre etmeye yönelik inançlarının genel örüntüleri nelerdir?

1.1 Okul öncesi öğretmen adaylarının bilişsel esneklikleri ve çevre eğitimini erken çocukluk eğitimine entegre etmeye yönelik inançları cinsiyet, sınıf düzeyi, çevre eğitimi ile ilgili ders alma, staj deneyimleri ve kişisel gelişim eğitimleri/faaliyetleri gibi değişkenlere göre farklılık göstermekte midir?

2. Bilişsel esneklik düzeyleri öğretmen adaylarının çevre eğitimini erken çocukluk eğitimine entegre etmeye yönelik inançlarını nasıl etkilemektedir?

YÖNTEM

Evren ve Örneklem

Bu araştırmanın hedef evrenini Türkiye'deki farklı üniversitelerin okul öncesi eğitimi lisans programlarına kayıtlı üniversite öğrencileri oluşturmaktadır. Ancak araştırmanın ulaşılabilir evrenini Afyonkarahisar ilinde öğrenim gören öğretmen adayları oluşturmaktadır. Bu öğretmen adayları, farklı seçmeli derslen alan ve farklı sınıf düzeylerinde eğitim gören kişilerden oluşmaktadır. Ayrıca, farklı geçmiş bilgileri ve deneyimleri vardır. Bu durum onların çalışmanın bir parçası olması için yeterli nitelikte olduklarını gösterir. Bir çalışmanın genelleme yapmak isteyeceği evren hedef evrendir. Ancak araştırmacının genelleme yapabileceği gruba ulaşılabilir

evren denir. İlki çalışma için ideal plan olsa da ikincisi ulaşılabilir ve gerçekçi seçenekler oluşturur (Fraenkel vd., 2012).

Araştırma Yöntemi

Bu çalışmada, nicel araştırma yöntemlerinden açıklayıcı korelasyonel desen kullanılmıştır. Korelasyonel desenlerde, iki veya daha fazla değişken arasındaki ilişkiler, onları etkilemeye çalışmadan incelenir (Fraenkel vd., 2012). Bu çalışmada, öğretmen adaylarının bilişsel esneklik düzeyleri ve çevre eğitimini okul öncesi eğitimle bütünleştirmeye yönelik inançları değişken olarak yer almaktadır.

Veri Toplama Araçları

Mevcut çalışmada hedeflenen araştırma sorularının cevaplanması için, üç farklı ölçeğe yer verilmiştir. İlk olarak, öğretmen adaylarının demografik bilgilerine ulaşabilmek ve elde edilen bulguları bu bilgiler ışığında değerlendirmek için bir demografik bilgi formu hazırlanmıştır. Bu formda, öğretmen adaylarının yaş, sınıf düzeyi, staj deneyimleri, çevre eğitimi ile ilgili ders alma durumları, kişisel gelişim eğitimlerine katılma durumları gibi değişkenlere yönelik sorulara yer verilmiştir. Öğretmen adaylarının bu soruları içtenlikle cevaplamaları beklenmiştir.

İkinci olarak, çalışmanın değişkenlerinden biri olan öğretmen adaylarının bilişsel esneklik düzeylerini belirlemek amacıyla Martin ve Rubin tarafından 1995 yılında geliştirilmiş ve Altunkol (2011) tarafından Türkçe'ye uyarlaması yapılmış olan Bilişsel Esneklik Ölçeği kullanılmıştır. Bilişsel Esneklik Ölçeği 12 maddeden oluşan 6'lı Likert tipi puanlama sistemine sahip bir ölçektir. Ölçeğin cevaplanması ile alınabilecek en düşük puan 12, en yüksek puan 72 olarak belirlenmiştir. Bu puanların standart sapmaları ile ilgili hesaplamalar yapılarak öğretmen adaylarının bilişsel esneklik düzeyleri belirlenmektedir. Ölçeğin orijinal formatı hazırlanırken üç faktörlü (farkındalık-isteklilik-öz yeterlilik) olmasına karar verilmiş ancak, uygulama sırasında üç faktörün birbirinden net şekilde birbirinden ayrılamaması gerekçesiyle tek faktörlü olarak işleme alınmıştır. Örneğin, bir öğrencinin durumun farkında olup isteksizlik mi gösterdiği yoksa öz yeterliliğin mi düşük olduğu tek bir yöntemle

anlaşılmamaktadır. Ölçek, literatürde farklı çalışmalarda kullanılmış ve bu çalışmaların hepsinde tek faktörlü bir ölçek olarak değerlendirilmiştir. Bu sebeple, mevcut çalışmada da faktörleri analizlere dahil edilmemiştir.

Son olarak, çalışmada yer alan değişkenlerden, öğretmen adaylarının çevre eğitimini okul öncesi eğitimle bütünleştirme inançlarını ölçmek adına Güner, Olgan ve Çakıroğlu (2017) tarafından geliştirilmiş Öğretmen Adaylarının Çevre Eğitimini Okul Öncesi Eğitimle Bütünleştirme İnançları Ölçeği uygulanmıştır. Bu ölçek 5'li likert tipi puanlama sistemine sahip 18 maddelik 3 faktörlü bir ölçektir. Ölçeğin faktörlerini "gelişme-öğrenme, çevresel sonuçlar, öğrenme ortamı" oluşturmaktadır. Mevcut çalışmada bu faktörler detaylı şekilde analize dahil edilmiştir. Ölçeğin uygulaması sırasında bir katılımcını alabileceği en yükse puan 90, en düşük puan 18 olarak belirlenmiştir.

Veri Toplama Süreci

Araştırma için veri toplama süreci, Orta Doğu Teknik Üniversitesi İnsan Denekleri Etik Kurulu'ndan (0046-ODTUİAEK-2024) ve ardından katılımcıların devam ettiği üniversitenin erken çocukluk eğitimi programından gerekli izinlerin alınmasıyla başlamıştır. Veriler Afyon Kocatepe Üniversitesi öğrencisi olan 200 öğretmen adayından toplanmıştır. Programa kayıtlı öğrenci sayısı resmî belgelerde 314 olarak görünse de aktif olarak eğitimine devam eden öğrenci sayısı 249'dur. Bu öğrencilerden 49'u ya formları eksik doldurmuş ya da çalışmaya katılmaya gönüllü olmamıştır. Veri toplama sürecinde araştırmacı, öğretmen adaylarının sınıflarını müsait oldukları zamanlarda ziyaret etmiş ve yaklaşık 15 dakika süren ölçekleri cevaplama süreci için ilgili ölçeklerin çıktıları öğrencilere dağıtılmıştır. Birinci, ikinci, üçüncü ve son sınıf öğrencilerinden veri toplama işlemi yaklaşık üç haftalık sürecin sonunda tamamlanmıştır. Veri toplama süreci 2023-2024 akademik yılının bahar döneminde gerçekleşmiştir.

Veri Analiz Süreci

Veri toplama sürecinin sonunda elde edilen veriler analiz edilmeden önce hata kontrolü yapılarak analize hazırlanmıştır. Bu aşamada katılımcıların küçük bir kısmı

ölçeklerde madde atlama gibi hatalar ile geçersiz verilere sebep olmuştur. Bu tarz hataların giderilmesi, eksik doldurulan ölçeklerin analizden çıkarılması gibi adımlardan sonra analiz gerçekleştirilmiştir. Verilerin analizinde IBM SPSS 29.0.2 programı kullanılmıştır. İlk olarak, tanımlayıcı analizler ile öğretmen adaylarının bilişsel esneklik düzeylerinin genel durumu ortaya çıkarılmıştır. Ayrıca, öğretmen adaylarının çevre eğitimini okul öncesi eğitimle bütünleştirmeye yönelik inançları da yine tanımlayıcı analizler ile açıklanmıştır. Ardından, öğretmen adaylarının bilişsel esneklik düzeylerinin ve çevre eğitimini okul öncesi eğitimle bütünleştirme inançlarının cinsiyet, sınıf düzeyi, çevre eğitimi dersi alma, staj deneyimi, kişisel gelişim eğitimine katılma gibi değişkenlere göre nasıl farklılık gösterdiğini ortaya çıkarmak için Bağımsız Örneklem T-Test ve ANOVA testleri uygulanmıştır. Son olarak, Pearson Korelasyon Katsayısı hesaplanarak, öğretmen adaylarının bilişsel esneklik düzeyleri ile çevre eğitimini okul öncesi eğitimle bütünleştirme inançlarının arasındaki ilişki meydana çıkarılmıştır.

Verilerin analiz aşamasında çalışmada kullanılan ölçeklerin güvenilirlik analizleri gerçekleştirilmiştir. Bilişsel esneklik ölçeğinin Cronbach Alfa katsayısı .81 olarak bulunmuştur. Benzer şekilde, Öğretmen adaylarının çevre eğitimini okul öncesi eğitimle bütünleştirilmesi inançları ölçeğinin de Cronbach Alfa katsayısı .94 olarak hesaplanmıştır. Bu değerler ışığında, ölçeklerin mevcut çalışma için yeterli düzeyleri güvenilirlik sunduğu anlaşılmıştır.

BULGULAR

Öncelikle tanımlayıcı istatistiksel bulgular elde edilmiştir. Bu bulgular ölçeklerin toplam değerleri ve ölçekleri oluşturan alt boyutlar için ayrı ayrı değerlendirilmiştir. Sonuç olarak katılımcıların çevre eğitimini erken çocukluk eğitimine entegre etmek için uygun bir öğrenme ortamı yaratmanın önemine ilişkin inançlarının, bu entegrasyonun çevresel çıktılar ve gelişimsel öğrenme üzerindeki etkisine ilişkin inançlarından daha güçlü olduğu bulunmuştur. Ayrıca, bulgulara göre öğretmen adaylarının bilişsel esneklik düzeylerinin ne yüksek ne de düşük olduğu anlaşılmıştır. Bu durum, öğretmen adaylarının davranışlarına karar verirken bilinçli kararlar aldıkları ve ortama/duruma uygun hareket etme konusunda ortalama düzeyde

esnekliğe sahip oldukları şeklinde yorumlanabilir. Ancak, kendilerine yeterli düzeyde güven duymadıkları ve bu yüzden bilişsel esneklik düzeylerinin çok yüksek olmadığı şeklinde yorumlanabilir.

Çalışmanın amaçlarından biri olan, aday öğretmenlerin bilişsel esneklik düzeylerinin cinsiyet, sınıf düzeyi, çevre eğitimi dersi alma durumu, staj deneyimi ve kişisel gelişim eğitimine katılma durumuna göre ne ölçüde farklılaştığını anlamak amacıyla bağımsız örneklem t-testleri ve tek yönlü ANOVA testi yapılmıştır. T-testi sonuçlarından elde edilen bulgulara göre, katılımcıların bilişsel esneklik düzeylerinin cinsiyet, çevre eğitimi dersi alma durumu ve staj deneyimine sahip olma durumu gibi değişkenlerden istatistiksel olarak anlamlı bir şekilde etkilenmediği anlaşılmıştır. Beklenmedik şekilde, kişilerin bilişsel esneklik düzeylerinin herhangi bir kişisel gelişim eğitimine katılmış olma durumlarından da etkilenmediği sonucuna ulaşılmıştır. Bulgular, aday öğretmenlerin çevre eğitimini okul öncesi eğitimle bütünleştirmeye yönelik inançlarının cinsiyet, staj deneyimi veya kişisel gelişim eğitiminden etkilenmediğini göstermektedir. Bulgular ayrıca katılımcıların çevre eğitimi dersi alıp almamasının istatistiksel olarak anlamlı bir sonuç sağlamadığını da ortaya koymuştur.

Bilişsel esnekliğin, öğretmen adaylarının çevre eğitimini erken çocukluk eğitimiyle bütünleştirme inançları üzerindeki etkisi incelenmiştir. Analiz sonuçlarına göre, katılımcıların bilişsel esneklik düzeyleri ile inançları arasında pozitif bir korelasyon bulunmuştur. Bulgular çalışmada kullanılan ölçeklerin faktörleri ve alt boyutları açısından değerlendirildiğinde, öğretmen adaylarının çevre eğitimini okul öncesi eğitimle bütünleştirme inanç ölçeğinde yer alan faktörlerin birbirleriyle anlamlı bir ilişki gösterdiği görülmüştür. Bu durumda, katılımcıların çevre eğitimini erken çocukluk eğitimine entegre etmenin çocukların gelişimine ve eğitimine ve çevresel çıktıların iyileştirilmesine katkıda bulunacağına inandıkları sonucuna varılabilir. Bu inançların bilişsel esneklik düzeyleriyle önemli bir ilişkiye sahip olması şu şekilde yorumlanabilir; hizmet öncesi öğretmenlerin bilişsel esneklik düzeyleri arttığında, karşılaşabilecekleri olağandışı durumlarla başa çıkma yetenekleri gelişecek ve çevre eğitimini erken çocukluk eğitimine entegre etme sürecinde ortaya çıkabilecek beklenmedik durumlarla başa çıkabileceklerine dair inançları artacaktır.

TARTIŞMA

Bu çalışmanın üç ana araştırma sorusu vardı. Bu sorulardan ilki, hizmet öncesi öğretmenlerin bilişsel esneklik düzeylerinin genel durumunu ve çevre eğitimini okul öncesi eğitimle bütünleştirme konusundaki inançlarını ortaya koymaktı. Bu soruya yanıt aramak için yapılan analizlerde öğretmen adaylarının bilişsel esneklik düzeyleri ortalama seviyede çıkmıştır. Bu bulguyu destekleyen literatür incelendiğinde, birçok çalışma aynı şekilde ortalama düzeyde bilişsel esnekliğe sahip öğretmen adayları olduğunu kanıtlamıştır (Körükçü,2020; Lange & Dewitte, 2019, Kazu& Pullu, 2023). Ayrıca, öğretmen adaylarının bilişsel esneklik düzeyleri arttıkça karşılaştıkları yeni ve farklı durumlara uyum sağlama süreçleri kolaylaşacağı için sınıf ortamlarında meydana gelebilecek sorunlara daha hızlı ve yaratıcı çözümler üretebilmeleri mümkündür (Grote vd., 2021; Kasirah vd.,2021). Ayrıca, yüksek bilişsel esneklik etkili problem çözme, bilinçli farkındalık, eleştirel düşünme, yaratıcı düşünme gibi becerileri de beraberinde getirdiği için öğretmen adaylarının yüksek bilişsel esnekliğe sahip olması önemlidir (Esen-Aygün,2018; Kaur,2024).

İkinci olarak, bu çalışma, hizmet öncesi erken çocukluk öğretmenlerinin çevre eğitimini okul öncesi eğitimle bütünleştirme konusundaki inançlarını ortaya çıkarmayı amaçlamıştır. Çalışmanın bulguları, öğretmen adaylarının inançlarının güçlü bir düzeyde olduğunu göstermiştir. Öğretmen adaylarının çevre eğitimini okul öncesi eğitimle bütünleştirme konusundaki inançları, onların bilgi, yeterlilik ve sorumluluklarının bir bütününü oluşturur. Öğretmenler bu bilgi, yetenek ve tutumlara sahip değilse, uygun bir çevre eğitimi yürütmek mümkün olmayacaktır (Plevyak vd, 2001). Literatürde öğretmen adaylarının çevre eğitimine yönelik inançlarını inceleyen çalışmalar, bu çalışmayla benzer doğrultuda sonuçlar bulmuşlardır. Örneğin bazı çalışmalarda, öğretmen adaylarının çevre eğitimine yönelik öz yeterlik inançları yüksek bulunmuştur (Effeney & Davis, 2013; Lamanauskas & Pekkeviciene, 2023; Tanık-Önal, 2020).

Öğretmen adaylarının bilişsel esneklik düzeylerinin cinsiyet, sınıf düzeyi, çevre eğitimi dersine katılma, staj deneyimine sahip olma ve kişisel gelişim eğitimlerine katılma gibi değişkenlere göre farklılaşıp farklılaşmadığını inceleyen bu çalışmanın

sonuçları ile literatürde yer alan bulgular bazı noktalarda aynı çizgide ilerlememektedir. Cinsiyetin ve sınıf düzeylerinin bilişsel esnekliğe olan etkisi birçok çalışmada araştırılmıştır. Ancak, bazı çalışmalarda kadın katılımcıların bilişsel esneklik düzeyleri erkek katılımcılara göre daha yüksek bulunmuştur. (Kazu & Pullu, 2023; Pepe, 2021). Aksini iddia eden çalışmalar da literatürde yer almaktadır (Algrahaibeh, 2020; Altunkol, 2011). Benzer şekilde, öğretmen adaylarının sınıf düzeyinin bilişsel esnekliği ne ölçüde farklılaştırdığı incelenirken, alanda bazı çalışmalar sınıf düzeyi artıkça bilişsel esneklik düzeyinin de arttığını bulmuştur (Magalhaes, 2020). Ancak, bazı çalışmalar da sınıf düzeyinin bilişsel esneklik düzeylerini anlamlı şekilde farklılaşmadığını ortaya koymaktadır (Yaşar-Ekici & Balcı, 2018). Yine de sosyal bilimlerde yapılan araştırmalarda bulguları etkileyen çok sayıda dış faktör olduğu kabul edildiği için sonuçların bu denli farklı çıkması normal kabul edilebilir (Whitacre & Rumsey, 2018).

Öğretmen adaylarının bilişsel esneklik düzeylerinin çevre eğitimi ders alma durumları ve staj tecrübelerine göre nasıl şekillendiği de bu çalışmanın araştırma sorularından biridir. Literatürde öğretmen adaylarının aktif öğrenme geçirdikleri ve onlara farklı imkanlar sunan derslerin bilişsel esnekliklerini dolaylı olarak artırdığına dair kanıtlar yer almaktadır. Öğretmen adaylarının alana ilişkin tecrübeleri arttıkça, meydana gelebilecek ani durumlara karşı daha dayanıklı hale gelebilirler (Carvalho, 2000; Zheng et al., 2024). Aynı şekilde, staj tecrübeleri de öğretmen adaylarının mesleki gelişimlerini ve öz yeterlilik inançlarını artırarak, bilişsel esneklik düzeylerinin iyileşmesine katkı sunmaktadır (Hung, 2020; Simmons &Fisher, 2016).

Bu çalışmanın amaçlarından biri, öğretmen adaylarının bilişsel esneklik düzeylerini etkilediği düşünülen değişkenlerden biri olan kişisel gelişim eğitimlerinin, bireylerin bilişsel esneklik düzeylerini nasıl şekillendirdiğini anlamaktır. Bu konuda daha önce yapılmış çalışmalar incelendiğinde, bazı kişisel eğitimlere katılan bireylerin öz yeterlilik, dayanıklılık ve yaratıcılık gibi alanlarda gelişim gösterdiği görülmektedir (Colomeischi,2022; Houser vd., 2018; Roeser, 2012). Bu becerilerin geliştirilmesinin bireylerin bilişsel esneklik düzeyleri üzerinde de etkisi olması mümkündür. Mevcut çalışma verilerinin, literatürde desteklenen sonuçları ortaya koymamasının nedeni, öğretmen adaylarının katılmayı seçtikleri veya katılma fırsatı buldukları kişisel

gelişim programlarının kariyerlerinde ilerlemelerine olanak sağlasalar bile kişisel refaha yönelik olmaması olarak yorumlanabilir (Canas vd., 2005; Houser vd., 2018). Bu araştırmanın amacı, çevre eğitiminin okul öncesi eğitimle bütünleştirilmesine ilişkin öğretmen adaylarının inançlarının cinsiyete, sınıf düzeyine, çevre eğitimi ile ilgili ders alıp almama durumuna, staj deneyimi olup olmamasına ve herhangi bir kişisel gelişim eğitimine katılıp katılmama durumuna göre nasıl farklılaştığını ortaya koymaktır. Literatür, öğretmen adaylarının çevre eğitimine ilişkin inançları konusunda karışık bulgular ortaya koymaktadır. Kadın öğretmen adaylarının erkeklere kıyasla daha yüksek çevresel farkındalık ve inançlara sahip olduğunu gösteren birçok çalışma bulunmaktadır (Bergman, 2015; Carrier, 2007). Bu çalışmalara dayanarak, kadınların geleneksel cinsiyet rolleri nedeniyle daha koruyucu ve sahiplenici oldukları söylenebilir. Bu korumacı yaklaşımın doğaya ve çevreye yönelik bakış açılarında da etkili olduğu söylenebilir (Tikka vd., 2000; Koç ve Kuvac, 2016). Öte yandan Tanık Önal (2020) yaptığı çalışmada öğretmen adaylarının çevre eğitimine yönelik öz-yeterlik inanç düzeylerinin cinsiyete göre anlamlı bir şekilde farklılaşmadığı sonucuna ulaşmıştır. Cinsiyetin inançlar üzerindeki etkisi konusunda literatürde bir fikir birliği yoktur. Mevcut çalışmayı destekleyen bulgular olduğu gibi bunun tersini iddia eden sonuçlar da vardır. Bu durum, cinsiyet rollerinin farklı inanç türleri üzerinde farklı sonuçları olması gerçeğiyle açıklanabilir (Zelezny vd., 2000). Benzer şekilde, sınıf düzeyinin inançlarını ne ölçüde farklılaştırdığına yönelik de literatürde karışık bilgiler yer almaktadır. Bazı çalışmalarda, deneyimi daha fazla olan dördüncü sınıf öğrencilerinin çevre eğitimine yönelik inançlarının daha fazla olduğunu ortaya koymaktadır (Balcı et al., 2018). Ancak, bazı çalışmalar da birinci sınıf öğrencilerinin gerçekçi olmayan öz yeterlilik algıları sebebiyle çevre eğitimine yönelik inançlarının daha yüksek olduğu da anlaşılmaktadır (Wahyudiati et al., 2020).

Literatür incelendiğinde çevre eğitimi dersleri almanın öğretmen adaylarının çevreye yönelik öz yeterlik inançlarını, tutumlarını ve algılarını olumlu yönde etkilediği görülmektedir (Richardson vd., 2017). Yapılan bir araştırmaya göre, güçlendirilmiş içerikle ve farklı yöntemler eklenerek çevre eğitimi dersi alan öğretmen adaylarının çevresel tutumlarının ve öz yeterlik inançlarının dönem sonunda anlamlı düzeyde

arttığı görülmüştür (Sarıbaş vd., 2017). Çevre eğitimi derslerinin içeriklerinin güncellenmesi, farklı öğretim yöntemlerinin eklenmesi gibi değişikliklerin, öğretmen adaylarının çevresel farkındalık ve öz yeterlik inançlarını etkileyebileceği literatürden anlaşılmaktadır (Moseley et al., 2002; Richardson et al., 2017). Benzer şekilde, öğretmen adaylarının öğretmenlik mesleğine ilişkin inançları üzerinde staj deneyimlerinin etkisini ortaya koyan çalışmalar incelendiğinde, öğretmen adaylarının iş birliği yapan bir öğretmen aracılığıyla okul ortamında edindikleri deneyimlerin öğretmenlik öz-yeterlik inançlarını artırdığı görülmektedir (Han & Damjanovic, 2014; Trauth-Nare, 2015).

Bu çalışmanın amaçlarından biri, öğretmen adaylarının kişisel gelişim eğitimlerine katılımlarının, çevre eğitiminin erken çocukluk eğitimiyle bütünleştirilmesine ilişkin inançlarını nasıl farklılaştırdığını anlamaktır. Literatürde kişisel gelişimin öğretmenlerin ön yargı oluşturmasını önlediğini ve öz yeterlilik inançlarını olumlu yönde etkilediğini gösteren çalışmalar bulunmaktadır (Geršicová & Barnova, 2018). Öğretmenlerle yapılan çalışmalar da mesleki gelişimlerini destekleyen kişisel gelişim eğitimlerinin öğrencilere yönelik tutum ve inançlarını da dönüştürdüğünü ve böylece öğretmenlik uygulamasını olumlu yönde etkilediğini göstermektedir (Rosenfeld & Rosenfeld, 2008).

Çalışmanın diğer temel amaçlarından biri, bilişsel esneklik düzeyinin öğretmen adaylarının çevre eğitimini erken çocukluk eğitimine entegre etme inançları üzerindeki etkisini ortaya koymaktır. Bu amaca hizmet eden analizler, hizmet öncesi öğretmen adaylarının bilişsel esneklik düzeyleri ile çevre eğitimini entegre etme inançları arasında pozitif bir ilişki olduğunu ortaya koymuştur. Alanyazındaki ilgili çalışmalar incelendiğinde, öğretmen adaylarının bilişsel esneklik düzeyleri ile öz yeterlik inançları ve algıları arasında anlamlı bir ilişki olduğu anlaşılmıştır (Holzberger& Prestele, 202; Stein vd., 2018; Pepe, 2021; Wang vd., 2021).

Sonuç olarak, hizmet öncesi öğretmen adaylarının bilişsel esneklik düzeyleri arttıkça çevre eğitimini erken çocukluk eğitimiyle bütünleştirmeye yönelik inançları da artmaktadır. Benzer şekilde, öğretmen adaylarının çevre eğitimini erken çocukluk eğitimine bütünleştirmeye yönelik inançlarını oluşturan faktörler göz önüne

alındığında, bu bütünleştirme sürecinin çocuklara ve çevreye katkılarının farkında olma, uygun ve etkili bir öğrenme ortamı yaratma ve çocukların gelişimini destekleme gibi konularda sahip oldukları inançların hizmet öncesi öğretmen adaylarının bilişsel esneklik düzeyleriyle ilişkili olduğu sonucuna varılmıştır. Öğretmen adaylarının bilişsel esneklik düzeylerinin artırılması ile onların çevre eğitimini okul öncesi eğitimle bütünleştirme inançlarının da artacağı düşünülebilir.

Uygulamaya Yönelik Öneriler

Çalışmanın bulguları analiz edildiğinde, erken çocukluk öğretmen adaylarının orta düzeyde bilişsel esnekliğe sahip olduğunu ve bunun çevre eğitimini erken çocukluk eğitimiyle bütünleştirme inançlarıyla olumlu bir şekilde ilişkili olduğunu ortaya koymuştur. Bilişsel esneklik olarak bilinen çeşitli sınıf durumlarına uyum sağlama yeteneği, öğretmenler için temel bir beceridir (Minh & Herbst, 2008). Çalışma, daha fazla bilişsel esnekliğe sahip öğretmenlerin öğrencilerin ilgilerini çekmede daha başarılı olduğunu ve öğrenci katılımı hakkında daha derin bir anlayışa sahip olduğunu göstermektedir (Stein vd., 2018). Bu bulgular, öğretmen etkinliğini ve mesleki başarısını iyileştirmek için bilişsel esnekliği geliştirmeye odaklanan öğretmen eğitim programlarının önemini vurgulamaktadır.

Çalışmanın alana katkıları arasında okul öncesi öğretmen adaylarının çevre eğitimini erken çocukluk eğitimiyle bütünleştirme konusunda yüksek inançlara sahip olduklarını ortaya çıkarması yer almaktadır. Bu inançların oluşumunda ve devamlılığında etkili olan çeşitli faktörler bulunmaktadır. Çalışmalar, alan eğitimi tabanlı deneyimlerin ve uygulamalı atölyelerin, hizmet öncesi öğretmenlerin öz yeterlilikleri ve çevre eğitimine hazır olmaları üzerinde önemli bir etkiye sahip olabileceğini göstermiştir. Trauth-Nare'ye (2015) göre, yoğun bir alan eğitimini kapsayan kurslar, hizmet öncesi öğretmenlerin ekolojik öğretime yönelik yeterliliklerinde iyileşmelere yol açmıştır. Bu bilgilerden hareketle, öğretmen adaylarının çevre eğitimine yönelik inançlarının güçlendirilmesi için alan gezileri gibi aktif öğrenme ortamları yaratılması onların mesleki gelişimlerine katkı sunmaktadır.

Ayrıca, staj deneyimleri, çevre eğitimine yönelik dersler gibi olanakların artırılıp desteklenmesi ile öğretmen adaylarının bilişsel esneklik düzeylerinin ve çevre

eğitimini okul öncesi eğitimle bütünleştirme inançlarının olumlu şekilde etkileneceği görülmüştür. Bu durumun gerekçesi olarak, deneyimlerin kişilerin öz yeterlilik algı ve inançlarını etkiliyor olması gösterilebilir (Brown et al., 2015).

Öğretmenlerin kişisel ve mesleki gelişimi, toplumdaki değişikliklere uyum sağlamak ve eğitimin etkinliğini artırmak için olmazsa olmazdır. Araştırmalar, birçok öğretmenin kurslar, kişisel gelişim grupları ve kendi kendine öğrenme programları gibi çeşitli kanallar aracılığıyla iletişim ve pedagojik becerilerini geliştirmeye çalıştığını göstermiştir (Herman, 2020). Mesleklerine başlamadan önce öğretmen adaylarının mesleki gelişimi için adımlar atması, mesleki etkinliklerini etkileyebilir. Bu durumda, üniversitelerin ve diğer kurumların kişisel gelişim eğitim fırsatları sağlaması faydalı olacaktır.

Gelecekte Yapılacak Çalışmalara Yönelik Öneriler

Mevcut çalışmada, okul öncesi öğretmen adaylarının bilişsel esneklik düzeyleri incelenmiş ve bu düzeyler ile çevre eğitimini erken çocukluk eğitimi ile bütünleştirme inançları arasındaki ilişki ortaya konulmuştur. Gelecekteki çalışmalar, bu iki unsurun oluşumunu etkileyen farklı faktörleri belirlemeyi amaçlayabilir.

Bu çalışmada, Afyonkarahisar'da lisans eğitimine devam eden birinci, ikinci, üçüncü ve dördüncü sınıf okul öncesi öğretmen adaylarından veriler toplanmıştır. Gelecekteki çalışmalar için, ülke genelindeki okul öncesi öğretmen adaylarının katılımıyla daha geniş katılımcı listesine sahip bir çalışma yapılabilir. Ayrıca yeni çalışmada nitel araştırma yöntemlerinin de yer alması bulguları güçlendirecektir.

Bu çalışmada, okul öncesi öğretmen adaylarının staj deneyimlerinin çevre eğitimini erken çocukluk eğitimi ile bütünleştirme inançları üzerindeki etkisi incelenen faktörlerden biridir. Gelecekte, okul öncesi öğretmen adaylarının staj deneyimlerinin inançlarını nasıl şekillendirdiği, farklı yöntemlerle ayrıntılı olarak değerlendirilerek ortaya konulabilir.

Özetle, bu çalışma öğretmen adaylarının bilişsel esneklik düzeylerini farklı değişkenlere göre inceleyerek alana katkı sağlamıştır. Bu değişkenler farklı bakış

açılarından güncellenebilir ve değerlendirilebilir. Aynı şekilde, öğretmen adaylarının çevre eğitimini erken çocukluk eğitimi ile bütünleştirmeye yönelik inançlarının değerlendirilmesi de benzer değişkenler açısından yer almıştır. Öğretmen adaylarının inançlarının öğrencilik yıllarında başlayıp öğretmen olduklarında da devam eden uzun vadeli bir sürecin parçası olduğu düşünülebilir.

D. THESIS PERMISSION FORM / TEZ İZİN FORMU

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