

# NATURAL MUSEUMS IN EDUCATION: CANDIDATE TEACHERS' VIEWS ACCORDING TO GENDER

## MUSEUS NATURAIS NA EDUCAÇÃO: VISÕES DOS PROFESSORES CANDIDATOS DE ACORDO COM O GÊNERO

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**Abstract:** This study aims to examine candidate teachers' views about integrating natural museums into education. A qualitative method was used in this research, and both male and female candidate teachers' views were evaluated and compared through content analysis. Pre-school teachers' (n=30) views on the subject matter were specified through semi-structured interview forms. At the end of the research, there were differences and similarities in views about some themes in terms of gender. According to these results, while female teachers exhibited positive views about natural museums and nature and environmental awareness, male teachers stated that they knew a little about this issue. Meanwhile, both sexes came up with similar views about integrating natural museums into education, raise students' awareness of an interest in and sensitivity towards nature and provide visuals of natural events in natural museums.

**Keywords:** Natural museums; Nature and Environment Awareness; Views by Pre-school Candidate Teachers; Gender.

**Resumo:** Este estudo tem como objetivo examinar as opiniões dos candidatos a professores sobre a integração de museus naturais na educação. Um método qualitativo foi usado nesta pesquisa e as opiniões dos professores candidatos masculinos e femininos foram avaliadas e comparadas por meio da análise de conteúdo. As opiniões dos professores de educação infantil (n = 30) sobre o assunto foram especificadas por meio de formulários de entrevista semiestruturada. No final da pesquisa, observou-se que havia diferenças e semelhanças nas visões sobre alguns temas em termos de gênero. De acordo com esses resultados, enquanto as professoras exibiam opiniões positivas sobre os museus naturais e a natureza e a consciência ambiental, os professores do sexo masculino afirmaram que sabiam um pouco sobre esse assunto. Enquanto isso, ambos os sexos tiveram visões semelhantes sobre a integração de museus naturais na educação, aumentaram a conscientização dos alunos sobre o interesse e a sensibilidade em relação à natureza e fornecem visuais de eventos naturais em museus naturais.

**Palavras-chave:** Museus naturais; Consciência da Natureza e do Meio Ambiente; Visão de professores candidatos à pré-escola; Sexo.

## Introduction

The concept of nature is defined as the entire parthenogenesis species (İzbirak, 1992). Environmental education, one of the essential fields in the concept of environment, on the other hand, refers to responsibilities to be undertaken by all sectors in the community to raise environmental awareness, sensitivity and help individuals form ever-lasting positive behaviors (Özey, 2009). In this regard, the importance of environmental education for individuals is strongly emphasized in researches (Erten, 2012; Erdal et al., 2013). It is also stated in the literature that, in educating individuals actively participating, it is vital that environmental awareness is formed to know the environment, to be intermingled with it, to see it as a museum and use it as a laboratory (Keleş et al., 2010; Tatar & Bağrıyanık, 2012). At this point, it is pointed out that mainly historical natural museums built a bridge between our past and present, formed environmental awareness, and added develop peoples' protectionist sides for environmental values (Karataş, 2011).

Natural museums are also named "scientific organizations" introducing the flora, animal species and fossils, types of rock, geological formations and the environment of countries, aiming to create interest in environment, and giving education in preserving the environment (Dilli, 2014). Related researches mention that natural museums have a big role in the development of students. For example, in a study, Karataş (2011) states that natural museums have roles as educational institutions and make students conscious of nature and its protection and teach them about rocks in nature, fossils, and features of animals and plants. Similarly, in a study by Adıgüzel (2006), natural museums expand students' horizons, help develop their learning skills, provide the opportunity to learn while doing, and raise environmental sensitivity. As it can be understood from the information in literature, natural museums play a significant role in student development.

Natural museums play essential roles in developing students' sensitivity towards nature and the environment. Therefore, it is important that candidate teachers, starting from the pre-teaching period, are well informed about the benefits of integrating natural museums in education. When literature is examined, it can be seen that there are some studies related to raising awareness of natural museums and the environment. In a study by Karataş (2011), the importance of natural museums on developing environmental awareness and their roles in education was taken up. Similarly, Dilli (2014) mentioned the roles of natural museums in education. Tatar & Bağrıyanık (2012) asked science and technology teachers' views about outdoor education and found out that they mostly preferred preparing "models/materials" and reading books on "science and technology". They preferred "summer camps", visiting "youth centers", and visiting "aquarium centers" the least. Keleş, Uzun & Uzun (2010) did research on the effect and permanence of the Ihlara Vally (Aksaray) and the natural education projects in the surroundings on environmental awareness, attitudes, and behavior. Erökten (2015) examined both male and female students' views about environmental knowledge in research.

When literature is examined, it is seen that there are not any studies done to specify candidate teachers' views and comparisons in terms of gender. At this point, it is hoped that this study will compensate the deficiency in literature.

The aim of this research is to specify and compare, in terms of gender, candidate teachers' views about the use of natural museums in education. To achieve this aim, the following questions were asked;

1. What are the views of candidate teachers, in terms of gender, about integrating natural museums in education?
2. In terms of gender variables, what do candidate teachers think about natural museums' teaching activities?

## Methods

A qualitative method was conducted in this research. Semi-structured interview forms and content analysis techniques were referred to specify pre-school teachers' views regarding gender variables.

This research was carried out among candidate teachers (n=30) studying at the Department of Pre-school Teaching of Atatürk Faculty of Education, Near East University. The information about the participants (n=30) is presented in Table 1. When the table is examined, it can be seen that the majority of the participants (%56.6) are female. In addition, it was found out that %66.6 of them have not received any education in natural museums.

**Table 1.** Demographic Characteristics of Pre-school Candidate Teachers

Demographic characteristics	f	%
Gender		
Female	17	56.6
Male	13	43.3
Education received in natural museums		
Yes	10	33.3
No	20	66.6

### Data Instrument

Pre-school candidate teachers stated their views through semi-structured interview forms about the use of natural museums as educational environments and the educational techniques they could apply.

The design of the interview form to do with the use of natural museums in education.

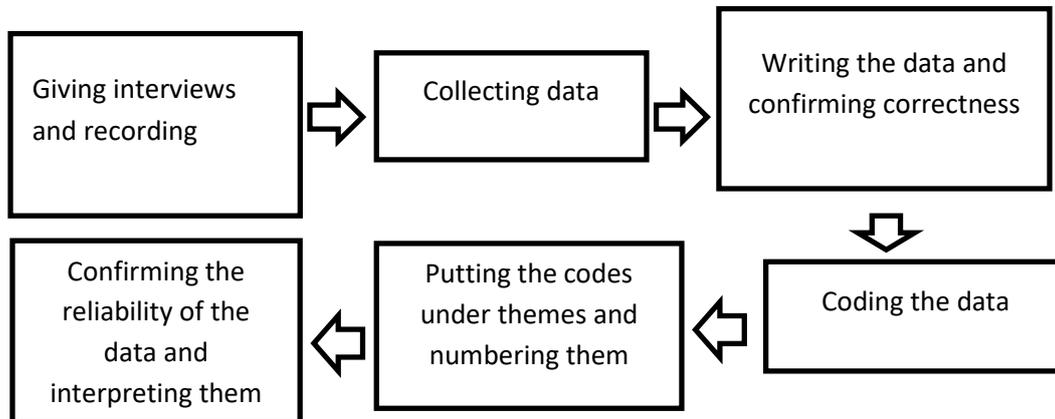
The semi-structured interview form to do with the use of natural museums in education was developed to specify candidate teachers' views. While writing the interview form, expert (n=5) views were referred to through literature, and arrangements were made to finalize the form. "What do you think about the use of natural museums in education?" and "What do you think about the educational activities done in natural museums?" were the questions asked to both male and female candidate teachers. The interviews lasted between 15-20 minutes. Prior to the interviews, the candidates were particularly informed that the research was on voluntary basis and there would be no identification. The interviews were recorded on the consent of the participants.

### Data Analysis

A content analysis was done to specify teachers' views regarding gender and the use of natural museums in education.

As it can be seen in Figure 1, the candidate teachers were interviewed and all the process was recorded.

**Figure 1.** Content analysis steps



At this point the data were put in written form and examined by three experts. In the second step, the wording groups by the participants were separately coded. The coding was categorized according to its content and put under themes. Each candidate teacher was given a code number. In the third step, museum education experts (n=2) and educational programs experts (n=3) compared the researcher’s previously specified themes and confirmed that the codes represented the conceptual themes. At this phase, the codes representing “Agreement” and “Disagreement” were specified. In order to measure the reliability of the qualitative data, Miles & Huberman’s (1994) formula (reconciliation percentage = Agreement/ (Agreement + Disagreement) x 100) was referred to. At the end of this research, 22 codes out of 25 were approved. The comparison of the results with the content analysis carried out by someone else ended in with 80% agreement, which indicated the reliability of the coding (Miles & Huberman, 1994). In addition, in the scope of the research, teachers’ views were numbered and coded in advance and the sample statements were specified with TC (Teacher Candidate).

## Results and discussion

### A Comparison of candidate teachers’ views, in terms of gender, about the use of natural museums in education

Table 2 represents the comparison of the views of pre-school candidate teachers, in terms of gender. Both male and female participants raised views on two issues; “The applicability of natural museums in education” and “The effectiveness of natural museums in teaching”.

Most of the female candidates pointed to the importance of using natural museums as teaching environments (n=7). The following is a sample statement;

*“I believe that natural museums are effective in concretization of the concept of environment. I argue that this awareness can be raised through certain activities in natural museums”* (TC 5).

The female candidate teachers also stated that natural museums’ use as educational environments would be effective in raising student interest in nature (n=5). TC 9 expressed views saying, *“I believe that the use of natural museums as educational environments will make the students more interested in nature”*.

Some female candidates stated that in introducing fossils to the students natural museums would be suitable environments (n=3). TC 11 said, *“I believe that it is important to inform students about fossils. In this regard, natural museums would have a big role in this issue”*. However, some female candidates expressed worries saying that they did not know how natural museums could be used as educational environments (n=2). TC 1 explained, *“I had never thought about how natural museums could be used as educational environments. I think, I have to know more about this subject”*.

**Table 2.** Candidate teachers' views, in terms of gender, about the use of natural museums in education

Theme	Gender	Teacher Candidate's View	f
Natural museums as educational environments	Female	1. Natural museums are important in education.	7
		2. It increases interest in nature.	5
		3. Natural museums can be used effectively in introducing fossils.	3
		4. I have no idea about how to make use of natural museums.	2
	Male	1. It can develop sensitivity towards nature.	6
		2. I don't know much about how effective it could be.	3
		3. Better learning can be achieved.	2
		4. I need to know more about it.	2
Effectiveness of natural museums in education	Female	1. It develops students' questioning skills.	10
		2. It increases student interest in research.	4
		3. It develops visual mind in telling the difference between plants and animals.	3
	Male	1. I'm not sure about the effect of natural museums when criticizing cause and effect.	8
		2. I don't think students can do research in museum environments.	3
		3. Natural museums can help students more to know the events around.	2

In Table 2, it can be understood that most male candidate teachers agree on the first theme that natural museums as educational environments could develop sensitiveness towards nature. TC6 raised views saying, *"I believe that organizing educational activities in natural museums will increase sensitivity in and awareness of nature"*.

Some of the male candidates expressed worries that they were not aware of the importance of natural museums' effect in increasing the effectiveness in environmental education (n=3). *"I don't know how effective natural museums can be in environmental education. I can't see the relationship between environmental education and natural museums"* explained TC 11.

Some male candidates advocated that qualified teachers could use natural museums effectively as educational environments (n=2). Some stated views as follows;

*"I can say that qualified teachers can make use of natural museums as educational environments,"* stated TC 13.

*"I need to know how I can benefit from natural museums. I need training"* said TC 2.

The indications in the first theme show that female candidates agree that natural museums are effective in the formation of environmental awareness. Contrary to this, male candidates are not well aware of this issue. Meanwhile, both male and female candidates had similar views that natural museum, when used for educational purposes, would help students become environmental friendly and sensitive individuals. Some candidates in both groups also expressed worries that they did not know much about how to turn natural museums into educational environments.

Table 2 also indicates that the majority of female candidates agreed in the second theme that natural museums helped develop students' questioning skills (n=10).

TC 16 went on saying, *"Through question-answer activities in natural museums, students can develop their questioning skills"*.

The female candidates added that natural museums increase students' eagerness in

doing research (n=4). They stated as follows;

TC 9 explained, *“Small scale research on plants and living creatures can be carried out in museums, which encourages students to do research”*. Some argued that distinguishing the types of plants and animals in nature allows museums to become environments developing visual intelligence (n=3).

TC 13 expressed views about the same issue saying, *“Natural museums are environments which develop visual intelligence through distinguishing the feature of both plants and animals. In the transfer of these subjects to students, natural museums play a big role”*. The majority of male candidates, as seen in Table2, admitted that they were not sure about the criticisms to do with the cause and effect relation among natural events (n=8). TC 7 said, *“I do not understand how the criticisms about cause and effect relations of natural events can be related with natural museums”*.

Some male candidates argued that students could not do any research in museum environments (n=3). *“I do not know how we can direct students to do research in natural museums. I don’t have much to say about this”*.

Some of the male candidates pointed out that natural museums could be effective in students’ perception of the events around (n=2). TC 5 explained saying, *“I believe that natural museums are effective in students’ understanding easily the events around”*.

All the findings in the second theme indicate that there is an agreement among both male and female candidates. They have similar views about perceiving and visualizing the events in natural environments. However, although female candidates believe that natural museums improve students’ questioning skills; male candidates do not have an agreement on this issue. Obviously, female candidates support researches more in natural museums where students can actively take place.

### **Candidate teachers’ views, in terms of gender, about the teaching activities done in natural museums**

Candidate teachers’ views about the question (4.2) are presented in Table 3. Male and female candidates raised views under two themes; *“Educational activities prior to museum visits”* and *“Activities to be done in museum environment”*.

**Table 3.** Candidate teachers’ views, in terms of gender, about teaching activities done in natural museums

Theme	Gender	Teacher Candidate’s View	f
Educational activities prior to visits to museums	Female	1. Students can do the observation by collecting leaves.	12
		2. Students can observe farm animals.	5
	Male	1. Picture of plants from the school garden can be drawn.	8
		2. Real animal stories can be told in the classroom prior to visits to museums.	5

Educational activities in museum environment	Female	1. Posters can be designed in a museum environment about animal protection and awareness-raising.	10
		2. An exhibition corner with the most interesting types of plants and living creatures can be designed.	7
	Male	1. In natural museums, plants can be observed, and printing studies can be done.	8
		2. Experiment can be done to consolidate what is learnt.	5

In the first theme, the majority of female candidates agreed that students can pick leaves from the school garden and observe (n=12). TC 14 explained saying, *“Prior to visits to museums, I can ask students to pick leaves and ask them to do observation to know the environment better”*. The female candidates also pointed out that in order to know animal characteristics, students could do observations on farms (n=5). TC 3 supported this idea saying, *“Before going to natural museums, an observation can be done in advance starting on the nearby farms”*.

As in Table 3, the majority of the male candidates agreed that pictures of leaves collected from the school garden could be drawn (n=8). TC 4 expressed views as, *“Prior to visits to museums, students can draw pictures of different types of plants. They can support these plant types by observations in natural museums”*.

Some male candidates agreed that, real life stories about animals could be effective if told in classroom environment (n=5). *“Real animal stories can be told prior to visits to museums”* explained TC 12).

The findings obtained in the first theme show that female candidates advocate the idea of observing the plant and animal types in nature. Whereas, male candidates believed that drawing and storytelling activities would be more effective. This indicates that the two groups have different views about the activities before visiting museums.

In the second theme in Table 3, the majority of the female candidates stated that posters about protecting living creatures and raising awareness of the environment could be designed in the museum environment (n=10). TC 5 expressed views saying, *“Posters showing how to protect living creatures and raise awareness of nature could be designed in the activities in museums”*.

The female candidate teachers also stated that exhibition corners showing drawings of plant and animal types could be designed (n=7). TC 2 supported this idea and said, *“Pictures of plants and living creatures can be drawn to attract students’ interest. These drawings can be exhibited in a corner of a museum”*.

As in Table 3, the majority of male candidates suggested that, contrary to female candidates, printing activities on plants could be done (n=8). TC 11 added to this view and said, *“During the activities in museum environment plants can be examined and printing studies can be done. It can be an effective try”*.

Some male candidates explained that parallel to the activities in natural museums experiments could also be done (n=5). TC 9 commented on this view saying, *“I believe students can do consolidation activities on learnt subjects in classrooms. It will be effective in permanent learning”*.

The statements in the second theme indicate that male and female candidate teachers have different views about the activities done in museum environment. However, the limited views expressed about this subject indicate that both groups need to know more about this field.

## Conclusion

The results of this research reveal the views raised by male and female candidates about gaining environmental knowledge, making individuals sensitive towards the environment, and introducing the formations in nature (e.g., fossils) through natural museums. It is also revealed that, while female candidates believe that natural museums help raise educational awareness, male candidates are not aware of this issue. Karataş (2011), in research, supports female candidates' views and adds that activities to be done in natural museums help increase individuals' sensitivity towards the environment. Parallel to it finding, Erökten (2015) stresses that the level of environmental awareness of male candidates is lower than that of the female candidates. These findings match up with findings in this research. In this research, both groups believed in the functions of natural museums in their effectiveness in raising students' environmental awareness and interest in nature. Similarly, in Dilli's research (2014), it was emphasized, parallel to these findings, that natural museums raised students' interest in and their awareness of nature. Another finding in this research is that some teacher candidates in both groups do not know much about interacting with natural museums as educational environments. In their study, Sarıođlan & Küçüközen (2017) emphasized the need for educating male and female candidates in this subject before they start doing their profession.

In this research, both teacher candidate groups expressed parallel views about visualizing the developments in natural environments observed in natural museums. In research by Tatar & Bađrıyanık (2012), it was stressed that outdoor activities such as museums and others would be helpful in understanding the developments in natural environments. Female candidates agreed that natural museums developed students' questioning skills, but male candidates did not agree on this assumption. Female candidates supported activities in natural museums with the active participation of students. This assumption was stressed in a study by Karadeniz & Atar (2017) that educational activities in museums were effective in developing students' questioning skills. Karadeniz (2017) and Karakuş (2012) both found out in their studies, like female candidates, museums were effective in active learning. Research findings in the literature are parallel to the results of this study.

One of the other findings obtained in this research is that female candidates recommend observing plants and animals' characteristics prior to visiting museums. This finding matches up with Saraç (2017) findings, who points out that observations done in natural history museums and outdoor activities (e.g., science and technology museums, planetariums, botanic gardens, zoos etc.) will have positive impacts on learning. On the other hand, the majority of male candidates are for drawing and story writing as effective factors in learning. Parallel to female candidates' views, Wells (2014) and Kararakuş (2012) stated in their studies that drawing and story-writing activities were effective in the education through museums. The above-mentioned research has parallel findings with both male and female candidate teachers' views in this research.

It was determined in this research that female candidate teachers suggested posters designing activities in museum environments and exhibiting them in exhibition corners. Similarly, in a study by Marcus & Kowitt (2016), activities like poster designing and exhibiting them in museum environments would be effective in permanent learning. Meanwhile, male candidates pointed out that printing and experiment activities could be done in museums. In studies carried out by Tatar & Bađrıyanık (2012) and Akgün, Yılmaz & Arık (2017) it was stressed that experiments done out of school and museums would play an important role in turning abstract concepts into concrete concepts in lessons. These findings match up well with the results obtained from this research. Different views between male and female candidate teachers about teaching activities in museums were determined. However, they raised limited views, which are an indication that they need to know more about this issue. Dađal & Bayındır (2016); Tutkun & Acer (2015) had the same ideas and suggested pre-service training to qualify candidate teachers with the subject matter.

In the scope of the findings obtained in this research, it is suggested that studies are done to specify pre-school teacher candidates' needs in the use of museums as educational environments and environmental education. Educational programs should be designed and developed, and experimental researches should be done. Meanwhile, besides pre-school can-

didate teachers, teachers teaching in other fields should be referred to for their views, which will help specify educational needs to achieve more success. Teachers' views about natural museums as educational environments and raising environmental awareness must be considered. Finally, educational needs in this field should be specified, and pre-service trainings should be organized.

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