





<http://www.tayjournal.com>

<https://dergipark.org.tr/en/pub/tayjournal>

## Exploring Cultural Heritage through Virtual Museums: Social Studies Teacher Candidates' Views and Experiences with Virtual Museums

 Ceren Utkugün, Assoc. Prof. Dr., Corresponding Author  
Afyon Kocatepe University, Türkiye  
[cedemir@aku.edu.tr](mailto:cedemir@aku.edu.tr)  
Orcid ID: 0000-0002-5911-9175

 Ramazan Yıldırım, Dr.  
Ministry of National Education, Türkiye  
[rmznyldrm@gmail.com](mailto:rmznyldrm@gmail.com)  
Orcid ID: 0000-0001-5727-5134

**Article Type:** Research Article

**Received Date:** 28.08.2024

**Accepted Date:** 25.11.2024

**Published Date:** 30.11.2024

**Plagiarism:** This article has been reviewed by at least two referees and scanned via a plagiarism software

**Doi:** 10.29329/tayjournal.2024.1056.03

**Citation:** Utkugün, C., & Yıldırım, R. (2024). Exploring cultural heritage through virtual museums: Social studies teacher candidates' views and experiences with virtual museums *Türk Akademik Yayınlar Dergisi (TAY Journal)*, 8(3), 440-476.

## **Abstract**

As the role of museums in preserving cultural heritage and passing it on to future generations becomes increasingly significant, virtual museums in a digitalized world have introduced a new dimension to the discovery and learning process of this heritage. This study aims to examine the views and experiences of social studies teacher candidates regarding virtual museums. The study was designed using a qualitative research method with a phenomenological approach. The study group consisted of 45 teacher candidates. A virtual museum interview form was used as the data collection tool. The data were collected in a digital environment through the completion of virtual museum interview forms. Content analysis was utilized for data analysis. The virtual museum visits of teacher candidates were analyzed under themes such as archaeology museums, history and ethnography museums, science and technology museums, and nature and environment museums, with prominent sites like Göbeklitepe and the Museum of Anatolian Civilizations coming to the forefront. Teacher candidates positively assessed the use of virtual museums in social studies lessons for reasons such as supporting permanent learning by concretizing the teaching-learning process and making lessons more enjoyable. They designed various learning materials and activities using virtual museums, increased their cultural awareness, and contributed to their educational practices. As a result of the study, it was suggested to strengthen schools' technical infrastructure, enrich virtual museum content, encourage teacher candidates to use virtual museums as teaching materials, and integrate virtual and physical museum visits to enhance the educational impact of virtual museums.

**Keywords:** Cultural heritage, museum, virtual museum, social studies education, teacher candidate.

## **Introduction**

In contemporary societies, museums, which serve as important cultural centers, help individuals understand their own culture and other cultures by exhibiting objects from humanity's past. They enable people to recognize similarities and differences, approach different cultures with tolerance, and develop empathy, imagination, and creativity (Köksal-Akyol & Akyol, 2014). The International Council of Museums [ICOM] defines museums as "non-profit, sustainable institutions at the service of society that provide individuals the opportunity to understand their environment, promote knowledge acquisition by combining entertainment with research, and aim for sustainability" (ICOM, 2007). Museums play a crucial role in helping students understand artifacts from past periods, appreciate their own culture, and approach other cultures with tolerance. Furthermore, through the artifacts displayed in museums, they contribute to the development of students' abilities to interpret the past, engage in critical thinking, and foster empathy (Kısa & Gazel, 2016).

As the role of museums in preserving cultural heritage and passing it on to future generations becomes increasingly significant, virtual museums in a digitized world have introduced a new dimension to the process of discovering and learning about this heritage. Virtual museums, which have gained prominence in recent years with the growing presence of digital technology in our lives, are a global form of museums that allow students to explore and engage in the learning process from anywhere with an internet connection (McKenzie, 1997; cited in Çelik & Ütkür-Güllühan, 2022). Virtual museums can be defined as interactive websites that utilize computer and internet technologies to provide visitors with access to

digitized copies (in visual, audio, or video formats) of artworks, historical artifacts, and documents, as well as information about these items, over the internet (Turan, 2015). With the advancement of modern technology, virtual museums now exist not only as websites but also as applications (Kılıç et al., 2023). In this context, virtual museums play a crucial role in preserving cultural heritage and passing it on to future generations. With the development of digital technologies, virtual museums can reach wider audiences and offer individuals new experiences in the learning process. These digital platforms, with their global accessibility, provide constant access to cultural and historical information, thereby enhancing intercultural understanding and tolerance while contributing to the development of individuals' cultural awareness. In this way, virtual museums serve the preservation and sustainability of cultural heritage in line with the demands of the modern age.

Virtual museums, leveraging the opportunities offered by modern technology, go beyond traditional museum experiences, redefining access to information and the sharing of cultural heritage. Bowen (2000) emphasizes the importance of virtual visitors being able to access information about distant museums, noting that in the past, visitors were required to physically visit museums to obtain information. However, thanks to the internet, it is now possible to access museums from homes, workplaces, schools, or libraries. Serin (2020) states that virtual reality allows individuals to experience being in places that seem impossible to visit, offering them authentic experiences. Through the technology employed in virtual museums, people can remotely access the collections of museums in different cities or even countries at any time of the day. This access provides direct and reliable sources of information. Virtual museums enable visitors to reach any museum they desire without time constraints. Furthermore, virtual museums are not only safe and cost-effective but also offer richer content options compared to the limited presentation capabilities of traditional museums (Kılıç et al., 2023). Çolak (2006) states that virtual museums are valuable tools that can be used in distance education, provide reliable information, allow simultaneous access to multiple users, enable individuals without physical access to reach national and international museums, and contribute to cultural development. Tschritzis and Gibbs (1991) highlight that real museums face disadvantages in displaying artifacts, such as size limitations, incomplete collections, adverse environmental conditions, and difficulties in visitor accessibility. In this context, virtual museums, which are independent of time and space, offer an alternative solution to these challenges.

The role of technology in education is becoming increasingly vital with innovative methods that expand students' access to and opportunities for learning. The use of technology in education should not be perceived as an additional burden but rather as an element that enriches the educational experience (Karataş et al., 2015). The impact of technology in education not only facilitates students' access to information but also makes learning processes more interactive and efficient. In this context, virtual museum tours emerge as an example of the opportunities technology offers in education and contribute significantly to students' learning processes. Virtual museum tours allow students to virtually visit places they cannot physically access, transform abstract information into concrete experiences (Karataş et al., 2015), provide access to information and experiences they could not otherwise obtain, and enable them to learn in an engaging way. The enjoyable learning environment created by these

tours facilitates learning (Kayabaşı, 2005; Saraç & Özarslan, 2017; Shim et al., 2003). Virtual museums offer students richer learning experiences both cognitively and affectively (Aktaş et al., 2021) while also providing an online learning environment that develops digital literacy skills and enables historical research (Okolo et al., 2011). According to Ata (2010), virtual museum applications can enhance the quality of classroom instruction and enable students to make significant educational progress. Daniela (2020), Fokides and Sfakianou (2017), and Kampouroupoulou et al. (2013), highlight that when virtual museums are used in school environments, they increase students' participation in effective learning experiences, positively influence their behavior through functions such as entertainment and communication, and make significant contributions to their cultural knowledge. Moreover, virtual tours provide valuable opportunities for schools to organize trips for students who face social and economic constraints. Çelik and Ütkür-Güllühan (2022) and Tuncel and Dolanbay (2021) emphasize in their studies that the lack of museums and cultural sites in the areas where students live, combined with parents' economic and safety concerns, underscores the importance of virtual museums and tours in ensuring equality of opportunity in education. Based on the findings of related studies, virtual museum tours play a critical role in enriching students' cultural, historical, and social knowledge and ensuring equal educational opportunities.

There is a strong connection between virtual museum applications and social studies courses. By emphasizing virtual museum applications, it has become possible for students to explore museum collections in social studies education without the constraints of time and space (Turan, 2015). Virtual museums, supported by technological tools, allow students to learn social studies topics more meaningfully. Furthermore, virtual museums, which support active learning methods, enable students to achieve deeper cognitive and affective learning (Aktaş et al., 2021). The use of virtual museums in social studies education makes significant contributions to the development of students' thinking skills. It provides an effective out-of-school learning environment for enhancing skills such as understanding time and chronology, spatial perception, and digital literacy. Virtual museums also offer extensive applications within the learning areas of the social studies curriculum, such as "Culture and Heritage," "People, Places, and Environments," and "Science, Technology, and Society" (İlhan et al., 2021). In this context, teaching activities supported by virtual museum tours in social studies classes are considered highly beneficial. They not only enhance the quality of museum experiences but also add new dimensions to real museum visits (Çolak, 2006; Yıldırım & Tahiroğlu, 2012).

Today, technologies such as virtual reality, holograms, and three-dimensional imaging, along with the recent pandemic period, have made virtual museums competitive with traditional museums. These developments have increased the significance of virtual museums in education and led to their inclusion in curricula. However, despite being integrated into curricula, the pedagogical foundations of virtual museums are still in their early stages. Consequently, teachers lack sufficient knowledge about how to effectively incorporate these museums into education and classroom activities across different subjects. This situation highlights the need for open-access training programs for teachers on the effective use of virtual museums in education, activities that directly link virtual museum use to the content and outcomes of curricula, stronger school-museum collaboration, and further reinforcement

of the educational objectives of museums (Kılıç et al., 2023). Studies by Aktaş et al. (2021) and Sungur and Bülbül (2019) have also identified that teachers and teacher candidates lack adequate knowledge and ideas about the use of virtual museums and related activities.

In this context, the necessity and importance of pre-service teachers receiving training on virtual museums and effectively utilizing them have become evident. To ensure the effective use of virtual museums in learning environments, it is crucial to consider the experiences of teacher candidates who will be the practitioners. Utkugün (2022) and İlhan et al. (2021) examined the experiences of social studies teacher candidates regarding virtual museum tours based on their views on the advantages, disadvantages, usage challenges, and effective application of virtual museums. In this study, teacher candidates evaluated virtual museums as a resource that can be used in social studies classes and designed in-class activities related to the virtual museums they visited. The candidates transformed the knowledge and experiences they gained from virtual museums into activities aligned with the learning outcomes of the course, thereby creating original materials for integrating virtual museums into the teaching process. In this context, the study aims to explore the views and experiences of social studies teacher candidates regarding virtual museums. To achieve this general objective, the following research questions are addressed:

1. Which virtual museums have social studies teacher candidates visited?
2. What are the views and evaluations of social studies teacher candidates regarding the virtual museums they visited?
3. What are the views of social studies teacher candidates on the usability of virtual museums in social studies courses?
4. What activities have social studies teacher candidates designed using the virtual museums they visited?
5. What are the views of social studies teacher candidates on the virtual museum tour activity?

## **Method**

### **Research Design**

This study, aiming to determine the views and experiences of social studies teacher candidates regarding virtual museums, was designed using a qualitative research method. Yıldırım and Şimşek (2018), define qualitative research as studies in which perceptions and events are examined realistically and holistically in their natural settings. The study was conducted using phenomenological design, one of the qualitative research approaches. Phenomenological research design seeks to reveal individuals' experiences, perceptions, and the meanings they attribute to a specific phenomenon or situation (Yıldırım & Şimşek, 2018). Since this study aims to deeply analyze virtual museum tours based on the views and experiences of teacher candidates, the phenomenological design was chosen.

## **Study Group**

The study group consisted of 45 teacher candidates (30 females and 15 males) enrolled in the Social Studies Education Department at Afyon Kocatepe University Faculty of Education during the 2023-2024 academic year. The study group was selected using criterion sampling, one of the purposive sampling methods. According to Maxwell (2018), purposive sampling is employed to select groups and participants that can best address the research questions. In criterion sampling, the criteria can either be determined by the researchers or derived from a pre-established list of criteria (Yıldırım & Şimşek, 2018). In this study, the criterion used for selecting the teacher candidates was being a fourth-year student in the Social Studies Education Program. The rationale for choosing fourth-year students was their advanced knowledge in the field and their pedagogical readiness, equipping them with the depth of understanding and experience needed to respond comprehensively to the research questions. In the presentation of findings, direct quotations from teacher candidates were coded as TCA1, TCA2...TCA45 instead of using their real names.

## **Data Collection Tool**

The data collection tool used in this study was a virtual museum interview form consisting of open-ended questions. Using written documents as a data collection tool aims to obtain detailed evidence about the meanings participants attribute to various concepts or situations (Bogdan & Biklen, 2007). An interview form was chosen as the data collection tool to allow teacher candidates to express themselves more comfortably and share their thoughts about their virtual museum tour experiences in detail. During the preparation phase of the virtual museum interview form, the open-ended questions were presented to an expert in the field of social studies education for evaluation in terms of scope and clarity. Based on the feedback received from the expert, the questions in the interview form were revised concerning their content, number, and phrasing, and the final version of the form was created. The virtual museum interview form includes questions designed to reveal teacher candidates' positive and negative evaluations of the virtual museums they visited, their views on the usability of virtual museums in social studies lessons, and the activities they designed for social studies classes using the virtual museums they explored.

## **Data Collection and Analysis**

The data collection process began after obtaining ethical approval from the Scientific Research and Publication Ethics Committee of Afyon Kocatepe University (Ethics Committee Decision: dated 20.12.2023 and numbered 2023/357). For the data collection process, teacher candidates were asked to visit three virtual museums of their choice during the midterm break of the 2023-2024 academic year, between January 29, 2024, and February 26, 2024, and to write detailed reflections on their experiences of these virtual museum tours. The confidentiality of the data collected from the teacher candidates was ensured, and it was stated in the interview form that the data would not be used for purposes other than scientific research. The research data were collected digitally through the teacher candidates' written completion of the virtual museum interview forms.

In qualitative research, the detailed reporting of data and the thorough explanation of how the researcher arrived at the conclusions are among the key criteria for validity (Creswell, 2013; Glesne, 2016). In this study, the method section provides a detailed explanation of the research design, study group, data collection tool, data collection process, and analysis process. The data were analyzed using content analysis. According to Yıldırım and Şimşek (2018), the purpose of content analysis is to identify concepts and relationships that help interpret and explain the collected data. The commonalities among the codes derived from the data were identified and classified, and sub-themes were created for each research question. Additionally, the data analysis process was reviewed by an expert in the field, and the codes produced by the researchers and the expert were compared and evaluated. The agreement percentage was calculated using the formula  $[\text{Agreement}/(\text{Agreement}+\text{Disagreement}) \times 100]$  and found to be 93%. According to Miles and Huberman (1994), a reliability percentage above 70% indicates that the study can be considered reliable. Sections causing disagreement, such as the definition of some codes and their categorization into themes, were re-evaluated to reach a consensus. To ensure the confirmability of the study, the researchers periodically revisited the raw data to verify the accuracy of the codes. The data were presented in tables according to the sub-themes and codes, and the findings were supported and interpreted with direct quotations.

#### **Ethical Permits of Research:**

In this study, all the rules specified to be followed within the scope of “Higher Education Institutions Scientific Research and Publication Ethics Directive” were complied with. None of the actions specified under the heading “Actions Contrary to Scientific Research and Publication Ethics”, which is the second part of the directive, have been taken.

#### **Ethics Committee Permission Information:**

Name of the committee that made the ethical evaluation = Afyon Kocatepe University Scientific Research and Publication Ethics Committee

Date of ethical review decision= 20.12.2023

Ethics assessment document issue number= 2023/357

### **Findings**

The views and experiences of social studies teacher candidates regarding virtual museums were analyzed under the following themes: the virtual museums they visited, their opinions on virtual museums, their views on the usability of virtual museums in social studies lessons, the activities they designed using the virtual museums they visited, and their evaluations of the virtual museum tour activity. Table 1 presents the virtual museums visited by the teacher candidates.

**Table 1.***Virtual Museums Visited by Teacher Candidates*

Sub-themes	Codes	<i>f</i>
Archaeological museums and heritage sites	Göbeklitepe Archaeological Site	12
	Anatolian Civilizations Museum	10
	Adana Archaeological Museum	6
	Istanbul Archaeological Museums	5
	Çatalhöyük Archaeological Site	4
	Gaziantep Archaeological Museum	3
	Ihlara Valley Archaeological Site	3
	Ephesus Archaeological Site	3
	Hierapolis (Pamukkale) Archaeological Site	3
	Gaziantep Zeugma Mosaic Museum	2
	Şanlıurfa Karahantepe Archaeological Site	1
	Hatay Archaeological Museum	1
	Boğazköy Hattusa Archaeological Site	1
	Nemrut Archaeological Site	1
History and ethnography museums	Ankara Ethnography Museum	14
	Ankara Republic Museum	8
	Museum of Turkish and Islamic Arts	7
	İzmir Atatürk Museum	6
	Ankara Independence War Museum	6
	Gallipoli 1915 Red Crescent Hospital Exhibition Area	5
	Ankara University Toy Museum	3
	Ankara Police Museum	3
	Çanakkale Epic Promotion Cente	2
	Antalya Museum	2
	Topkapı Palace	2
	Istanbul Airport Museum	2
	Ankara Hacı Bayram Veli Museum	2
	Presidency National Struggle Exhibition	1
	Çanakkale Kilitbahir Castle Museum	1
	Bursa City Museum	1
	Bayburt Kenan Yavuz Ethnography Museum	1
	Samsun Gazi Museum	1
	Şanlıurfa Museum	1
Science and technology museums	Turkish Islamic Science and Technology History Museum	6
	Konya Science Center:	1
Nature and environment museums	Nevşehir Göreme Open-Air Museum	3
	MTA General Directorate Martyr Cuma Dağ Natural History Museum	1

As seen in Table 1, the virtual museums visited by the teacher candidates were analyzed under the sub-themes of archaeological museums and heritage sites, history and ethnography museums, science and technology museums, and nature and environment museums. An examination of the virtual museums visited by the teacher candidates reveals that they chose museums in different regions of Türkiye, representing diverse themes, based on their interests and personal curiosities. In this context, it can also be stated that the virtual museums visited by the teacher candidates align with the content of the Social Studies Curriculum, making them relevant resources for educational activities.

The teacher candidates visited the following virtual archaeological museums and heritage sites: Göbeklitepe Archaeological Site, Anatolian Civilizations Museum, Adana Archaeological Museum, Istanbul Archaeological Museums, Çatalhöyük Archaeological Site, Gaziantep Archaeological Museum, Ihlara Valley Archaeological Site, Ephesus Archaeological



Site, Hierapolis (Pamukkale) Archaeological Site, Gaziantep Zeugma Mosaic Museum, Şanlıurfa Karahantepe Archaeological Site, Hatay Archaeological Museum, Boğazköy Hattusa Archaeological Site, and Nemrut Archaeological Site.

The teacher candidates visited the following virtual history and ethnography museums: Ankara Ethnography Museum, Ankara Republic Museum, Museum of Turkish and Islamic Arts, Izmir Atatürk Museum, Ankara Independence War Museum, Gallipoli 1915 Red Crescent Hospital Exhibition Area, Ankara University Toy Museum, Ankara Police Museum, Gallipoli Campaign Promotion Center, Antalya Museum, Topkapı Palace, Istanbul Airport Museum, Ankara Hacı Bayram Veli Museum, Presidency National Struggle Exhibition, Çanakkale Kilitbahir Castle Museum, Bursa City Museum, Bayburt Kenan Yavuz Ethnography Museum, Samsun Gazi Museum, and Şanlıurfa Museum.

The teacher candidates visited the Turkish Islamic Science and Technology History Museum and the Konya Science Center as virtual science and technology museums, and the Nevşehir Göreme Open-Air Museum and the MTA General Directorate Martyr Cuma Dağ Natural History Museum as virtual nature and environment museums. Table 2 presents the views of teacher candidates regarding virtual museums.

**Table 2.**  
*Views of Teacher Candidates Regarding Virtual Museums*

Sub-themes	Codes	<i>f</i>
Virtual tour experience	Being interesting/appealing	42
	Evoking curiosity/excitement	23
	Being visually rich/educational	30
	Giving the feeling of a real museum visit	18
	The use of technology for educational purposes	16
	Being advantageous in terms of time	15
	The desire to visit the virtual museum in person as well	15
	Lack of prior knowledge about virtual museums	12
	Being more enjoyable	12
	Curiosity about the virtual tour of the visited museum/historical site	11
	Being able to tour distant museums through virtual tours	9
Ease of use	Being financially advantageous	7
	The ease of navigating through the virtual tour	21
	The presence of informative texts for the sections	11
	Audio/video support in the virtual tour	5
	The availability of guides for the virtual tour	4
Technological challenges and shortcomings	The decrease in image quality when zooming in	22
	The inability to clearly read text when zooming in	14
	Difficulty in passing from one section to another	12
	Insufficient navigation within the museum	11
	Limited written information in the museum	11
	Lack of audio narration/music in the virtual tour.	9
	Few three-dimensional/moving models in the museum	4
	Internet connection issues during the virtual tour	3
	Freezing/lagging during the virtual tour	3
	The museum's lighting system being visually straining	1

As seen in Table 2, the teacher candidates' views on virtual museums were analyzed under the sub-themes of virtual tour experience, ease of use, and technological challenges and shortcomings.

Teacher candidates who explained their views on virtual museums through the virtual tour experience expressed their opinions as follows: being interesting/appealing, evoking curiosity/excitement, being visually rich/educational, providing the feeling of a real museum visit, the use of technology for educational purposes, being advantageous in terms of time, the desire to visit the virtual museum in person as well, lack of prior knowledge about virtual museums, being more enjoyable, curiosity about the virtual tour of the museum/historical site, the ease of navigating through the virtual tour and being financially advantageous.

TC2F explained her virtual tour experience through the Denizli Hierapolis Archaeological Site as follows: *"I wanted to revisit Hierapolis, which reflects the history of my city and which I had already visited in person, through the virtual museum to clarify the details I remembered and to see it from a different perspective. Visiting Hierapolis in person is very enjoyable, but when I recall searching for water in the heat, getting tired from walking, and being scorched by the sun, I realized that the virtual museum is much easier and more effortless both financially and emotionally. Of course, visiting in person has a unique charm. I found it very useful for exploring and seeing places that are far away and difficult to reach. Being able to visit the places I've seen with just two clicks was quite delightful... This must be what it means to use technology in a beneficial and successful way."*

TC5F described the virtual museum experience through the Çanakkale 1915 Red Crescent Hospital Exhibition Area as follows: *"...Inside this museum, there are various points of interest starting from the machine gun trench protecting the hospital from enemy aircraft, including the tea house, operating room, storage, registration and first aid tents, and the shaded area where our fallen soldiers were kept. What impacted me the most about this hospital was, as soon as I entered, the sound effects of people crying out in agony during the war, gunfire, bomb explosions, and even the mooing of cows, which deeply moved me. For a moment, I felt as though I was living in that era; I was covered in goosebumps and became very emotional. Later, when I entered the hospital, I saw scenes of injured people, those praying, those reciting prayers, people sitting and lying down, doctors attending to patients, and fallen soldiers with their bodies covered. It deeply affected me, and my eyes filled with tears. After visiting this museum, I understood even more clearly that we can never repay the sacrifices made by our soldiers and people, who gave their lives, blood, and everything for this homeland. It is definitely one of the places that must be visited to instill a sense of national consciousness. Thanks to this activity, I had the opportunity to visit it online again and relive the emotions I experienced there..."*

TC12F shared her experience during the virtual tour of the Ankara Independence War Museum as follows: *"...While exploring the virtual museum, I realized that pausing the tour to do some research is much easier compared to a physical museum visit. For instance, I researched how and under what conditions the items in the General Assembly Hall were gathered, and I learned that they serve as a vivid example of the spirit of that time: 'There is scarcity, but it does not pose an obstacle.'" TC28F described her virtual tour experience of the Bayburt Kenan Yavuz Ethnography Museum as follows: *"First of all, I want to say that the location of the museum is very beautiful. The open space looks very refreshing. The exterior of the museum is also quite aesthetically pleasing. They visually exhibited water mills, which**

*are almost non-existent now but were widely used in the past. When we entered the exhibition hall, we encountered items from those times, such as bowls, scissors, and sewing machines. There are also vintage cameras and cassettes, which are currently very popular among young people. Old records, telephones, clocks, and coins used during that time were displayed very clearly. This clarity is very impressive for a virtual tour. One of the things that caught my attention was the traditional Turkish floor dining table, an essential element of Turkish culture. There are many tools and equipment used for agriculture. Seeing these items made me think about how challenging the tasks of that time must have been. I greatly admired the interior and exterior design of the hall prepared to display these items. It gave me a strong sense of the past. For example, a village house was recreated. The items inside created a very authentic environment. It was very impressive that they considered every detail, from the cradle to dried vegetables. Of course, the Turkish flag had a prominent place in the exhibit. When I visited the Dede Korkut and Turkish Identity Library, which consists of works that form the foundation of Turkish-Islamic identity, I felt a warm and sincere atmosphere. I think students who love reading books would feel very connected to this place. The prayer area in the museum was also very well-designed, meticulous, and inviting. I came across a section called Loru Han. It reminded me of the tribal houses we see in TV series, but it was definitely more spacious and peaceful. The carvings on the doors and the flowers planted around the area made the atmosphere even more beautiful. I also visited an area called the observation terrace, which looked very refreshing. According to the information I read, various celebrations and weddings were held here. Thanks to this museum, I gained an understanding of how and where a family lived in the past. Every part of the museum felt very warm and welcoming. It is definitely a museum I want to visit in person. If it looks this beautiful virtually, I can only imagine how amazing it must be in reality..."*

Teacher candidates who explained their views on virtual museums in terms of ease of use expressed their opinions as follows: the ability to conduct the virtual tour easily, the presence of informative texts for the sections, the availability of audio/video support during the virtual tour, and the inclusion of guides for the virtual tour.

TC13F described the ease of use of the Göbeklitepe Archaeological Site virtual tour as follows: *"...At the entrance of the museum, I first encountered the exhibition area. Having an informative section about Göbeklitepe and its history here was a great idea for gaining knowledge before visiting the archaeological site. In terms of technology, it was possible to see various tools in this area. The video option was particularly nice, as watching the video before the tour provided a brief overview and context for the visit. The opportunity to examine the structures one by one at the site was very well thought out. Clicking on the circular areas at each structure gave the feeling of walking among those monoliths. In this sense, I was very impressed and liked it a lot. While exploring the structures, I had the chance to closely examine the motifs and figures on all the stones..."*

TC22M described the virtual tour of Topkapı Palace as follows: *"...The image quality, usability of the interface, and the speed of operations within the site were quite good. The wide-ranging view provided was particularly intriguing. I didn't encounter any issues during the tour..."* TC26F emphasized the importance of the informative texts in the Ankara

Independence War Virtual Museum as follows: *"...The sections with informational content were specifically added and were clearly readable. In this respect, I was genuinely satisfied with the virtual tour and felt like I was actually visiting the museum..."*

Teacher candidates who explained their views on virtual museums in terms of technological challenges and shortcomings expressed their opinions as follows: the decrease in image quality and lack of clarity in text when zooming in, difficulties in passing from one section to another, insufficient navigation within the museum, limited written informational content, absence of audio narration or music in the virtual tour, the small number of three-dimensional or interactive models, internet connection issues during the virtual tour, freezing or lagging during the tour, and visually straining lighting systems in the museum. Some students shared their experiences regarding the difficulties they encountered during virtual museum tours as follows:

TC30F (Anatolian Civilizations Museum): *"The virtual museum was quite good, but it could be improved. For example, if you could touch the historical artifacts and receive brief audio information about them, it would be more efficient..."*

TC31M (Göbeklitepe Archaeological Site): *"In evaluating the virtual museum section for Göbeklitepe, the work done is impressive. Efforts were made to include almost every detail. However, the descriptions next to the artifacts serve as guides for me when visiting a museum. In this virtual museum, more than half of the descriptions were unreadable, and when I zoomed in, the image lost its clarity..."*

TC35F (Independence War Museum, First Turkish Grand National Assembly): *"I explored the Independence War Museum, also known as the First Grand National Assembly of Turkey [GNAT], on sanalmuze.gov.tr, but I didn't find the experience sufficient. When I researched through other sources, I gained more information about the First Assembly. First of all, the image quality wasn't very good, and I couldn't get information about the things I was curious about by zooming in. While other sources contained many pictures of paintings, I noticed that the site didn't include much about the paintings inside the museum. I also think the lack of an audio feature was a significant drawback. If there had been an audio feature, the artifacts in the museum could have been introduced audibly..."*

TC39F: *"...Since the Nevşehir Göreme Museum is an open-air museum, I had a bit more difficulty exploring it. Because it's virtual, I often got confused and wandered around the same spot, but even this detail amused me..."*

TC43F: *"...The experience feels realistic, like you're actually there, with a camera-like perspective. However, I had a hard time moving forward, turning left, right, or back, and it made me feel a bit overwhelmed. While technology provides us with a great opportunity, if even I had trouble navigating, I think middle school-level students might struggle a bit more when exploring a virtual museum..."*

Table 3 presents the teacher candidates' views on the usability of virtual museums in social studies lessons.

**Table 3.***Views of Teacher Candidates on the Usability of Virtual Museums in Social Studies Lessons*

Sub-themes	Codes	f
The learning-teaching process	Being used as an instructional material	40
	Facilitating permanent learning	25
	Making the topics taught in the lesson more concrete	23
	Attracting students' attention	13
	Making the lesson enjoyable	3
Acquisition of general knowledge and value	Introducing culture to students	20
	Instilling the value of patriotism in students	19
	Fostering a love for Atatürk in students	4
	Encouraging students to appreciate history	4
	Promoting the value of cooperation among students	1
Awareness and skill development	Enhancing students' sense of chronology	3
	Improving students' creative thinking skills	4
	Developing students' awareness of recycling	1
	Instilling a sense of cooperation in students	1
	Encouraging students to develop a habit and appreciation for visiting museums	1

As seen in Table 3, the teacher candidates' views on the usability of virtual museums in social studies lessons were analyzed under the sub-themes of teaching-learning process, general culture and value acquisition, and awareness and skill development.

Teacher candidates who explained their views on the usability of virtual museums in social studies lessons through the teaching and learning process expressed their opinions as follows: being used as teaching materials, facilitating permanent learning, making the topics taught in the lesson more concrete, attracting students' attention, and making the lesson more enjoyable. Some of the teacher candidates' views on this topic are as follows:

TC2F: *"...The ancient city of Hierapolis, which also bears traces of the Byzantine period, will positively influence students' perspectives on history by allowing them to see historical traces, structures, and living spaces. Additionally, since they learn by experiencing and exploring, their retention of information will also increase..."*

TC4F: *"...After covering a topic in class, a virtual museum tour can help make the information more permanent. I believe visual memory is very important for students..."*

TC19F: *"The Ankara Ethnography Museum I visited allowed me to gain knowledge about the social and cultural lifestyles during the Ottoman and Republic periods. The museum features items such as hand looms and their techniques, clothing styles, woven carpets, miniatures, ornaments, weapons, and various objects brought from mosques and lodges from the Ottoman and Republic periods. After touring the museum, I realized that, as a teacher candidate, I could use virtual museums as teaching materials in the future to make information more effective and long-lasting when conveying knowledge to my students about the social, cultural, and ethnographic structure of the Ottoman and Republic periods. For instance, I could connect the learning outcome in the 7<sup>th</sup> grade Culture and Heritage unit, 'SB.7.2.5. Gives examples of the Ottoman understanding of culture, art, and aesthetics,' with the artifacts in the Ankara Ethnography Museum to teach the lesson. This is because textbooks are often insufficient in terms of providing information. By integrating the*

*museum into the classroom through technology instead of teaching within four walls, I could make the lesson more engaging and memorable.”*

TC43F: *“In the Antalya Museum, there were tools and items from ancient times, statues from the Byzantine period, burial mounds (kurgans), jewelry, and many other things. While exploring, I noticed that everything was entirely related to social studies, and seeing the actual tools and items I had studied in class helped me visualize them much better. For example, when teaching about the cutting tools from ancient times, if I were to just say 'cutting tools made of stone' and move on, the students might not understand it as well. If I showed this lesson on the smartboard after covering it in class, I could achieve more lasting learning...”*

Teacher candidates who explained their views on the usability of virtual museums in social studies lessons through general culture and value acquisition expressed their opinions as follows: virtual museums introduce culture to students, instill the value of patriotism, foster a love for Atatürk, make history more appealing, and promote the value of cooperation among students. Some teacher candidates' views on this subject are as follows:

TC5F (Çanakkale 1915 Red Crescent Hospital Exhibition Area): *“It can be shown as an example for middle school students to instill important values such as national independence, sovereignty, and love for the homeland and nation...”*

TC11F: *“From the perspective of the social studies course, visiting the Çanakkale Campaign Promotion Center will allow children to closely see how our homeland could not be divided in the past and how our glorious army achieved remarkable successes. It will also help them understand that it was not easy for Türkiye to reach where it is today...”*

TC19F: *“As a teacher candidate, in the future, I would like to teach my students about wars, love for the homeland, and its defense by using the example of the Çanakkale War, which was one of the most difficult and unjust wars of the Ottoman period. By making them feel the love and defense of their homeland, I can help them better understand these concepts. However, since I will not be able to take my students to Çanakkale due to conditions and limitations, I can use the Çanakkale Campaign Promotion Center Museum, which I visited virtually, as a teaching material in class. By visualizing the content, I can make the lesson more efficient. Additionally, I can relate it to the learning objective (SB.6.1.2. Analyzes the place and role of social, cultural, and historical ties in the formation of social unity) and teach my lesson within this context.”*

Teacher candidates who explained their views on the usability of virtual museums in social studies lessons through awareness and skill development expressed their opinions as follows: virtual museums enhance students' sense of chronology, improve their creative thinking skills, instill awareness of recycling and cooperation, and foster a habit and love of visiting museums. Some teacher candidates' views on this subject are as follows:

TC2F: *“...By virtually visiting the Ankara University Toy Museum, students' imagination can be developed. Their creativity can be enhanced, making them more productive. Through the toy museum, students can also be introduced to the concept of recycling. They can learn about the history of toys and gain knowledge about traditional*

toys. Toys could be collected and donated to institutions like care homes or orphanages, fostering a sense of charity and kindness.”

TC20F: “...In my opinion, all kinds of museums should be visited because I believe they will develop students’ critical and creative thinking skills. Additionally, I think museum visits will raise students’ awareness about history...”

Table 4 presents the activities designed by teacher candidates using the virtual museums they visited.

**Table 4.**

*Activities Designed by Teacher Candidates Using the Virtual Museums They Visited*

Sub-themes	Codes	f
Learning materials and techniques	Educational game	17
	Worksheet	17
	Question-and-answer activity	11
	Organizing a museum visit	6
	Brainstorming	4
	Puzzle	2
	Station technique	2
	Archaeological excavation activity	1
Visual arts and design activities	Drama	16
	Creating replicas of artifacts seen in the museum	13
	Creating a tour board	8
	Drawing pictures of the places and works seen	6
	Preparing a museum brochure/poster/flyer	4
	Preparing an exhibition	3
Creative writing and thinking activities	Evaluations of the museum after the virtual tour	37
	Writing stories/tales with historical empathy	4

As seen in Table 4, the activities designed by teacher candidates using the virtual museums they visited were analyzed under the sub-themes of learning materials and techniques, visual arts and design activities, and creative writing and thinking activities.

Teacher candidates who designed learning materials and applied learning techniques using the virtual museums they visited developed activities such as educational games, worksheets, question-and-answer sessions, organizing museum tours, brainstorming, puzzles, the station technique, and archaeological excavation activities. Some examples of activities designed by teacher candidates are as follows:

TC1M: “I would explore the Konya Science Center through a virtual tour. Using the station technique, I would create four stations in the form of poetry, painting, slogans, and song lyrics. I would ask the students to collaborate and contribute to each station based on what they remembered from the museum. The resulting work would be displayed on a bulletin board in the school hallway.”

TC8F: “I would prepare a spinning wheel. On the upper sections of the wheel, I would write questions about the virtual museum we visited. I would select a student from the class list to spin the wheel and answer the question. If the student answered correctly, they would choose a classmate and ask them a question about the museum. If the student didn’t know the answer, they would have to answer one of the penalty questions located on the lower section of the wheel. At the end of the lesson, I would reward the student with the most correct answers with a prize.”

TC33M: *"First, I would guide students on a virtual tour of the Adana Archaeological Museum using a smartboard. Then, I would provide them with information about the museum. To make the learning more permanent, I would prepare cards related to the museum at the teacher's desk, writing distinctive features of the museum on these cards. I would ask the students to identify these distinctive points. The group that finds the points earns points. Later, I would have the students in each group prepare five questions about the museum and ask them to the opposing group."*

TC38M: *"Before the museum visit, the teacher introduces the museum with a brief presentation. Then, students begin exploring the Ankara Ethnography Virtual Museum using the provided website link. As they tour the museum exhibits, students analyze each exhibit and collect information about it on Traveler's Route activity worksheets. The worksheets include questions and answers about the exhibit, information boxes for completing answers, explanation sections, and relevant images."*

Teacher candidates who designed visual arts and design activities using the virtual museums they visited developed activities such as drama, creating replicas of artifacts seen in the museum, making a trip board, drawing pictures of the places and artifacts viewed, and designing museum brochures, posters, or flyers. Some examples of activities designed by teacher candidates are as follows:

TC6F: *"Students are taken on a virtual tour of the Istanbul Museum of the History of Islamic Science and Technology. They are shown and told about scientists and the technological discoveries they made. Then, students are asked to imagine themselves as scientists and come up with their own invention, creating a model of it. The models created by the students are then exhibited in the school."*

TC8F: *"After virtually touring the Ankara Ethnography Museum in class, I would ask students to bring items from home similar to the artifacts they saw in the museum. They would also share stories and information about these items that they learned from their elders. In class, we would relate the items brought in with the virtual museum visit and compare the items to those used in modern times. Just like during Local Goods Week, I would organize an exhibition of traditional clothing and old items."*

TC13F: *"The events seen during the virtual tour of the Çanakkale 1915 Red Crescent Hospital Exhibition Area can be dramatized by the students. Through the emotions and thoughts experienced during the virtual tour and drama process, children would develop empathy and gain a better understanding of what happened. Additionally, students could be tasked with designing a model of the Çanakkale monument using recycled materials."*

TC36F: *"After taking students on a detailed virtual tour of the Göbeklitepe Archaeological Site, I would divide them into groups and have them work on creating museum brochures. Students would observe the artifacts in the museum and study them in detail to gain in-depth knowledge. Then, I would provide groups with poster boards and crayons, asking them to create and illustrate brochures about the museum. Alternatively, I would have the students create posters in groups about the museum. These brochures and posters would then be displayed in a 'Tour and Observation' corner within the school."*



Teacher candidates who designed creative writing and thinking activities using the virtual museums they visited developed activities such as writing evaluations of the museum after the virtual tour and creating stories or fairy tales with historical empathy. Some examples of activities designed by teacher candidates are as follows:

TC1M: *“In the social studies class, I would organize a virtual tour of the Martyr Cuma Dağ Natural History Museum. After the tour, I would have the students sit in a circle and conduct a brainstorming session, ensuring that every student has a chance to speak.”*

TC4F: *“Before the virtual museum tour, I would provide students with information, and after the tour, I would ask each student to write about what they saw, what they remembered, and their thoughts about the museum. Then, I would have them ask and answer questions with each other.”*

TC11F: *“After visiting the Çanakkale Campaign Promotion Center, I would ask students to research their favorite hero story from the museum and present it to their classmates. Listening to and understanding these hero stories one by one will leave an impact on them and help them better appreciate the value of this homeland.”*

TC36F: *“After taking students on a detailed tour of the museum, I would ask them to write stories as if they were imaginary heroes living during that period, focusing on the objects displayed in the museum, historical documents, and the doctors, nurses, wounded soldiers, animals, and babies depicted there. I would encourage them to include the location, time, and starting point of the event, highlighting the challenges faced and the victories achieved, to enhance the significance of the museum visit. Alternatively, I would assign roles to each student in the class to reenact the scenes represented by the models in the museum. Using various sound effects and equipment, we would recreate the events of the war to promote impactful learning.”*

Table 5 presents the teacher candidates' views on the virtual museum tour activity.

**Table 5.**

*Opinions of Teacher Candidates on the Virtual Museum Tours Activity*

Sub-themes	Codes	<i>f</i>
Learning and academic development	Providing permanent learning instead of memorized knowledge	7
	Examining the Social Studies Curriculum to match museums and outcomes	7
	Revising educational sciences content to prepare activities	6
	Overlapping virtual museum tours with the Social Studies Teaching Program course content	5
	Contributing to KPSS	2
	Being an activity that improves writing skills	2
Personal and professional development	Being an activity that is done effortlessly/pleasurably	33
	Contributing to the teaching life	16
	Difficulty in preparing the activity	2
	Difficulty in matching the learning outcome and museum	2
Acquisition of cultural and historical knowledge	Developing the imagination	1
	Being culturally educational	23
	Creating a desire to visit museums	21
	Understanding the importance of museum visits	10
	Discovering new museums with virtual tours	8
	Increasing awareness of cultural heritage	3

As seen in Table 5, the teacher candidates' views on the virtual museum tour activity were analyzed under the sub-themes of learning and academic development, personal and professional development, and acquisition of cultural and historical knowledge.

Teacher candidates who explained the virtual museum tour activity in terms of learning and academic development expressed their opinions as follows: it facilitates permanent learning instead of rote memorization, involves reviewing the Social Studies Curriculum to match museums with learning outcomes, requires revisiting educational sciences knowledge for activity preparation, aligns with the course content of the Social Studies Teaching Program, contributes to KPSS exam preparation, and is an activity that enhances writing skills. TC1M stated that he/she refreshed his knowledge as follows: *"Although I had previously reviewed the learning outcomes of the Social Studies Curriculum, I revisited them in detail to align them with virtual museums. Preparing activities using virtual museums allowed me to revisit my educational sciences knowledge. I believe that this virtual museum tour activity will make significant contributions to the lessons I will conduct with my students in the future. At the same time, I think reviewing the curriculum and learning outcomes will be beneficial for the KPSS exam."* TC3F connected the virtual museum tours to the courses in the Social Studies Teaching Program and shared his/her thoughts as: *"I found that museums are highly aligned with the courses we take at the faculty. While exploring virtual museums, I was reminded of the courses we studied in our program. Designing activities made me recall our educational sciences courses. This made the virtual museum tours even more enjoyable. In other words, virtual museum tours reinforced some of the theoretical knowledge we learned in certain courses, and now I have become a teacher candidate with a growing desire to visit museums in person."* TC4F expressed that she achieved permanent learning during the activity, stating as follows: *"If I compare this activity with classical exams or tests, I would likely have resorted to rote memorization for the exam. Since the information wouldn't have been permanent, I would either have passed the course without learning much or failed it. This activity was very instructive for me. During the activity, I realized that I learned better and that the knowledge I gained was more permanent."* TC15F stated that *"It was a very enjoyable and instructive activity. I had a long time to complete the activity, and I took my time, doing it slowly because it was enjoyable and thoughtful. While completing the activity, I constantly reflected on my profession and how the activity contributed to me and my career. In fact, on the day I completed the activity, I told a friend about it and shared what I felt while working on it. I think it was a very different, informative, and educational activity for us. While doing it, I felt more developed because I examined the learning outcomes of the Social Studies Curriculum one by one. I thought about how I could teach these outcomes effectively to my students in the future and, most importantly, how to make my teaching permanent. I reviewed social studies textbooks to generate ideas while preparing the activity. I didn't think this activity was assigned as just homework to keep us busy, nor did I feel bored or question its usefulness. It was not the type of activity where I asked myself, 'Why am I doing this? What use will it have for me?' Instead, it was a truly engaging and purposeful experience."*

Teacher candidates who explained the virtual museum tour activity in terms of personal and professional development expressed their opinions as follows: it was an activity that could be completed without difficulty and with enjoyment, contributed significantly to their teaching

careers, involved challenges in matching learning outcomes with museums during activity preparation, and fostered imagination. TC2F described their thoughts on the activity process as follows: *“This activity was one where I never thought, ‘Ugh, how am I going to do this?’ Instead, I enjoyed it and wrote down what came to mind with enthusiasm.”* TC8F evaluated the virtual museum tour activity, stating: *“The virtual museum tour activity was something that could improve us. Through this activity, I better understood the importance of museums for lessons and how they could be used as teaching materials. I examined the topics, learning outcomes, and fields in the textbooks. I questioned how students could better understand the topic through the use of virtual museums in lessons. As a social studies teacher candidate, I designed an activity for students for the first time. I believe activities like this will better prepare us for teaching.”* TC13F explained the process for determining the content of the activity as follows: *“I think this activity was very beneficial professionally. I am a 32-year-old preschool teacher and also studying in the social studies teaching program. I felt ashamed of myself for not knowing about virtual museum applications, but learning has no age limit. Before deciding on the virtual museums I would tour for the activity, I visited many museums, and my 5-year-old son accompanied me while I explored them. Since he loves the Rafadan Tayfa Göbeklitepe movie, we chose Göbeklitepe together. The movie also gave me ideas for designing the activity. In short, I had a lot of fun and learned a lot while completing this activity.”* TC18F mentioned that she learned a lot and enjoyed the virtual museum tour activity but also experienced challenges, stating: *“I learned so much and enjoyed this activity a lot. However, I struggled a lot in the activity preparation phase. I envisioned virtual museums as being distant from the school and classroom environment, which made it difficult to plan the activity.”*

Teacher candidates who explained the virtual museum tour activity in terms of cultural and historical knowledge acquisition expressed their opinions as follows: the activity was culturally instructive, fostered a desire to visit museums, helped understand the importance of museum visits, enabled the discovery of new museums through virtual tours, and increased sensitivity to cultural heritage. TC5F evaluated the cultural benefits of the virtual museum tour activity, stating: *“The virtual museum tour activity was very beneficial for me. Exploring the museums I selected based on my interests was a very useful experience. In the future, I may be able to visit these museums in person, but exploring them online made me feel like I had already visited them. On the same day, I had the chance to access multiple museums with ease. This will also allow me to convey our historical and cultural heritage to my students in a well-equipped manner in the future. I think museums and historical artifacts are not given enough importance in our country. If we, as future teachers, become aware and culturally sensitive, we can instill this feeling in our students as well.”* TC11F reflected on the cultural benefits of virtual museum tours, saying: *“Since we don’t always have the time or opportunity to visit every museum, even touring museums virtually allows us to view our culture from a broader perspective.”* TC12F compared physical and virtual museums, expressing the impact of virtual museum tours as follows: *“In general, I love visiting museums in the cities I travel to. Those historical places and objects feel enchanting to me. When I close my eyes, it’s as if I could travel back to the time when those objects were part of a living world. A teacher of mine once said in high school, ‘Go to a place like (Afyonkarahisar) Imaret Mosque, touch it, close*

*your eyes, and you're in the 15th century.' It stayed with me, and I still do it. Virtual tours didn't fully give me that feeling because I couldn't touch the objects, but they increased my readiness, excitement, and desire to see them. This way, I virtually crossed distances I wouldn't currently be able to travel. Moreover, when I visit these museums in person in the future, the experiences and knowledge I gained through virtual museum tours will guide me and make my visit even more enjoyable." TC20F explained how the virtual museum activity fostered an interest in visiting museums: "I wasn't very interested in or curious about museums before. However, the virtual museums I explored were so impressive that I noted down some of them and decided to visit them in person. Thanks to this activity, I also became curious about the museums in the city I live in and visited them immediately. I believe this activity added a lot to my perspective."*

## **Discussion and Conclusion**

In this study, which aimed to determine the views and experiences of social studies teacher candidates regarding virtual museums, the perspectives of the teacher candidates in the study group were evaluated in terms of the virtual museums they visited, their opinions about virtual museums, their views on the usability of virtual museums in social studies lessons, the activities they designed using the virtual museums they visited, and their opinions on the virtual museum tour activity. The virtual museums visited by the teacher candidates were analyzed under various themes, including archaeology museums and archaeological sites, history and ethnography museums, science and technology museums, and nature and environment museums. Among the virtual museums visited by the teacher candidates, prominent cultural and historical sites such as Göbeklitepe Archaeological Site, Anatolian Civilizations Museum, Ankara Ethnography Museum, Ankara Republic Museum, Museum of Turkish and Islamic Arts, and the Turkish Islamic Science and Technology History Museum were highlighted. This reflects the teacher candidates' interest in history, culture, and science, as well as their curiosity to explore Türkiye's rich heritage. Additionally, the alignment of the virtual museums visited by the teacher candidates with the Social Studies Curriculum demonstrates that such activities can serve as effective tools in education and contribute to the curriculum. İlhan et al. (2021) emphasized the importance of considering the role of teachers in the integration of virtual museums into education. They suggested that social studies teacher candidates should receive training on virtual museums or be made aware of their potential during their undergraduate studies.

The teacher candidates' views on virtual museums were analyzed under the themes of virtual tour experience, ease of use, and technological challenges and shortcomings. In the context of the virtual tour experience, teacher candidates stated that virtual museum tours were engaging, educational, and advantageous in terms of time but did not fully replace the experience of a physical museum visit. Regarding technological challenges and shortcomings, issues such as decreasing image quality, insufficient navigation, and internet connectivity problems were highlighted. As a result, it was found that while teacher candidates viewed virtual museum tours as beneficial for education, they emphasized the need to address certain technical difficulties and shortcomings. In a study by İralı (2019), it was noted that virtual museums could be used for purposes such as entertainment, interaction, and information

acquisition. Similarly, Ulusoy (2010) found that virtual museums were perceived as both educational and entertaining. İlhan and Dolmaz (2022) identified in their research that while virtual museums offer significant advantages as educational tools, they also present certain disadvantages. Teacher candidates emphasized the advantages of virtual museum tours, describing the experience as creative, advantageous, inspiring, pleasant, comfortable, motivating, unique, practical, efficient, engaging, impressive, enjoyable, educational, and beneficial. However, they also highlighted technical disadvantages, such as the inability to examine artifacts in detail, difficulties in use, limited zoom-in and zoom-out adjustments, lack of panoramic views, absence of guides, and visual quality issues (İlhan & Dolmaz, 2022). Kaya and Okumuş (2018) and Sürme and Atılgan (2020) noted that during virtual museum visits, visitors prioritized ease of use, accessibility to all galleries, and the readability of signs. Similarly, Çınar et al. (2021) found that virtual museums do not provide the realistic experience offered by physical museums. Çınar et al. (2021) found that although students appreciated virtual museum tours, they preferred physical museum visits due to the opportunity to experience the museum atmosphere in person, see the artifacts directly, and touch them. While virtual museums offer many advantages, their inability to allow tactile interaction with objects or provide the experience of walking through corridors makes them fall short of delivering an authentic museum experience, which constitutes the most prominent criticism (Barlas-Bozkuş, 2014). Kaya and Okumuş (2018) emphasized the need for music and video support, improved visual quality, and detailed background information for visuals to create a more effective virtual museum experience. Similarly, Çıldır and Karadeniz (2014) suggested that the educational departments of museums could increase the educational use of virtual museums by preparing and offering schools educational packages based on their collections. These packages could include games, puzzles, videos, and animations accessible through virtual museums.

The teacher candidates' views on the usability of virtual museums in social studies lessons were examined in the dimensions of teaching-learning process, general culture and value acquisition, and awareness and skill development. It was concluded that virtual museums support permanent learning by concretizing lessons, increase student interest, make lessons more enjoyable, and are effective as teaching materials. Additionally, virtual museums were found to instill national consciousness, cultural awareness, and a love for Atatürk, enhance students' understanding of time and chronology, improve their creative thinking skills, and foster a habit and appreciation for visiting museums. In a study conducted by Çalışkan et al. (2016) with social studies teacher candidates, it was stated that virtual museums support permanent learning in social studies lessons, provide an active and enjoyable learning environment, and offer advantages such as concretization, fostering a love for history, and promoting empathy. Similarly, Peker (2020) found that social studies teacher candidates strongly believed that the use of virtual museums in the educational process would create lasting and positive effects on students. Koca and Daşdemir (2018) highlighted the positive impact of virtual museum tours on students' academic achievement, while Meirkhanovna et al. (2022) and Sevi and Er-Türküresin (2023) emphasized the role of virtual museums in fostering sensitivity to cultural heritage, patriotism, scientific thinking, aesthetics, and other important values in students. Çınar et al. (2021) noted that virtual museums enrich the

teaching and learning process, making lessons more enjoyable. Turgut (2015) and Gılıç (2020) found that virtual museum tours contribute to the learning process, offer an enjoyable experience, and add dynamism to lessons. Durmuş (2012) reported that students enjoyed virtual museum tours and expressed a desire for such activities to be incorporated into other lessons as well. Ustaoglu (2012) stated that traditional teaching methods did not evoke curiosity in students, whereas virtual museum applications increased curiosity, which in turn boosted engagement and success in lessons.

The activities designed by teacher candidates using the virtual museums they visited were categorized into learning materials and techniques, visual arts and design activities, and creative writing and thinking activities. Teacher candidates developed various learning materials such as educational games, worksheets, question-and-answer activities, and archaeological excavation activities. In the scope of visual arts and design activities, they created drama performances, replicas of artifacts seen in museums, drawings, and museum brochures. Additionally, in the domain of creative writing and thinking, they designed activities such as evaluations after virtual museum visits, historical empathy-based storytelling, and brainstorming sessions. Öner-Armağan et al. (2023) found in their research that while teacher candidates initially emphasized their technological proficiency and subject knowledge during virtual museum use, they later recognized the importance of pedagogical knowledge and demonstrated an ability to integrate content with pedagogy effectively after the application. Barab et al. (2005) and Iqbala et al. (2010) stated that virtual applications provide students with a sense of being in a different environment, thereby enhancing their imagination and problem-solving skills. They also noted that such applications offer highly interactive learning experiences and create suitable environments for constructing knowledge, brainstorming, and synthesizing information using diverse resources. In this context, virtual environments are seen to support both students' and teacher candidates' cognitive and pedagogical development, making the educational process more dynamic and interactive. According to Öztürk-Kömleksiz and Gökmenoğlu (2020), a child who encounters warnings from museum staff or teachers, such as "Be quiet!" or "Don't touch anything!" may find it difficult to benefit fully from a museum visit or enjoy the experience. However, the use of virtual museums in the teaching and learning process can provide children with a freer and more active learning experience, free from such restrictions, making activities designed through virtual museums more appealing and effective.

The teacher candidates' views on the virtual museum tour activity were evaluated within the framework of learning and academic development, personal and professional development, and cultural and historical knowledge acquisition. Regarding the preparation process, it was noted that the activity was carried out with ease and enjoyment, involved reviewing the Social Studies Curriculum to match museums with learning outcomes, and required revisiting educational sciences knowledge during activity preparation. However, some challenges were encountered in aligning learning outcomes with museums and during the activity design process. In terms of cultural benefits, it was stated that virtual museum tours were culturally instructive, inspired a desire to visit museums, helped better understand the importance of museums, facilitated the discovery of new museums, and enhanced sensitivity to cultural heritage. In terms of contributions to education and teaching careers, it

was emphasized that this activity had positive effects on teaching careers, supported permanent learning, aligned with the course content of the Social Studies Teaching Program, contributed to KPSS preparation, enhanced writing skills, and enriched imagination. Shehade and Stylianou-Lambert (2020) noted that high visual quality and realistic designs capture visitors' attention, increase interaction with collections and accessibility, and encourage visitors to spend more time in virtual museums. The teacher candidates who formed the study group belong to Generation Z. Generation Z refers to individuals born from the early 21st century onwards. This generation has grown up immersed in technology from infancy and understands and uses technological devices, which permeate all aspects of daily life, more effectively than previous generations. The interest of Generation Z individuals in technology is undeniable. Therefore, modern educational practices tend to capture the attention of Generation Z more effectively (Adıgüzel et al., 2014).

## **Recommendations**

Based on the research findings, the following recommendations can be made:

To address the technological challenges encountered during virtual museum tours, the technical infrastructure of virtual museums can be enhanced, image quality improved, and navigation made more user-friendly.

To make virtual museums more effective in education, their content can be enriched. Features such as audio narration, 3D models, and interactive artifacts can be added to capture students' interest.

Teacher candidates can be encouraged to use virtual museums as teaching materials. They can be guided on planning virtual museum tours, aligning learning outcomes with museums, and designing activities.

Combining virtual museum tours with physical museum visits can provide students with a broader learning experience. Virtual museums can be used as a preparatory step for physical visits, allowing students to gain prior knowledge about the museum and enhancing the educational impact of museum trips.

## References

- Adıgüzel, O., Batur, H. Z., & Ekşili, N. (2014). Kuşakların değişen yüzü ve y kuşağı ile ortaya çıkan yeni çalışma tarzı: Mobil yakalılar [The changing face of generations and the new working style emerging with generation y: Mobile collars]. *Journal of Suleyman Demirel University Institute of Social Sciences*, (19), 165-182.
- Aktaş, V., Yılmaz, A., & İbrahimoglu Z. (2021). Sosyal bilgiler öğretmenlerinin sanal müze kullanımına yönelik tutumları [Social sciences teachers' attitudes towards the use of virtual museums] *Trakya Journal of Education*, 11(3), 1294-1313.
- Ata, B. (2010). Sosyal bilgiler eğitiminde müzelerin önemi [The importance of museums in social studies education] In R. Turan & K. Ulusoy (Eds.). *Sosyal bilgilerin temelleri* [Foundations of social studies] (pp. 191-205). Maya.
- Barab, S. A., Thomas, M. K., Dodge, T., Carteaux, B., & Tüzün, H. (2005). Making learning fun: Quest Atlantis, a game without guns. *Educational Technology Research and Development*, 53(1), 86-107.
- Barlas-Bozkuş, Ş. (2014). Kültür ve sanat iletişimi çerçevesinde Türkiye'de sanal müzelerin gelişimi [The development of virtual museums in Turkey: As perspective of culture and art communication]. *The Journal of Academic Social Science Studies*, 26, 329-344.
- Bogdan, R., & Biklen, S. K. (2007). *Qualitative research for education: An introduction to theories and method*. Allyn & Bacon.
- Bowen, J. (2000). The virtual museum. *Museum International*, 52(1), 4-7.
- Creswell, J. W. (2013). *Qualitative inquiry & research design choosing among five approaches*. Sage.
- Çalışkan, E., Önal, N., & Yazıcı, K. (2016). Öğretim etkinliklerinde sanal müzelerin kullanımına ilişkin sosyal bilgiler öğretmen adayları ne düşünüyor? [What do social studies pre-service teachers think about virtual museums for instructional activities?]. *Turkish Studies*, 11(3), 689-706.
- Çelik, Ö., & Ütkür-Güllühan, N. (2022). Sanal müze gezilerine yönelik ilkökul öğrencilerinin görüş ve farkındalıklarının incelenmesi [Examination of primary school students' views and awareness on virtual museum tours of our cultural richness]. *Millî Eğitim Dergisi*, 51(236), 2927-2946.
- Çıldır, Z., & Karadeniz, C. (2014). Museum, education and visual culture practices: Museums in Turkey. *American Journal of Educational Research*, 2(7), 543-551.
- Çınar, C., Utkuğün, C., & Gazel A. A. (2021). Sosyal bilgiler dersinde sanal müze kullanımı hakkında öğrenci görüşleri [Student opinions about the use of virtual museum in social studies lesson]. *International Journal of Social and Educational Sciences*, 16, 150-170.
- Çolak, C. (2006, December 21-23). Sanal müzeler [Virtual museums]. [Paper presentation]. *XI Internet in Türkiye Conference*. Ankara, Turkey.
- Daniela, L. (2020). Virtual museums as learning agents. *Sustainability*, 12(7), 2698.
- Durmuş, A. (2012). *Sanal bilim ve teknoloji müzesinde eğitsel arayüz ajanı kullanımının öğrencilerin ilgi ve başarılarına etkisi* [The effect of using educational interface agent in virtual science and technology museum on students' interest and achievement]. (Publication No. 311090) [Doctoral dissertation, Gazi University]. National Thesis Center.
- Fokides, E., & Sfakianou, M. (2017). Virtual museums in arts education. results of a pilot project in primary school settings. *Asian Research Journal of Arts & Social Sciences*. 3(1), 1-10.
- Glesne, C. (2016). *Becoming qualitative researchers: An introduction*. Pearson.
- Gılıç, İ. (2020). *Sanal müze destekli işbirlikçi İngilizce öğrenme etkinliklerinin ortaokul 7. sınıf öğrencilerinin okuduğunu anlama başarılarına ve sanal müze memnuniyetlerine etkisi* [The effect of virtual museum supported cooperative English learning activities on reading comprehension achievement and virtual museum satisfaction levels of secondary school 7<sup>th</sup> grade students]. (Publication No. 640185) [Master thesis, Mersin University]. National Thesis Center.
- International Council of Museums (ICOM). (2007, August 24). Resolutions adopted by ICOM's 22<sup>nd</sup> general assembly. Retrieved January 30, 2024, from <http://icom.museum/en/resources/standards-guidelines/museum-definition>



- Iqbala, A., Kankaanranta, M., & Neittaanmäki P. (2010). Engaging learners through virtual worlds. *Procedia Social and Behavioral Sciences*, 2, 3198–3205.
- İlhan, G. O., & Dolmaz, M. (2022). Covid-19 pandemisi sürecinde İngilizce öğretmen adaylarının sanal müze deneyimleri [Virtual museum experiences of pre-service English teachers during the covid-19 pandemic process]. *Bolu Abant İzzet Baysal University Journal of Faculty of Education*, 22(4), 1313-1337.
- İlhan, G. O., Tokmak, A., & Aktaş, V. (2021). Sosyal bilgiler öğretmen adaylarının sanal müze deneyimleri [Virtual museum experiences of social studies teacher candidates]. *Journal of International Museum Education*, 3(1), 74-93.
- İralı, A. E. (2019). *Kültür varlıklarının sanal ortam uygulamalarının ziyaret yönünden incelenmesi: Sait Faik Abasıyanık müzesi üzerine bir inceleme* [Analysis of virtual environment applications of cultural assets through visit motivation: An analysis on Sait Faik Abasıyanık Museum]. (Publication No. 555995) [Doctoral dissertation, İstanbul University]. National Thesis Center.
- Kampouropoulou, M., Fokiali, P., Efstathiou, I., & Stefanos, E. (2013). The virtual museum in educational practice. *Review of European Studies*, 5(4), 120-129.
- Karataş, H., Alcı, B., & Karabıyık-Çeri, B. (2015). Öğretmen adaylarının bilgisayar destekli eğitime ilişkin tutumları [Attitudes of pre-service teachers to computer assisted education]. *Journal of Research in Education and Teaching*, 4(3), 1-9.
- Kaya, R., & Okumuş, O. (2018). Sanal müzelerin tarih derslerinde kullanımının öğrenci görüşlerine göre değerlendirilmesi [An evaluation of the use of virtual museums in history courses by student opinion]. *Turkish History Education Journal*, 7(1), 113-153.
- Kayabaşı, Y. (2005). Sanal gerçeklik ve eğitim amaçlı kullanılması [Virtual reality and its use for educational purposes]. *The Turkish Online Journal of Educational Technology*, 4(3), 151-158.
- Kılıç, H., Turan, İ., Yalı, S., & Bulut, G. (2023). Eğitimde sanal müze uygulamaları [Virtual museum applications in education]. *Journal of History School*, 63, 850-867.
- Kısa, Y., & Gazel, A. A. (2016). Sosyal bilgiler öğretiminde müze kullanımına ilişkin öğretmen ve öğrenci görüşlerinin incelenmesi (Afyonkarahisar müzeleri) [Examination of teacher and student opinions on the use of museums in social studies education (Museums of Afyonkarahisar)] *International Journal of Field Education*, 2(1), 96-119.
- Koca, N., & Daşdemir, İ. (2018). Sosyal bilgiler öğretiminde sanal tur uygulamaları [Virtual tour application in social studies]. *Turkish Studies*, 13(27), 1007-1016.
- Köksal-Akyol, A., & Akyol, A. A. (2014). Okul öncesi eğitimde müzeler [Museums in preschool education]. In İ. Ulutaş (Ed.), *Okul öncesinde görsel sanatlar eğitimi. Her yönüyle okul öncesi eğitim* [Pre-school visual arts education. Pre-school education in all aspects] (pp. 275-291). Hedef.
- Maxwell, J. A. (2018). *Nitel araştırma tasarımı: Etkileşimli bir yaklaşım* [Qualitative research design: An interactive approach]. (M. Çevikbaş, Trans.). Nobel.
- Meirkhanovna, B. A., Begaliyeva, S. B., Makhabbat, A., Rakhat, Y., Abdualievich, Z. K., & Kaldyhanovna, K. R. (2022). Views of primary school teachers on value acquisition in virtual museums. *World journal on educational technology: Current Issues*, 14(2), 343-355.
- Miles, B. M., & Huberman, A. M. (1994). *Genişletilmiş bir kaynak: Nitel veri analizi* [Qualitative data analysis: An expanded sourcebook]. (S. Akbaba & A. Ersoy, Trans.). Pegem.
- Okolo, C. M., Englert, C. S., Bouck, E. C., Heutsche, A., & Wang, H. (2011). The virtual history museum: Learning U. S. history in diverse eighth grade classrooms. *Remedial and Special Education*, 32(5), 417-428.
- Öner-Armağan, F., Ezberci-Çevik, E., & Köksal, E. A. (2023). Fen bilgisi öğretmen adaylarının sanal müze uygulamalarına yönelik görüşleri [Views of pre-service science teachers on virtual museum applications]. *Journal of Computer and Education Research*, 11(22), 459-481.
- Öztürk-Kömlüksiz, F., & Gökmenoğlu, T. (2020). Müze eğitim kitapçığı hazırlama sürecinde bir durum saptama çalışması: KKTC örneği [A situation determination study in the preparation process of the museum education booklet: The KKTC example]. *Millî Eğitim Dergisi*, 49(228), 365-385.

- Peker, N. (2020, November 3-4). Sosyal bilgiler dersinde sanal müze kullanımı ve sosyal bilgiler öğretmen adaylarının sanal müze kullanımına yönelik tutumları: Aksaray Müzesi örneği [The use of virtual museums in social studies courses and the attitudes of social studies teacher candidates towards the use of virtual museums: The example of Aksaray Museum]. [Paper presentation]. V. *International Aksaray Symposium*, Aksaray, Turkey.
- Saraç, H., & Özarslan, M. (2017). Fen alanı öğretmen adaylarının bilgi ve iletişim teknolojilerine yönelik görüşleri [Views of science fields teacher's necessities to information and communication technologies]. *International e-Journal of Educational Studies (IEJES)*, 1(1), 32-46.
- Serin, H. (2020). Virtual reality in education from the perspective of teachers. *Amazonia Investiga*, 9(26), 291-303.
- Sevi, E., & Er-Türküresin, H. (2023). Sosyal bilgiler öğretmen adaylarının sanal müzelerde değer kazanımına ilişkin görüşleri [Opinions of social studies teacher candidates on value acquisition in virtual museums]. *Journal of International Museum Education*, 5, 16-33.
- Shehade, M., & Stylianou-Lambert, T. (2020). Virtual reality in museums: Exploring the experiences of museum professionals. *Applied Sciences*, 10(11), 4031.
- Shim, K. C., Park, J. S., Kim, H. S., Kim, J. H., Park, Y. C., & Ryu, H. I. (2003). Application of virtual reality technology in biology education. *Journal of Biological Education*, 37(2), 71-74.
- Sungur, T., & Bülbül, H. (2019). Sınıf öğretmeni adaylarının sanal müze uygulamalarına yönelik görüşleri [The opinions of the prospective classroom teachers on the applications of virtual museum]. *Bolu Abant İzzet Baysal University Faculty of Education Journal*, 19(2), 652-666.
- Sürme, M., & Atılgan, E. (2020). Sanal müzede sanal tur yapan bireylerin memnuniyet düzeylerini belirlemeye yönelik bir araştırma [A research to determine the satisfaction levels of individual tours in the virtual museum]. *Journal of Turkish Tourism Research*, 4(3), 1794-1805.
- Tsichritzis, D., & Gibbs, S. (1991) Virtual museums and virtual realities. In D. Tsichritzis (Ed.). *Object composition: Composition d'objets* (pp. 157-164). Genève: Centre universitaire d'informatique.
- Tuncel, G., & Dolanbay, H. (2021). Sınıf dışı öğretim teknikleriyle sosyal bilgiler öğretimi [Teaching social studies with out-of-class teaching techniques]. In R. Sever, M. Aydın & E. Koçoğlu (Eds.). *Alternatif yaklaşımlarla sosyal bilgiler eğitimi* [Social studies education with alternative approaches] (pp. 341-397). Pegem.
- Turan, İ. (2015). Okul dışı sosyal bilgiler öğretiminde sanal müze ve turlar [Virtual museums and tours in out-of-school social studies teaching]. In A. Şimşek & S. Kaymakçı (Eds.), *Okul dışı sosyal bilgiler öğretimi* [Teaching social studies outside of school] (pp.189-204). Pegem.
- Turgut, G. (2015). *Sosyal bilgiler dersinde bir eğitim aracı olarak sanal müze kullanımı* [Benefit from the virtual museum as an educational tool in social studies lessons]. (Publication No. 413995) [Master thesis, Adnan Menderes University]. National Thesis Center.
- Ulusoy, K. (2010). Open education students' perspectives on using virtual museums application in teaching history subjects. *Turkish Online Journal of Distance Education (TOJDE)*, 11(4), 36-46.
- Ustaoğlu, A. (2012). *İlköğretim 7. sınıf sosyal bilgiler dersi Türk tarihinde yolculuk ünitesinde sanal müzelerin kullanımının öğrenci başarısına etkisi* [The effect of using virtual museum in travel in history of Turkish unit of primary education 7<sup>th</sup> grade social studies course on students academic success]. (Publication No. 317060) [Master thesis, Gazi University]. National Thesis Center.
- Utkuğün, C. (2022). Virtual museums from the perspective of social studies pre-service teachers. *International Journal of Psychology and Educational Studies*, 9(Special Issue), 1069-1084.
- Yıldırım, A., & Şimşek, H. (2018). *Sosyal bilimlerde nitel araştırma yöntemleri* [Qualitative research methods in social sciences]. Seçkin.
- Yıldırım, T., & Tahiroğlu, M. (2012). Sanal ortamda gerçekleştirilen müze gezilerinin ilköğretim öğrencilerinin sosyal bilgiler dersine yönelik tutumlarına etkisi [The effects of virtual museum visits on elementary students' attitudes towards social studies courses]. *Electronic Journal of Social Sciences*, 11(39), 104-114.

## **BIOGRAPHICAL NOTES**

### **Contribution Rate of Researchers**

Author 1: 50%

Author 2: 50%

### **Conflict Statement**

There is no conflict of interest in the research.

# Sanal Müzelerle Kültürel Mirası Keşfetmek: Sosyal Bilgiler Öğretmen Adaylarının Sanal Müzelere Yönelik Görüş ve Deneyimleri



## Özet

Kültürel mirasın korunması ve gelecek nesillere aktarılmasında müzelerin rolü her geçen gün daha da önem kazanırken dijitalleşen dünyada sanal müzeler, bu mirası keşfetme ve öğrenme sürecine yeni bir boyut kazandırmıştır. Bu araştırmanın amacı sosyal bilgiler öğretmen adaylarının sanal müzelere yönelik görüş ve deneyimlerinin incelenmesidir. Araştırma nitel araştırma yönteminde, fenomenoloji deseninde tasarlanmıştır. Araştırmanın çalışma grubu 45 öğretmen adayından oluşmaktadır. Araştırmada veri toplama aracı olarak sanal müze görüş formu kullanılmıştır. Araştırma verileri dijital ortamda sanal müze görüş formlarının doldurulması suretiyle toplanmıştır. Verilerin analizinde içerik analizinden yararlanılmıştır. Veriler, alt temalar ve kodlar doğrultusunda tablolar halinde sunulmuş, doğrudan alıntılarla desteklenerek yorumlanmıştır. Öğretmen adaylarının sanal müze ziyaretleri; arkeoloji müzeleri, tarih ve etnografya müzeleri, bilim ve teknoloji müzeleri ile doğa ve çevre müzeleri temaları altında incelenmiş ve Göbeklitepe, Anadolu Medeniyetleri Müzesi gibi önemli mekânların ön plana çıktığı görülmüştür. Öğretmen adayları, öğrenme-öğretme sürecini somutlaştırarak kalıcı öğrenmeyi desteklemesi ve dersleri daha eğlenceli hale getirmesi gibi sebeplerle sanal müzelerin sosyal bilgiler derslerinde kullanılmasını olumlu değerlendirmişlerdir. Öğretmen adayları, sanal müzeleri kullanarak çeşitli öğrenme materyalleri ve etkinlikler tasarlamış, bu süreçte kültürel farkındalıklarını artırmış ve eğitim-öğretim hayatına katkılar sağlamışlardır. Araştırma sonucunda; sanal müzelerin eğitici etkisini artırmak için okulların teknik alt yapısının güçlendirilmesi, sanal müze içeriklerinin zenginleştirilmesi, öğretmen adaylarının sanal müzeleri ders materyali olarak kullanmaya teşvik edilmesi ile sanal ve fiziksel müze gezilerinin birleştirilmesi önerilmiştir.

**Anahtar Kelimeler:** Kültürel miras, müze, sanal müze, sosyal bilgiler eğitimi, öğretmen adayı.

## Giriş

Kültürel mirasın korunması ve gelecek nesillere aktarılmasında müzelerin rolü her geçen gün daha da önem kazanırken dijitalleşen dünyada sanal müzeler, bu mirası keşfetme ve öğrenme sürecine yeni bir boyut kazandırmıştır. Son yıllarda dijital teknolojinin hayatımızda daha fazla yer almasıyla gündeme gelen sanal müze kavramı, öğrencilerin internet bağlantısı olan her yerden erişim sağlayarak gezinti yapabildiği ve kendilerini öğrenme sürecinin bir parçası olarak buldukları, küresel bir özellik taşıyan müze türü olarak karşımıza çıkmaktadır (McKenzie, 1997; akt. Çelik & Ütkür-Güllühan, 2022). Sanal müzeler, “bilgisayar ve internet teknolojilerinden faydalanarak sanat eserleri, tarihî eserler ve belgelerin dijitalleştirilmiş kopyalarını (görsel, ses, video formatlarında) ve bu eserlere ait bilgileri internet üzerinden ziyaretçilerin erişimine sunan etkileşimli web siteleri” olarak tanımlanabilir (Turan, 2015).

Sanal müzeler, modern teknolojinin sunduğu olanaklar sayesinde, geleneksel müze deneyimlerinin ötesine geçerek bilgiye erişimi ve kültürel mirasın paylaşımını yeniden tanımlamaktadır. Bowen (2000), sanal ziyaretçilerin uzaktaki bir müze hakkında bilgi edinmesinin önemine dikkat çekerek geçmişte ziyaretçilerin bilgi sağlayıcıları olan müzeleri

fiziksel olarak ziyaret etmek zorunda olduklarını ancak internet sayesinde artık ev, iş yeri, okul veya kütüphanelerden müzelere ulaşmanın daha mümkün hale geldiğini belirtmektedir. Serin (2020) ise, sanal gerçekliğin bireylere imkânsız görünen yerlerde bulunma fırsatı vererek gerçek yaşam deneyimleri yaşamalarını sağladığını ifade etmektedir. Sanal müzelerde kullanılan teknoloji sayesinde, insanlar farklı şehirlerde veya hatta farklı ülkelerdeki müzelerin koleksiyonlarına uzaktan, günün her saatinde erişebilirler ve bu erişim birinci elden doğru ve güvenilir bilgi kaynaklarını içerir. Sanal müzeler, ziyaretçilerin zaman sınırlaması olmadan istedikleri müzeye ulaşmalarına imkân tanımaktadır. Ayrıca, sanal müzeler hem güvenli hem de ekonomik olmalarının yanı sıra, geleneksel müzelerin sınırlı sunum imkanlarına kıyasla daha zengin sunum seçenekleri sunmaktadırlar (Kılıç vd., 2023).

Teknolojinin eğitimdeki rolü, öğrencilere erişim ve öğrenme olanaklarını genişleten yenilikçi yöntemlerle giderek daha hayati bir hale gelmektedir. Teknolojinin eğitimde kullanımını ekstra bir yük olarak algılanmamalı, aksine eğitimi zenginleştirici bir unsur olarak değerlendirilmelidir (Karataş vd., 2015). Sanal müze uygulamalarıyla sosyal bilgiler dersi arasında güçlü bir ilişki olduğu söylenebilir. Sanal müze gezileri, öğrencilerin fiziksel olarak gidemeyecekleri yerleri sanal olarak ziyaret etmelerine, soyut bilgileri somut hale getirmelerine (Karataş vd., 2015), erişemedikleri bilgi ve deneyimlere ulaşmalarına ve eğlenerek öğrenmelerine imkân tanımakta ve gezilerin oluşturduğu eğlenceli öğrenme ortamı öğrenmeyi kolaylaştırmaktadır (Kayabaşı, 2005; Saraç & Özarslan, 2017; Shim vd., 2003). Sanal müzeler, öğrencilere hem bilişsel hem de duyuşsal anlamda daha zengin öğrenme deneyimleri sunarken (Aktaş vd., 2021), aynı zamanda dijital okuryazarlık becerilerini geliştirme ve tarihî araştırma yapmalarını sağlayan çevrimiçi bir öğrenme ortamı oluşturma fırsatı da tanımaktadır (Okolo vd., 2011). Daniela (2020), Fokides ve Sfakianou (2017), ve Kampouropoulou vd.ne (2013) göre sanal müzeler, okul ortamlarında kullanıldığında öğrencilerin etkili öğrenme deneyimlerine katılımını artırmakta, eğlence ve iletişim gibi işlevlerle davranışlarını olumlu yönde düzenlemekte ve kültürel bilgi birikimlerine önemli katkılarda bulunmaktadır. Ayrıca sanal geziler, sosyal ve ekonomik koşulları elverişli olmayan öğrenciler için okulların gezi düzenleyebilmesi adına değerli fırsatlar sunmaktadır. Çelik ve Ütkür-Güllühan (2022) ile Tuncel ve Dolanbay (2021), çalışmalarında, öğrencilerin yaşadıkları bölgelerde müze ve gezilecek yerlerin eksik olmasının, velilerin ekonomik ve güvenlik kaygılarıyla birleştiğinde, sanal müzeler ve sanal gezilerin eğitimde fırsat eşitliği sağlama açısından ne kadar önemli hale geldiğini vurgulamaktadır. İlgili araştırma sonuçlarından hareketle, sanal müze gezileri öğrencilerin kültürel, tarihî ve sosyal bilgilerini zenginleştirmek ve eğitimde eşit fırsatlara sahip olmalarını sağlamak için kritik bir öneme sahiptir.

Günümüzde sanal gerçeklik, hologram ve üç boyutlu görüntü gibi teknolojiler ile yakın tarihte yaşanan pandemi süreci, sanal müzeleri, klasik müzelerle rekabet edebilir hale getirmiştir. Bu gelişmeler, sanal müzelerin eğitimdeki önemini artırmış ve sanal müzeler öğretim programlarına dahil edilmiştir. Sanal müzeler, öğretim programlarına eklenmiş olmasına rağmen, pedagojik temelleri henüz yeni geliştiği için, öğretmenler bu müzelerin eğitimde ve farklı derslerde sınıf içi etkinliklere nasıl entegre edileceği konusunda yeterli bilgiye sahip değildir. Bu durum, sanal müzelerin eğitimde etkin kullanımına yönelik öğretmenlere sunulacak açık erişimli eğitimlere, sanal müze kullanımını doğrudan öğretim programlarındaki içerik ve kazanımlarla ilişkilendiren etkinliklere, daha güçlü bir okul-müze

iş birliğine ve müzelerin eğitsel amaçlarının daha da güçlendirilmesine ihtiyaç duyulduğunu göstermektedir (Kılıç vd., 2023). Aktaş vd. (2021) ile Sungur ve Bülbül (2019) araştırmalarında, öğretmenler ve öğretmen adaylarının sanal müze kullanımı ve bu konudaki etkinlikler hakkında yeterli bilgi ve fikir sahibi olmadıklarını tespit etmişlerdir. Bu doğrultuda, hizmet öncesi eğitim kapsamında öğretmen adaylarının sanal müze eğitimi almalarının ve bu müzeleri etkin bir şekilde kullanabilmelerinin gerekliliği ve önemi ortaya çıkmaktadır. Sanal müzelerin öğrenme ortamlarında etkin bir şekilde kullanılabilmesi için, uygulayıcı olacak öğretmen adaylarının deneyimlerinin dikkate alınması önemlidir. Utkuğün (2022) ve İlhan vd.nin (2021) araştırmalarında sosyal bilgiler öğretmen adaylarının sanal müze gezilerine yönelik deneyimlerini sanal müzelerin avantaj, dezavantaj, kullanım zorlukları ve etkili kullanımına yönelik görüşler temelinde incelemişlerdir. Bu araştırmada ise öğretmen adayları, sanal müzeleri sosyal bilgiler dersinde kullanabilecekleri bir materyal olarak değerlendirmiş, gezdikleri sanal müzelerle ilgili ders içi etkinlikler tasarlamışlardır. Öğretmen adayları, sanal müzelerde edindikleri bilgi ve deneyimleri, dersin kazanımlarına uygun etkinliklere dönüştürmüş, böylece sanal müzelerin öğretim sürecinde nasıl entegre edilebileceğine yönelik özgün materyaller oluşturmuşlardır. Bu bağlamda araştırmada sosyal bilgiler öğretmen adaylarının sanal müzelere yönelik görüş ve deneyimlerinin incelenmesi amaçlanmıştır. Bu genel amaç doğrultusunda aşağıdaki sorulara cevap aranmıştır:

Bu genel amaç doğrultusunda aşağıdaki sorulara cevap aranmıştır:

1. Sosyal bilgiler öğretmen adaylarının gezdikleri sanal müzeler hangileridir?
2. Sosyal bilgiler öğretmen adaylarının gezdikleri sanal müzelere yönelik görüş ve değerlendirmeleri nelerdir?
3. Sosyal bilgiler öğretmen adaylarının sanal müzelerin sosyal bilgiler derslerinde kullanılabilirliğine yönelik görüşleri nelerdir?
4. Sosyal bilgiler öğretmen adaylarının gezdikleri sanal müzeleri kullanarak tasarladıkları etkinlikler nelerdir?
5. Sosyal bilgiler öğretmen adaylarının sanal müze gezileri etkinliğine ilişkin görüşleri nelerdir?

## **Yöntem**

Araştırma, nitel araştırma yaklaşımlarından biri olan fenomenoloji deseni kullanılarak gerçekleştirilmiştir. Fenomenolojik araştırma deseni, bireylerin belirli bir olay ya da durumla ilgili yaşadıkları deneyimler, algular ve bu olguya atfettikleri anlamları ortaya çıkarmayı hedefler (Yıldırım & Şimşek, 2018). Bu araştırmada, öğretmen adaylarının görüş ve deneyimlerine dayanarak sanal müze gezilerinin derinlemesine incelenmesi amaçlandığı için fenomenoloji deseni tercih edilmiştir. Araştırmanın çalışma grubu, 2023-2024 eğitim öğretim yılında Afyon Kocatepe Üniversitesi Eğitim Fakültesi Sosyal Bilgiler Eğitimi Ana Bilim Dalı'nda öğrenim görmekte olan 30 kadın, 15 erkek olmak üzere toplam 45 öğretmen adayından oluşmaktadır. Çalışma grubunun seçiminde, amaçlı örnekleme yöntemlerinden biri olan ölçüt örnekleme tercih edilmiştir. Çalışma grubunu oluşturan öğretmen adaylarının seçilmesinde kullanılan ölçüt, Sosyal Bilgiler Eğitimi Programı'nda 4. sınıf öğrencisi olmaktır.

Bulguların sunumunda yer verilen doğrudan alıntılarda, öğretmen adaylarının isimleri yerine ÖA1, ÖA2...ÖA45 şeklinde kodlar kullanılmıştır.

Araştırmada veri toplama aracı olarak sanal müze görüş formu kullanılmıştır. Yazılı belgelerin veri toplama aracı olarak kullanılması, katılımcıların çeşitli kavramlar veya durumlara verdikleri anlamlara dair ayrıntılı kanıtlar elde etmeyi amaçlamaktadır (Bogdan & Biklen, 2007). Sanal müze görüş formunun hazırlık aşamasında öncelikle araştırmanın amacı doğrultusunda literatür taraması yapılmış, açık uçlu sorular hazırlanmıştır. Hazırlanan sorular kapsam ve anlaşılabilirlik bakımından değerlendirilmek üzere uzman görüşüne sunulmuştur. Alan uzmanından gelen dönütler doğrultusunda sorular, sayı ve ifade edilmiş biçimi açısından yeniden düzenlenerek görüş formuna son şekli verilmiştir. Sanal müze görüş formunda, öğretmen adaylarının gezdikleri sanal müzeler hakkında olumlu ve olumsuz değerlendirmeleri, sanal müzelerin sosyal bilgiler derslerinde kullanılabilirliğine yönelik görüşleri ve gezdikleri sanal müzeleri kullanarak sosyal bilgiler dersi için tasarladıkları etkinlikleri ortaya çıkartmaya yönelik sorular yer almıştır.

Veri toplama süreci Afyon Kocatepe Üniversitesi Bilimsel Araştırma ve Yayın Etiği Kurulu'ndan (Etik Kurul Kararı: 20.12.2023 tarih ve 2023/357 karar sayılı) etik izin alınarak başlamıştır. Araştırmanın veri toplama süreci için öğretmen adaylarından, 2023-2024 eğitim öğretim dönemi ara tatilinde, 29.01.2024-26.02.2024 tarihleri arasında kendi seçimleri doğrultusunda 3 adet sanal müze gezisi yapmaları ve sanal müze gezilerine ilişkin görüşlerini detaylı olarak yazmaları istenmiştir. Öğretmen adaylarından toplanacak verilerin gizlilik ilkesinin çiğnenmeyeceği, verilerin bilimsel araştırma dışında kullanılmayacağı görüş formunda belirtilmiştir. Araştırma verileri, öğretmen adaylarının sanal müze görüş formlarını dijital ortamda yazılı olarak doldurmaları sonucunda toplanmıştır.

Araştırma verilerinin analizinde içerik analizinden yararlanılmıştır. Yıldırım ve Şimşek'e (2018) göre, içerik analizinin amacı, elde edilen verileri anlamlandıracak ve açıklamayı kolaylaştıracak kavramlar ve ilişkiler ortaya çıkarmaktır. Elde edilen verilerden hareketle oluşturulan kodların ortak yönleri belirlenerek sınıflandırılmış ve her bir araştırma problemine yönelik alt temalar oluşturulmuştur. Ayrıca veri analiz süreci uzman görüşüne sunulmuş ve araştırmacılar ile alan uzmanının kodlamaları karşılaştırılarak değerlendirilmiştir. Uyuşum yüzdesi ( $[(\text{Görüş birliği})/(\text{Görüş birliği} + \text{Görüş ayrılığı}) \times 100]$ ) formülüyle %93 olarak hesaplanmıştır. Miles ve Huberman'a (1994) göre, güvenilirlik hesaplarının %70'in üzerinde olması, araştırmanın güvenilir kabul edilebileceğini göstermektedir. Araştırmacılar ve alan uzmanı arasında görüş ayrılığı bulunan kısımlar yeniden değerlendirilerek görüş birliği sağlanmıştır. Araştırmacılar, araştırmanın teyit edilebilirliğini sağlamak amacıyla zaman zaman ham verilere geri dönerek kodların doğruluğunu test etmiştir. Veriler, alt temalar ve kodlar doğrultusunda tablolar halinde sunulmuş, doğrudan alıntılarla desteklenerek yorumlanmıştır.

### **Araştırmanın Etik İzinleri:**

Bu çalışmada “Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi” kapsamında uyulması gerektiği belirtilen tüm kurallara uyulmuştur. Yönergenin ikinci bölümü olan “Bilimsel Araştırma ve Yayın Etiğine Aykırı Eylemler” başlığı altında belirtilen eylemlerin hiçbiri gerçekleştirilmemiştir.

### **Etik Kurul İzin Bilgileri:**

Etik değerlendirmeyi yapan kurulun adı = Afyon Kocatepe Üniversitesi Bilimsel Araştırma ve Yayın Etiği Kurulu

Etik Kurul Etik inceleme karar tarihi= 20.12.2023

Etik değerlendirme belgesi konu numarası= 2023/357

### **Bulgular**

Sosyal bilgiler öğretmen adaylarının sanal müzelere yönelik görüş ve deneyimleri; öğretmen adaylarının gezdikleri sanal müzeler, sanal müzelere yönelik görüşleri, sanal müzelerin sosyal bilgiler derslerinde kullanılabilirliğine yönelik görüşleri, gezdikleri sanal müzeleri kullanarak tasarladıkları etkinlikler ve sanal müze gezileri etkinliğine ilişkin görüşleri temaları altında analiz edilmiştir.

Öğretmen adaylarının gezdiği sanal müzeler; arkeoloji müzeleri ve örenyerleri, tarih ve etnografya müzeleri, bilim ve teknoloji müzeleri ile doğa ve çevre müzeleri alt temaları üzerinden analiz edilmiştir. Öğretmen adaylarının gezdikleri sanal müzeler incelendiğinde, ilgi alanları ve kişisel merakları doğrultusunda Türkiye'nin farklı bölgelerinde, farklı temalarda müzeleri ziyaret ettikleri görülmektedir. Yine bu bağlamda öğretmen adaylarının gezmiş oldukları sanal müzelerin Sosyal Bilgiler Dersi Öğretim Programı içeriğiyle de uyumlu olduğu ifade edilebilir. Öğretmen adayları arkeoloji müzeleri ve örenyerleri olarak Göbeklitepe Örenyeri, Anadolu Medeniyetleri Müzesi, Adana Arkeoloji Müzesi, İstanbul Arkeoloji Müzesi, Çatalhöyük Örenyeri, Gaziantep Arkeoloji Müzesi, Ihlara Vadisi Örenyeri, Efes Örenyeri, Hierapolis (Pamukkale) Arkeoloji Örenyeri, Gaziantep Zeugma Mozaik Müzesi, Şanlıurfa Karahantepe Örenyeri, Hatay Arkeoloji Müzesi, Boğazköy Hattuşa Örenyeri ve Nemrut Örenyeri sanal müzelerini; tarih ve etnografya müzeleri olarak Ankara Etnografya Müzesi, Ankara Cumhuriyet Müzesi, Türk ve İslam Eserleri Müzesi, İzmir Atatürk Müzesi, Ankara Kurtuluş Savaşı Müzesi, Çanakkale 1915 Hilal-i Ahmer Hastanesi Canlandırma Alanı, Ankara Üniversitesi Oyuncak Müzesi, Ankara Polis Müzesi, Çanakkale Destanı Tanıtım Merkezi, Antalya Müzesi, Topkapı Sarayı, İstanbul Havalimani Müzesi, Ankara Hacı Bayram Veli Müzesi, Cumhurbaşkanlığı Milli Mücadele Sergisi, Çanakkale Kilitbahir Kale Müzesi, Bursa Kent Müzesi, Bayburt Kenan Yavuz Etnografya Müzesi, Samsun Gazi Müzesi ve Şanlıurfa sanal müzelerini; bilim ve teknoloji müzeleri olarak Türk İslam Bilim ve Teknoloji Tarihi Müzesi ve Konya Bilim Merkezi sanal müzelerini; doğa ve çevre müzeleri olarak ise Nevşehir Göreme Açık hava Müzesi ve MTA Genel Müdürlüğü Şehit Cuma Dağ Tabiat Tarihi Müzesi sanal müzelerini gezmişlerdir.

Öğretmen adaylarının sanal müzelere yönelik görüşleri; sanal gezi deneyimi, kullanım kolaylığı ve teknolojik zorluklar ve eksiklikler alt temaları üzerinden analiz edilmiştir. Sanal



müzelere yönelik görüşlerini sanal gezi deneyimi üzerinden açıklayan öğretmen adayları; sanal müze gezisinin ilgi çekici/güzel olması, sanal müze gezisinin merak/heyecan uyandırması, sanal müzenin görsel açıdan zengin/öğretici olması, sanal müze gezisinin gerçek müze gezisi hissi vermesi, teknolojinin eğitim amaçlı kullanılması, sanal müze gezisinin zaman açısından avantajlı olması, sanal müzenin canlı olarak da gezilmesi isteği, öncesinde sanal müzeler hakkında bilgi sahibi olunmaması, sanal olmayan müze/tarihi alan gezisinin daha güzel olması, müzenin/tarihi alanının sanal gezisinin merak edilmesi, yaşanan bölgeye uzak müzelerin sanal tur ile gezilebilmesi ve sanal müze gezisinin maddi açıdan avantajlı olması olarak; kullanım kolaylığı üzerinden açıklayan öğretmen adayları; sanal turun kolay bir şekilde yapılabilmesi, bölümlere ait bilgilendirici yazıların olması, sanal turda ses/video desteğinin olması ve sanal gezi için yönlendiricilerin olması olarak; teknolojik zorluklar ve eksiklikler üzerinden açıklayan öğretmen adayları; yakınlaştırma yapılırken görüntü kalitesinin düşmesi ve yazıların net okunmaması, bir bölümden diğer bölüme geçerken zorluk yaşanması, müze içinde yönlendirmelerin yetersiz olması, müzedeki yazılı bilgilendirmelerin az olması, sanal turda sesli anlatım/müzik olmaması, üç boyutlu/hareketli maketlerin sayıca az olması, sanal gezi sırasında internet bağlantısı kaynaklı sorunlar yaşanması, sanal gezi sırasında takılma/donma yaşanması ve müzenin ışıklandırma sisteminin göz yorucu olması olarak ifade etmişlerdir.

Öğretmen adaylarının sanal müzelerin sosyal bilgiler derslerinde kullanılabilirliğine yönelik görüşleri; öğrenme-öğretme süreci, genel kültür ve değer kazanımı ile bilinç ve beceri kazanımı alt temaları üzerinden analiz edilmiştir. Sanal müzelerin sosyal bilgiler derslerinde kullanılabilirliğine yönelik görüşlerini öğrenme ve öğretme süreci üzerinden açıklayan öğretmen adayları sanal müzelerin öğretim materyali olarak kullanılması, kalıcı öğrenmeyi sağlaması, derste anlatılan konuları somutlaştırması, öğrencilerin ilgisini çekmesi ve dersi eğlenceli hale getirmesi olarak; milli ve kültürel değerler üzerinden açıklayan öğretmen adayları öğrencilere kültürü tanıtmaları, millî bilinç ve Atatürk sevgisi kazandırması ile tarihi sevdirmesi olarak; bilinç ve beceri kazanımı üzerinden açıklayan öğretmen adayları öğrencilerin zaman ve kronolojiyi algılama becerilerini arttırması, yaratıcı düşünme becerilerini arttırması, hayal gücünü zenginleştirmesi, geri dönüşüm ve yardımlaşma bilinci kazandırması ile müze gezme alışkanlığı ve sevgisi kazandırması olarak ifade etmişlerdir.

Öğretmen adaylarının gezdikleri sanal müzeleri kullanarak tasarladıkları etkinlikler; öğrenme materyalleri ve teknikleri, görsel sanatlar ve tasarım etkinlikleri ile yaratıcı yazma ve düşünme etkinlikleri alt temaları üzerinden analiz edilmiştir. Gezdikleri sanal müzeleri kullanarak öğrenme materyalleri ve etkinlikleri tasarlayan öğretmen adayları; eğitsel oyun tasarlama, çalışma yaprağı, soru-cevap, sanal turu yapılan müzeye gezi etkinliği düzenleme, bulmaca, istasyon tekniği ve arkeolojik kazı etkinliği; görsel sanatlar ve tasarım etkinlikleri tasarlayan öğretmen adayları drama, müzede görülen eser örneklerinin yapılması, gezi panosu oluşturma, görülen mekân ve eserlere yönelik resim çizme etkinliği, müze broşürü/afiş/poster hazırlama etkinliği; yaratıcı yazma ve düşünme etkinlikleri tasarlayan öğretmen adayları; sanal gezi sonrasında müzeye yönelik değerlendirmeleri, tarihsel empatiyle hikâye/masal yazımı ve beyin fırtınası etkinliği oluşturmuşlardır.

Öğretmen adaylarının sanal müze gezileri etkinliğine yönelik görüşleri; öğrenme ve akademik gelişim, kişisel ve mesleki gelişim ile kültür ve tarihi bilgi kazanımı alt temaları üzerinden analiz edilmiştir. Sanal müze gezileri etkinliğine yönelik görüşlerini hazırlık süreci üzerinden açıklayan öğretmen adayları zorlanmadan/keyifle yapılan bir etkinlik olması, müze ve kazanım eşleştirmek için Sosyal Bilgiler Dersi Öğretim Programı'nın incelenmesi, etkinlik hazırlamak için eğitim bilimleri bilgilerinin tekrar edilmesi, etkinlik hazırlama aşamasında zorluk yaşanması ve kazanım-müze eşleştirmesinde zorluk yaşanması olarak; kültürel fayda üzerinden açıklayan öğretmen adayları; kültürel açıdan öğretici olması, müze gezme isteği oluşturması, müze gezilerinin öneminin anlaşılması, sanal gezilerle yeni müzeler keşfedilmesi ve kültürel mirasa duyarlılığı arttırması olarak; eğitim öğretim hayatına katkıları üzerinden açıklayan öğretmen adayları; etkinliğin öğretmenlik hayatı için katkılarının olması, ezber bilgi yerine kalıcı öğrenme sağlaması, sanal müze gezileri ile Sosyal Bilgiler Öğretmenliği Programı ders içeriklerinin örtüşmesi, Kamu Personel Seçme Sınavı [KPSS] için katkılarının olması, yazma becerisini geliştiren bir etkinlik olması ve hayal gücünü geliştirmesi olarak ifade etmişlerdir.

## **Tartışma ve Sonuç**

Sosyal bilgiler öğretmen adaylarının sanal müzelere yönelik görüş ve deneyimlerinin belirlenmesini amaçlayan bu çalışmada çalışma grubunu oluşturan öğretmen adaylarının bakış açısından; gezdikleri sanal müzeler, sanal müzelere yönelik görüşleri, sanal müzelerin sosyal bilgiler derslerinde kullanılabilirliğine yönelik görüşleri, gezdikleri sanal müzeleri kullanarak tasarladıkları etkinlikler ve sanal müze gezisi etkinliğine ilişkin görüşleri değerlendirilmiştir.

Öğretmen adaylarının gezdikleri sanal müzeler; arkeoloji müzeleri ve örenyerleri, tarih ve etnografya müzeleri, bilim ve teknoloji müzeleri ile doğa ve çevre müzeleri gibi farklı temalar altında incelenmiştir. Öğretmen adaylarının ziyaret ettikleri sanal müzeler arasında, Göbeklitepe Örenyeri, Anadolu Medeniyetleri Müzesi, Ankara Etnografya Müzesi, Ankara Cumhuriyet Müzesi, Türk ve İslam Eserleri Müzesi ve Türk İslam Bilim ve Teknoloji Tarihi Müzesi gibi önemli kültürel ve tarihî mekânların öne çıktığı tespit edilmiştir. Bu durum, öğretmen adaylarının tarih, kültür ve bilim alanlarına olan ilgilerinin yanı sıra Türkiye'nin zengin mirasını keşfetmeye yönelik meraklarını da yansıtmaktadır. Ayrıca öğretmen adaylarının gezdikleri sanal müzelerin, Sosyal Bilgiler Dersi Öğretim Programı ile uyumlu olması, bu tür etkinliklerin eğitimde etkili bir araç olarak kullanılabileceğini ve ders programına katkı sağlayabileceğini ortaya koymaktadır.

Öğretmen adaylarının sanal müzelere yönelik görüşleri; sanal gezi deneyimi, kullanım kolaylığı ve teknolojik zorluklar ile eksiklikler başlıkları altında incelenmiştir. Sanal gezi deneyimi bağlamında, öğretmen adayları sanal müze gezisinin ilgi çekici, öğretici ve zaman açısından avantajlı olduğunu, ancak gerçek bir müze gezisinin yerini tam olarak tutmadığını belirtmişlerdir. Teknolojik zorluklar ve eksiklikler açısından ise, görüntü kalitesinin düşmesi, yönlendirmelerin yetersizliği ve internet bağlantısı sorunları gibi çeşitli sıkıntılar dile getirilmiştir. Sonuç olarak, öğretmen adaylarının sanal müze gezilerinin eğitim açısından faydalı olduğu, ancak bazı teknik zorluklar ve eksikliklerin giderilmesi gerektiği görüşünde olduğu tespit edilmiştir. İrahı (2019) araştırmasında, sanal müzelerin eğlence, etkileşim ve bilgi

edinme amaçları için kullanılabilceğini belirtirken Ulusoy (2010) sanal müzelerin hem eğitici hem de eğlenceli bulunduğunu tespit etmiştir. İlhan ve Dolmaz (2022) araştırmalarında, sanal müzelerin eğitim aracı olarak önemli avantajlar sunduğu kadar bazı dezavantajları da barındırdığını tespit etmiştir. Öğretmen adaylarının sanal müze gezilerini yaratıcı, avantajlı, ilham verici, hoş, konforlu, motive edici, farklı, pratik, verimli, dikkat çekici, etkileyici, eğlenceli, eğitici ve faydalı bir deneyim olarak değerlendirerek avantajlarını vurguladıkları; eserin detaylı incelenememesi, kullanım zorluğu, kısıtlı yakınlık-uzaklık ayarı, panoramik görüntü eksikliği, rehber bulunmaması ve görsel kalite sorunları gibi değerlendirmelerle teknik dezavantajlarına değindiklerini belirtmişlerdir (İlhan & Dolmaz, 2022). Kaya ve Okumuş (2018) ile Sürme ve Atılgan (2020), sanal müze ziyaretlerinde ziyaretçilerin kullanım kolaylığı, tüm galerilere erişim imkânı ve tabelaların okunabilirliğini ön planda tuttuğunu belirtmiştir. Sanal müzelerin fiziki müzelerin sunduğu gerçekçi deneyimi sağlamadığı Çınar vd.nin (2021) araştırmasında da yer almaktadır. Çınar vd. (2021) öğrencilerin sanal müze gezilerini beğenmelerine rağmen, müze atmosferini canlı olarak yaşama, eserleri doğrudan görme ve dokunma gibi nedenlerle fiziksel müze gezilerini tercih ettiklerini tespit etmişlerdir. Sanal müzeler, birçok avantaj sunmasına rağmen, objelere dokunamama ve koridorlarda dolaşamama gibi sınırlamaları nedeniyle gerçek müze deneyimini yetersiz kılmakta, bu durum da en belirgin eleştirileri oluşturmaktadır (Barlas-Bozkuş, 2014).

Öğretmen adaylarının sanal müzelerin sosyal bilgiler derslerinde kullanılabilirliğine yönelik görüşleri, öğrenme-öğretme süreci, millî ve kültürel değerler ile bilinç ve beceri kazanımı boyutlarında incelenmiştir. Sanal müzelerin, dersleri somutlaştırarak kalıcı öğrenmeyi desteklediği, öğrenci ilgisini artırarak dersi daha eğlenceli hale getirdiği ve öğretim materyali olarak etkili olduğu sonucuna ulaşılmıştır. Ayrıca, sanal müzelerin millî bilinç, kültürel farkındalık ve Atatürk sevgisi kazandırdığı, öğrencilerin zaman ve kronoloji algısını geliştirip, yaratıcı düşünme becerilerini artırdığı, müze gezme alışkanlığı ve sevgisi kazandırdığı belirlenmiştir. Çalışkan vd. (2016) tarafından sosyal bilgiler öğretmen adaylarıyla yapılan bir araştırmada, öğretmen adayları sanal müzelerin sosyal bilgiler derslerinde kalıcı öğrenmeyi desteklediğini, aktif ve eğlenceli bir öğrenme ortamı sunduğunu, somutlaştırma, tarih sevgisi ve empati gibi avantajlar sağladığını belirtmişlerdir. Peker (2020) tarafından yapılan araştırmada, sosyal bilgiler öğretmen adaylarının sanal müze kullanımının eğitim sürecinde ve öğrenciler üzerinde kalıcı ve olumlu etkiler yaratacağına dair güçlü bir inanca sahip oldukları belirlenmiştir. Koca ve Daşdemir (2018) sanal müze gezilerinin öğrencilerin akademik başarısı üzerinde olumlu etkisi olduğunu, Meirkhanovna vd. (2022) ile Sevi ve Er-Türküresin (2023) sanal müzelerin öğrencilerde kültürel mirasa duyarlılık, vatanseverlik, bilimsellik, estetik ve diğer önemli değerlerin kazandırılmasına olumlu katkı sağladığını, Çınar vd. (2021) öğrenme-öğretme sürecini zenginleştirerek dersleri eğlenceli hale getirdiğini, Turgut (2015) ve Gılıç (2020), sanal müze gezilerinin öğrencilerin öğrenme sürecine katkıda bulunduğunu, eğlenceli bir deneyim sunduğunu ve derse hareket kattığını, Durmuş (2012), sanal müze gezilerinin öğrenciler tarafından beğenildiğini ve bu tür etkinliklerin diğer derslerde de uygulanmasını istediklerini, Ustaoglu (2012), geleneksel yöntemle ders gören öğrencilerde merak duygusu oluşmazken, sanal müze uygulamaları ile merak duygusunun arttığını ve bu durumun derse ilgiyi ve başarıyı yükselttiğini ifade etmişlerdir.

Öğretmen adaylarının gezdikleri sanal müzeleri kullanarak tasarladıkları etkinlikler, öğrenme materyalleri ve etkinlikleri, görsel sanatlar ve tasarım etkinlikleri ve yaratıcı yazma ve düşünme etkinlikleri olarak sınıflandırılmıştır. Öğretmen adayları, eğitsel oyunlar, çalışma yaprakları, soru-cevap etkinlikleri ve arkeolojik kazı gibi çeşitli öğrenme materyalleri tasarlamışlardır. Görsel sanatlar ve tasarım etkinlikleri kapsamında ise drama, müzede görülen eserlerin replikalarını yapma, resim çizme ve müze broşürü hazırlama gibi etkinlikler geliştirilmiştir. Ayrıca, yaratıcı yazma ve düşünme alanında, sanal müze ziyaretlerinden sonra değerlendirmeler, tarihsel empatiyle hikâye yazımı ve beyin fırtınası etkinlikleri tasarlanmıştır. Öner-Armağan vd. (2023) araştırmalarında; öğretmen adaylarının sanal müze kullanımlarında başlangıçta teknolojik yeterlilikleri ve alan bilgilerinin öne çıktığı, uygulama sonrasında ise pedagojik bilginin de önemini kavradıkları ve bilgiyi içerikle birleştirebildikleri sonucuna ulaşmışlardır. Barab vd. (2005) ve Iqbala vd. (2010), sanal uygulamalarla öğrencilere farklı bir ortamda bulunma hissi verildiğini, böylece hayal güçleri ve problem çözme yeteneklerinin geliştirildiğini, yüksek düzeyde etkileşimle öğrenme deneyimleri sunulduğunu ve bilginin yapılandırılması, beyin fırtınası gibi farklı kaynaklardan yararlanarak bilginin sentezlenmesi için uygun ortamlar sağlandığını belirtmişlerdir. Bu bağlamda sanal ortamların hem öğrenci hem de öğretmen adaylarının bilişsel ve pedagojik gelişimlerini destekleyerek, eğitim sürecini daha dinamik ve etkileşimli hale getirdiği görülmektedir.

Öğretmen adaylarının sanal müze gezileri etkinliğine yönelik görüşleri, hazırlık süreci, kültürel fayda ve eğitim-öğretim hayatına katkılar çerçevesinde değerlendirilmiştir. Hazırlık sürecine ilişkin olarak, etkinliğin zorlanmadan ve keyifle yapıldığı, Sosyal Bilgiler Dersi Öğretim Programı'nın incelenerek müze ve kazanımların eşleştirildiği, etkinlik hazırlığı sırasında eğitim bilimleri bilgilerinin yeniden gözden geçirildiği, ancak kazanım-müze eşleştirmesinde ve etkinlik hazırlama aşamasında bazı zorluklar yaşandığı belirtilmiştir. Kültürel fayda açısından ise, sanal müze gezilerinin kültürel açıdan öğretici olduğu, müze gezme isteği uyandırdığı, müzelerin önemini daha iyi kavradığı, yeni müzelerin keşfedilmesine olanak sağladığı ve kültürel mirasa duyarlılığı artırdığı ifade edilmiştir. Eğitim-öğretim hayatına katkılar bağlamında ise, bu etkinliğin öğretmenlik kariyerine olumlu etkiler sağladığı, kalıcı öğrenmeyi desteklediği, Sosyal Bilgiler Öğretmenliği Programı ders içerikleriyle uyumlu olduğu, KPSS hazırlığına katkıda bulunduğu, yazma becerilerini geliştirdiği ve hayal gücünü zenginleştirdiği vurgulanmıştır.

## **Öneriler**

Sanal müze gezileri sırasında yaşanan teknolojik zorlukların önüne geçmek üzere; sanal müzelerin teknik alt yapısı güçlendirilebilir, görüntü kalitesi arttırılabilir ve yönlendirmeler daha kullanıcı dostu hale getirilebilir.

Sanal müzelerin eğitimde daha etkili kullanılabilmesi için içerikleri zenginleştirilebilir. Sesli anlatım, üç boyutlu modeller ve interaktif eserler eklenerek öğrencilerin ilgisi çekilebilir.

Öğretmen adayları sanal müzeleri ders materyali olarak kullanmaları için teşvik edilebilir. Öğretmen adaylarına sanal müze gezilerinin planlanması, kazanımlar ve müzelerin eşleştirilmesi ve etkinlik tasarlama konularında rehberlik yapılabilir.

Sanal müzeler ile fiziksel müze gezileri birleştirilerek öğrencilere daha geniş bir öğrenme deneyimi sunulabilir. Müze gezilerinin eğitici etkisini arttırmak üzere sanal müzeler, fiziksel gezilerin ön hazırlığı olarak kullanılabilir ve öğrencilerin müzeye dair ön bilgi edinmeleri sağlanabilir.