

Opportunities for the development of ecological competence of the future preschool teachers

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Abstract

The preschool period plays a key role in environmental education and shaping attitudes towards the environment. It is therefore important that preschool teachers are equipped to provide students with the necessary training in their early stages. This study aims to evaluate the new opportunities for the development of the ecological competencies of future preschool teachers in terms of the views of pre-service teachers. This research was conducted using a qualitative design. The participants of the research consisted of 33 students studying in the 3rd and 4th grades of the preschool teaching department at various universities in Kazakhstan in the 2021-2022 academic year. As a data collection tool, the researchers created a semi-structured interview form. From the result of the research, pre-school teacher candidates found themselves at a medium level in terms of ecological competencies. Pre-school teacher candidates evaluated ecological attitudes and behaviors in the categories of environmental awareness, sensitivity, and volunteerism.

Keywords: Ecological competencies; pre-school; teacher candidates

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1. Introduction

Quality environmental education for children is determined by how they see themselves about the natural world during their real-life experiences. Experiences in nature provide students with self-confidence and empathic relationships with nature. The knowledge and skills they acquire are key to both their self-perception and the protection and respect of the natural environment. For this reason, after taking the necessary safety precautions, children should be free to explore the natural world without intermediaries and learn through their own experiences. At this point, teachers who will organize learning opportunities in out-of-school environments such as various natural areas, parks, and gardens become an important dimension of environmental education. Teachers can help children support and develop their environmental knowledge and awareness based on their natural curiosity and interests. However, an environmentally friendly teacher can be effective in providing information about the environment to children (Malone & Tranter, 2003).

1.1. Theoretical and conceptual framework

Considering the effect of teachers on their students, environmentally sensitive behaviors can be observed in children who grow up in the light of teachers who have the potential to be a model. In short, as a result of determining the attitudes of preschool teachers towards the environment and developing measures for this purpose, positive behaviors towards the environment can occur. Considering that teachers, who are role models for children in the education to be given in the pre-school period, have desired attitudes and behaviors towards the environment, it shows the importance of teachers being environmentally literate individuals (Buhan, 2006).

The influence of teachers, who are both informative and exemplary in the educational environment where the individual encounters basic environmental knowledge, theoretical and practical, is important in this field as well as in all other fields. It is stated that the main factor affecting the teachers' handling of the environment and environmental issues in the classroom environment is their attitudes towards the environment (Kim & Fortner 2006). Environmental education should not be an academic course, but an education that shapes the positive thoughts of the individual about the environment and reveals environmentally friendly behaviors as a result. The basis of environmentally friendly attitudes, which are aimed to continue throughout life, develops between early childhood and middle childhood (Davis, 1998).

In most studies, the importance of environmental education in creating positive attitudes towards the environment in students and pre-school education in developing positive attitudes towards the environment is expressed (Lubomira, 2004). According to Basile (2000), environmental knowledge and the formation of attitudes towards the environment begin to take shape in the pre-school period. Considering the early developmental characteristics of children, environmental education in this period will contribute to the cognitive development of children and contribute to their development of positive attitudes towards science education in the pre-school period. Although life-centered environmental education, which cannot be provided to children in the pre-school period, is given at later ages, it may not have the expected effect in developing a positive environmental attitude (Taskin & Sahin, 2008).

1.2. Related research

Plevyak et al. (2001) stated that the most important element that determines the success of environmental education is the teacher, and stated that it will not be possible to raise environmental literate students unless teachers have the knowledge, skills, and responsibility to prepare their lessons for the environment. Michail et al. (2007), The findings obtained from the studies conducted to determine the qualifications of incumbent teachers within the scope of environmental education show that teachers are not sufficient in environmental education. Studies on the subject have stated that teachers' attitudes towards the environment are negative, their level of knowledge about environmental issues is not at the desired level, and there are various misconceptions about some environmental issues.

In the study of a constructivist approach to environmental education for preschool children conducted by Jurca (2010), it was emphasized that environmental education is designed to help them realize the existence of the global environment that we are a part of, especially in preschool education, should be given importance. Although there is a need for qualified educators to provide environmental education effectively, educators should be equipped with superior qualifications. Especially in the environmental decision-making process, to educate the generations who have the authority to make these decisions, it is possible to provide effective education to the whole society throughout life by training well-equipped teachers.

McKeown-Ice (2000) stated that the situation of environmental education in the pre-service teacher education program is not well known, and for this purpose, 715 teacher training institutions were surveyed. Many schools are concerned with the environment; It has been revealed that the majority of schools do not institutionalize environmental education, that environmental education practices differ across the country, and that pre-service teacher education programs do not systematically prepare future teachers to teach the environment effectively. Simsekli (2004) in his study in which he revealed the environmental education sensitivity in primary schools, it was revealed that applied environmental education aimed at improving environmental awareness of students is effective in developing environmental awareness, but schools do not attach enough importance to environmental education.

Basile (2000) argues that the preschool period plays a key role in environmental education and shaping attitudes towards the environment. According to Basile's study, 9-year-old students who participate in nature activities have less knowledge about the environment than students who do not participate in similar activities. Based on this, it can be concluded that children's participation in science-environment-related activities can positively affect their perception of the relationship between the two concepts.

Considering that children take adults as models in the pre-school period, it can be said that the attitudes and behaviors of adults who spend time with children in this period are especially important. The preschool teacher is one of these adults and his role in the child's life cannot be ignored. With environmental awareness and environmental awareness developed at an early age, every child is a citizen of the world who will be brought into society in the future. Therefore, in this study, it is of great importance to evaluate the new opportunities for the determination and development of the ecological competencies of preschool teachers in terms of teacher candidates.

1.3. Purpose of the research

This research aims to evaluate the new opportunities for the development of ecological competencies of future preschool teachers from the perspective of teacher candidates. Accordingly, the following sub-objectives were determined.

1. What is the evaluation of pre-school teacher candidates regarding their ecological competencies?

2. What are the views of pre-school teacher candidates about their ecological attitudes and behaviors?

3. How do pre-school teachers evaluate new opportunities in the development of ecological competencies?

2. Method and Materials

In this part of the research; In this study, information about the method chosen and the way of conducting the research are given to evaluate the new opportunities for the development of pre-school teacher candidates' ecological competencies in terms of the views of the pre-service teachers.

2.1. Research method

This research is conducted in a qualitative design. Qualitative research is a method that reviews the problem it examines, interprets, and tries to understand the form of the problem in its natural environment. Qualitative research, which uses qualitative data collection methods such as observation, interview, and document analysis for the solution of a problem, refers to a subjective-interpretive process for detecting previously known or unrecognized problems and dealing with natural phenomena related to the problem in a realistic way (Klenke, 2016). In this study, the views of prospective teachers about new opportunities for the development of ecological competencies of future preschool teachers were evaluated in line with the qualitative research method.

2.2. Participants

The participant group of the research consists of students studying in the 3rd and 4th grades of the preschool teaching department at various universities in Kazakhstan in the 2021-2022 academic year. A simple random sampling method was used in the formation of the participant group of the research. For this method to be used, the information about the problems addressed must be homogeneous (homogeneous) according to the universe. Then, the researcher generates random numbers as many as the number of items he wants in the sample or uses a computer program or random number lists to randomly select items from the list he has created (Lawrence, 2014). The study group of the research was formed on a completely voluntary basis. The demographic information of the pre-service teachers who voluntarily agreed to participate in the study is given in Table 1.

Table 1 : Demographic information of the study group

Class	Gender		Sum
	Female	Male	
3. Class	9	5	14
4. Class	16	3	19
Sum	25	8	33

In Table 1, demographic information about the gender and class distribution of the teacher candidates participating in the research is given. 14 of the teacher candidates are in the 3rd grade and

19 of them are in the 4th grade. Of the pre-service teachers participating in the research, 25 are female and 8 are male. From this point of view, it is possible to say that the majority of teacher candidates participating in the research are women.

2.3. Data collection tools

A semi-structured interview form was created as a data collection tool. While preparing the semi-structured interview form, the Pre-School Education Program and the relevant parts of the relevant legislation were examined as well as the relevant literature review. Next; In the interviews with some preschool teachers and experts working in kindergartens and kindergartens, the sub-objectives of the research were discussed; It has been tried to determine the current situation and the situation that should be. At the end of the theoretical information in the relevant literature and the interviews, a data collection tool was prepared for the evaluation of new opportunities for the development of the ecological competencies of the future preschool teachers, which is the aim of the research, in terms of the views of the teacher candidates. In the data collection tool that was prepared, open-ended questions were arranged by taking into account the opinions and criticisms of the experts. In the semi-structured interview form, there are 2 questions about the demographic characteristics of teacher candidates. In the interview form, there is a rating question created for pre-service teachers to evaluate themselves regarding their ecological competencies. In addition, the form was completed by creating 2 open-ended questions about the ecological attitudes and behaviors of teacher candidates and the development of their competencies. The questions in the semi-structured interview form are given in Table 2.

Table 2: *Semi-structured interview form*

Pre-school teacher candidates semi-structured interview form	
Demographic Questions	
Class you are studying:	3.Class: () 4.Class: ()
Your gender:	Female: Male: () ()
Questions on Ecological Competence	
1. How many points would you give yourself when you evaluate your ecological competence out of 10?	
Very good ←—————→ Very bad	
(10)	(1)
(9)	(2)
(8)	(3)
(7)	(4)
(6)	(5)
(5)	(6)
(4)	(7)
(3)	(8)
(2)	(9)
(1)	(10)
2. What are your views on your ecological attitudes and behaviors?	

3. How do you evaluate new opportunities in the development of ecological competencies?	

2.4. Data collection process

During the data collection process, it was stated that several criteria should be taken into account when filling in the interview forms of teachers and teacher candidates.

1. Teachers and prospective teachers who agreed to participate in the study were asked to answer the questions in the interview forms where they could express themselves more easily, in line with the wishes of the teachers and teacher candidates, as suggested by Flick (2014). During the interviews, it was stated that teachers and teacher candidates should be careful not to be disturbed by a third person.

2. Due to the pandemic process, one-to-one interviews with teachers and teacher candidates could not be held, so interview forms were sent to teachers via online methods.

3. Before starting to fill out the interview forms, it was stated to each teacher and pre-service teacher that a code name would be used in the research and their names would not be used to answer the research questions sincerely.

The completion of the data collection process by completing the interviews with all pre-service teachers covered approximately 3 months of the research.

2.5. Data analysis

The answers given by the pre-service teachers to the questions in the semi-structured interview form were analyzed per the content analysis method. Three methods are generally recommended in qualitative data analysis. First, it is essential to stick to the original form of the collected data as much as possible. When necessary, presenting the data by directly quoting participant statements increases the validity of the said originality. In the second method, although the data is presented with a descriptive approach, it is possible to determine some codes, go from codes to categories and from categories to themes. In addition, in this method, relationships are established between themes. In the third method, the researcher analyzes the data using his interpretations as well as a description and thematic analysis. In the same study, data analysis can also be performed by using three methods separately or together (Eysenbach & Kohler, 2002).

In this study, the data obtained from the semi-structured interview form were given with direct quotations from the views of the pre-service teachers and codes and themes created based on the common points of the answers given by the teachers.

3. Results

In this part of the study, the findings and opinions obtained from the answers of 20 pre-school teacher candidates participating in the study to 6 questions in the semi-structured interview form are included.

Table 3 shows the evaluations of pre-school teacher candidates regarding their ecological competencies.

Table 3: Evaluations of pre-school teacher candidates regarding their ecological competencies

		Teacher Candidates	
		F	%
Rating	10 Points	-	-
	9 Points	2	6
	8 Points	1	3
	7 Points	5	15,1
	6 Points	3	9
	5 Points	8	24,2
	4 Points	7	21,2

	3 Points	4	12,1
	2 Points	2	6
	1 Point	1	3
Sum		33	100
Arithmetic mean			4,96

In Table 3, the views of pre-school teacher candidates participating in the research on their ecological competencies were evaluated between 10 points and 1 point. 2 of the pre-service teachers participating in the research gave themselves 9 points, 1 of the 8 points, 5 of the 7 points, 4 of the 6 points, 8 of the 5 points, 6 of the 4 points, 4 of the 3 points 2 of them. point and 1 gave 1 point. It is seen that none of the pre-school teacher candidates participating in the research gave themselves 10 full points. In addition, the arithmetic average of the 33 teacher candidates participating in the research on their ecological competencies is 4.96. Based on this, it is possible to say that teachers find themselves moderately sufficient.

In Table 4, the views of pre-school teacher candidates on ecological attitudes and behaviors are evaluated.

Table 4: *Opinions of pre-school teacher candidates on ecological attitudes and behaviors*

Categories	Subcategories	F	%
Awareness	Following environmental news	21	63,6
	Noticing environmental pollution	18	54,5
	Noticing the beauties of the environment	11	33,3
Sensitivity	Using resources sparingly	23	69,6
	Animal protection	20	60,6
	Nature conservation	19	57,5
Volunteering	Being sensitive to environmental problems	13	39,3
	Raising people's awareness	16	48,4
	Being a member of environmental organizations	14	42,4
	Taking an active role in environmental initiatives	5	15,1

In Table 4, the views of pre-school teacher candidates participating in the research on their ecological attitudes and behaviors were evaluated. Ecological perspectives of teacher candidates are divided into awareness, sensitivity, and volunteering categories. In the awareness category, 63.6% of the pre-service teachers gave the answer to follow the environmental news, 54.5% to notice environmental pollution, and 33.3% to notice the beauties of the environment. In the sensitivity category, 69.6% of the pre-service teachers answered to use resources sparingly, 60.6% to protect animals, and 39.3% to be sensitive to environmental problems. In the volunteering category, 48.4% of the teacher candidates answered to raise awareness, 42.4% to be a member of environmental organizations, and 15.1% to be active in environmental initiatives.

The views of some of the pre-service teachers who participated in the research on their ecological attitudes and behaviors are given below with direct quotations.

Prospective Teacher 7. To save electricity, I turn off the lights and electrical appliances when I am not using them. I talk to people I realize doing something that harms the environment to stop that behavior.

16. Candidate Teacher: I try to convince others of the importance of protecting the environment. I read newspaper and magazine articles about the environment. When I see news about the environment on television, I follow it with interest. I love to watch the beauty of nature. I am sensitive to environmental problems and the elimination of environmental pollution.

19. Teacher Candidate: I am a member of an animal protection non-governmental organization. I make an effort to raise awareness of people about protecting animals. At the same time, I took an active role in several projects to protect the environment or prevent environmental pollution. I think that these projects have very important effects on me in terms of developing environmental awareness.

27. Teacher Candidate: I am mobilizing my friends to reduce the water and electricity consumption in my school. In my family, everyone is conscious of the efficient use of resources. I am sensitive to issues such as protecting nature, not polluting the environment, and protecting animals.

32. Teacher Candidate: I throw the garbage I see around me (at school, on the street, etc.) into the trash. I closely follow environmental problems (such as fire, depletion of energy resources, natural disasters) and solutions developed. I love nature very much and I think natural beauties should be protected.

In Table 5, the views of pre-school teacher candidates about new opportunities in the development of ecological competencies were evaluated.

Table 5 : Opinions of pre-school teacher candidates on new opportunities in the development of ecological competencies

Categories	Subcategories	F	%
Education Opportunities	To raise environmental awareness	27	81,8
	Curriculum enrichment	25	75,7
	Organizing congresses and seminars	21	63,6
	Raising awareness with ecological art	4	12,1
Volunteering Opportunities	Spreading volunteerism	22	66,6
	Encourage volunteering	14	42,4
Technological Opportunities	Participating in volunteer work	12	36,3
	Getting to know the environment using technology	13	39,3
	Creating environmental awareness using technology	9	27,2

In Table 5, the views of pre-school teacher candidates participating in the research on the use of new opportunities in the development of ecological competencies were evaluated. Pre-service teachers' opinions were evaluated in three categories as educational opportunities, volunteering opportunities, and technological opportunities. In terms of educational opportunities, 81.8% of the pre-service teachers suggested environmental awareness, 75.7% of them enriching the curriculum, 63.6% of them organizing congresses and seminars, and 12.1% of them raised awareness through ecological art. Volunteering opportunities for teacher candidates; They categorized it as 66.6% spreading volunteerism, 42.4% encouraging volunteering, and 36.3% participating in volunteer work. In addition, 39.3% of the pre-service teachers expressed knowing the environment by using

technology and 27.2% of them expressed raising environmental awareness by using technology as technological opportunities.

The views of some of the pre-service teachers participating in the research on new opportunities in the development of ecological competencies are given below with direct quotations.

9. Candidate Teacher: I think that some changes should be made in the education system to develop ecological competencies. For example, courses to raise awareness about the environment can be added to the curriculum. In addition, I think every pre-school teacher candidate should be a member of a volunteer organization and work actively.

12. Candidate Teacher: I think that environmental awareness can be gained through art. Painting exhibitions emphasizing environmental pollution or environmental beauties can be held. Organizing such events in the university environment will also increase our sensitivity. Teacher candidates can participate in voluntary work. With the help of technological tools, it is possible to obtain information about the environment.

18. Teacher Candidate: I think that congresses and seminars to be held at the university can be educational. To increase environmental awareness and awareness, the university should encourage all teacher candidates to volunteer. I think technology can also be effective in creating environmental awareness.

23. Prospective Teacher: The education given at the university should aim to make us sensitive to environmental problems. Curricula should be created accordingly.

33. Pre-service Teacher: I think that ecological competencies can be acquired mostly in the school environment. I think the university must raise the environmental awareness of teacher candidates. The university can organize congresses, seminars, or art exhibitions for this. It can enrich the course content. Being a part of non-governmental organizations and taking part in volunteer work can also be effective. It is also possible to develop ecological competencies through the Internet. The internet can be used to get to know the environment and gain environmental awareness.

4. Discussions

When the views of the pre-school teacher candidates participating in the research on their ecological competencies are evaluated, it is seen that the pre-service teachers find themselves moderately sufficient. In the study conducted by Said et al. (2003) with 285 teachers working in public schools in Malaysia, it was revealed that teachers' environmental knowledge and environmentally friendly behaviors were low. He stated that although teachers consider the waste problem important, the percentage of practicing environmentally friendly behaviors is quite low. They also revealed that environmental protection is not a priority in their lifestyles and shopping habits, despite their high concerns about environmental knowledge, attitudes, and environmental problems. Sia (1992), in his study to determine the self-efficacy perceptions of classroom teachers about providing environmental education, found that similar to the current study, teachers believed that they did not have the necessary knowledge and skills for environmental and nature education. Teachers admit that there is a lack of knowledge in teaching environmental education concepts effectively.

Ecological attitudes and behaviors of pre-school teacher candidates participating in the research were discussed in the categories of awareness, sensitivity, and volunteerism. While pre-service teachers evaluated following environmental news, noticing environmental pollution and environmental beauties as awareness, they expressed being sensitive to environmental problems,

using resources sparingly, protecting animals and nature, and sensitivity in ecological attitudes and behaviors. In addition, pre-school teacher candidates considered raising people's awareness, being a member of environmental organizations, and taking an active role in environmental initiatives in the category of volunteering in ecological attitudes and behaviors. Barr (2003) stated in his study that people who develop sensitivity towards the environment are to solve environmental problems and conflicts between people and the environment. In their study, Robertson and Krugly-Smolka (1997) revealed that teachers should have a more comprehensive knowledge of environmental issues to bring better environmental awareness to students.

Pre-school teacher candidates participating in the research, opportunities in the development of ecological competencies, in terms of educational opportunities; environmental awareness, curriculum enrichment, organizing congresses and seminars, and raising awareness with ecological art. The pre-service teachers considered spreading volunteerism, encouraging volunteering, and participating in volunteer work as volunteering opportunities. Pre-service teachers stated that knowing the environment by using technology and creating environmental awareness using technology are technological opportunities. Cimen et al. (2011) found that the environmental self-efficacy of teacher candidates who are members of environmental organizations is significantly high in their study with teacher candidates, and they explained this situation as spending more time in environmental activities and gaining relevant experiences will increase the self-efficacy beliefs of teacher candidates.

5. Conclusion

Pre-school education should be a well-structured system to meet the need of raising individuals who are aimed to be included in society. In the process of reintegrating the children who will benefit from this education into society as a social being, it will be possible to create awareness of the environment with the guidance of the teachers who will provide this education.

Accordingly, in this study, new opportunities for the development of the ecological competencies of future preschool teachers were evaluated in terms of the views of pre-service teachers. As a result of the research, pre-school teacher candidates find themselves at a medium level in terms of ecological competencies. Pre-school teacher candidates evaluated ecological attitudes and behaviors in the categories of environmental awareness, sensitivity, and volunteerism. In addition, pre-service teachers stated that the practices to be made in the field of education, volunteering activities and the use of technological opportunities can create new opportunities for the development of ecological competencies.

6. Recommendations

In line with the results of the research, the following suggestions were made to create new opportunities for the development of pre-school teacher candidates' ecological competencies.

1. To improve the ecological competencies of pre-school teacher candidates, curriculum contents should be created to raise environmental awareness and create environmental awareness. Universities should prepare awareness-raising projects with ecological art by consolidating the knowledge of pre-service teachers with congresses and seminars.
2. Collaborative attitudes of universities and non-governmental organizations should be ensured to disseminate and encourage volunteering and to ensure that teacher candidates take an active role in voluntary organizations.

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3. New arrangements should be made in the course curricula created by universities to expand the use of technological opportunities as a tool for the development of pre-school teacher candidates' ecological competencies.

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