

## RESEARCH ARTICLE

## Analysis of Postgraduate Theses on the Subject of Virtual Museum

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## ABSTRACT

The aim of the research is to analyze postgraduate theses on the subject of virtual museums and to determine the general trends in theses. This study, which is a qualitative research, used descriptive content analysis. At the beginning of the data collection phase, a detailed search was conducted using the keyword "virtual museum" on the subject of the research using the "advanced search" tab in the National Thesis Search Center on the official website of the Council of Higher Education (CoHE). According to research findings, it was seen that postgraduate theses on the subject of virtual museums mostly consist of master's theses and students are mostly preferred as the research group. Despite the importance of virtual museums in education, academic studies on this subject are insufficient in number and existing studies offer a limited scope. It is important to increase the use of qualitative methods because postgraduate theses on virtual museums need to be diversified. It is possible to conduct more comprehensive and applied research on virtual museums.

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## 1. Introduction

The International Council of Museums has defined museums as permanent institutions that serve society and development, are open to society, and collect, research, preserve, share information and exhibit materials that bear witness to the environment in which they are located (Ulusoy, 2010). As museums prepare to welcome the 21st century, they have emphasized education and training, allowing people to spend their free time learning and having fun; museums have made their objects tangible and created an interactive social environment for everyone of all ages (Karadeniz, 2009). At the same time, museums can provide a space for individuals and groups to create meaning by interacting with narratives, artifacts and visuals (Falk & Dierking, 2000; Hein, 1999;

Hooper-Greenhill, 1991). In addition, different types of museums have different purposes. For example, natural history museums aim to provide content related to cultures, environments, and science as well as to encourage students to develop personal interests in these topics (Abu-Shumays & Leinhardt, 2002; Marcus et al., 2012; Tal & Morag, 2007; Tran, 2007). One of the meaning-making strategies that support students' learning in museums is to provide students with options and opportunities to explore topics that interest them during museum visits (Falk & Dierking, 2000; Griffin & Symington, 1997; Kisiel, 2003). Similarly, many types of museums offer students the opportunity to learn from objects and artifacts. By using museums related to various subject areas, more effective learning can be achieved. (Buyurgan & Mercin, 2005, p.12)

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Researchers have shown that effective service learning supports students' civic tendencies and skills, including social responsibility and civic participation (Kahne & Middaugh, 2010; Wade, 2008). It is stated that museum trips increase participation in class and academic success, facilitate learning, contribute to creative and historical thinking skills, and provide students with an aesthetic perspective. However, in the implementation of museum trips, there are difficulties such as security concerns, financial support, difficulties of current legislation, distance, and transportation (Atayeter & Tozkoparan, 2016; Önder et al., 2009; Sağdıç & Demirkaya, 2015). In order to overcome this problem and provide access to different museums in a globalizing world, the concept of virtual museums has been developed.

Virtual museum can be defined as an interactive website that offers digital copies of works of art, historical artifacts and documents and information about these works to its visitors via the internet by using the possibilities of information technologies (Turan, 2015, p. 190). At the same time, the definition of virtual museum can be made as follows: "Museums that contain digital objects and information about them prepared by using different media opportunities, that go beyond the usual communication methods to provide uninterrupted communication with the visitor and to meet various access methods, and that do not require a physical space in order to enable worldwide access" (Schweibenz, 2004, p. 3).

The foundations of virtual museums were laid with the concept of "imaginary museums without walls" at a time when technology was not yet developed. According to Çolak, "It can be said that it was laid with the discussion between Walter Benjamin and Andre Malraux on the problem of the 'aura of the work of art' in the second half of the 20<sup>th</sup> century. In response to Benjamin's claim that the aura of the work of art was damaged in the age when it could be reproduced with the possibilities of technology, Malraux argued that new auras were added to the work of art. This discussion enabled Malraux to develop the concept of the 'imaginary museum without walls' that anyone could access from anywhere, at a time when computer and communication technologies were not yet developed" (Çolak, 2006).

Virtual museums create a more interactive and dynamic learning environment by going beyond the traditional museum approach. These platforms, which support learning processes covering different disciplines such as history, art, geography, and social studies in education, provide students with different perspectives. Social studies is a pivotal course formed by the combination of many disciplines. Cultural heritage topics that allow students to understand the past are taught through social studies and history courses (Mazman Budak, 2021). Museums can facilitate historical and civic understanding in social studies. For example, history museums can increase students' historical understanding and provide historical inquiry

opportunities by offering multiple perspectives and providing the opportunity to analyze historical evidence (Barton & Levstik, 2004; Marcus, 2008; Marcus, et al., 2012; Trofanenko, 2010). For example, in social studies, students can visit virtual exhibitions belonging to the Ottoman Empire, examine these works in historical context, and evaluate their connections to today's world. Such experiences both provide cultural awareness and develop critical thinking skills. From this perspective, this issue is becoming increasingly important. Because one of the most important benefits of academic studies to the literature is that they reveal current developments, practices and deficiencies to researchers and offer solutions. In this respect, the determination of trends in theses prepared on the subject of virtual museums, which is associated with various fields, especially in the field of social studies, will contribute to the literature. In line with the aim of the research, answers to the following questions were sought:

In the theses prepared on the subject of virtual museum;

1. What is the distribution of researches according to fields?
2. What is the distribution of researches according to graduate level?
3. What is the distribution of the researches according to the year of publication?
4. What is the distribution of the methods used in the researches?
5. What is the distribution of the university in which the studies were published?
6. What is the distribution of the study group of the studies?
7. What is the distribution of data collection tools used in the studies?
8. What is the distribution of the studies according to the subject?

## 2. Method

### 2.1. Research Model

This research, in which the qualitative research method was used, is a descriptive content analysis study regarding the examination of postgraduate theses on virtual museums. Descriptive content analysis studies are systematic studies that include the evaluation of research results and trends by examining studies conducted on a determined subject (Lin et al., 2014; Suri & Clarke, 2009). In this study, independent qualitative, quantitative and mixed studies on virtual museums were examined and trends were tried to be determined.

### 2.2. Scope of the Research

The research includes master's and doctoral theses prepared on the subject of virtual museums in the Council of Higher

Education (CoHE) Thesis Center between the years 2004-2024. Three criteria were determined for postgraduate theses within the scope of the research. The first criterion was that the theses should be related to the virtual museum, should be included in the Higher Education Database and finally should be open to access. At the beginning of the data collection phase, a detailed search was conducted using the keyword "virtual museum" related to the subject of the research with the "advanced search" tab in the National Thesis Search Center on the official website of the Council of Higher Education (CoHE). Within this scope, 55 theses, 52 master's and three doctoral, published between the years 2004-2024 were reached.

### 2.3. Analysis of Data

In this study covering postgraduate theses on Virtual Museum, descriptive content analysis was used. The theses determined in the study were downloaded and a data set consisting of 55 theses was determined. Afterwards, after examining similar studies in the relevant literature, the researcher prepared the "Virtual Museum Theses Classification Form" as a data collection tool. The prepared form consists of seven parts. These parts include the field (branch of science) in which the thesis was prepared, year, university and the method, study group, subject and measurement tool of the thesis. This form was taken into consideration when the theses related to the research were coded by the researcher and comparisons were made to test the reliability of the form in the coded data. In order to ensure the reliability and validity of the research, the categorized data during the data analysis were also examined and compared by the field expert. It was determined that the codings made by the researcher and the field expert were significantly consistent. Reliability was calculated with the formula  $[\text{Consensus} / (\text{Consensus} + \text{Disagreement}) \times 100]$  suggested by Miles and Huberman (1994). As a result of the reliability analysis, the compliance rate was determined as 92%. This study is limited to theses written on virtual museums between 2004-2024.

## 3. Findings

This section of the research includes findings on the subject of virtual museums.

### 3.1. Distribution of Theses on Virtual Museum According to the years of Publication

The highest rate of studies on virtual museums was made in 2023 with a rate of 24%. Nine theses were written in 2024 and it has a rate of 16% among the theses written. Seven theses were made in 2022 and six theses were made in 2021. Studies on virtual museums first started in 2004 and one thesis was written.

**Table 1.** Distribution of studies on virtual museum according to years.

Year	f	%
2024	9	16%
2023	13	24%
2022	7	13%
2021	6	11%
2020	2	4%
2019	1	2%
2017	2	4%
2016	2	4%
2015	2	4%
2014	2	4%
2013	1	2%
2012	2	4%
2011	1	2%
2010	2	4%
2008	2	4%
2004	1	2%
<b>Total</b>	<b>55</b>	<b>100%</b>

### 3.2. Distribution of Studies on the Subject of Virtual Museum According to Postgraduate Level

When the studies on virtual museums were examined according to their levels, it was seen that the most studies were done at the master's level. A total of 55 theses were written, 52 theses were written as master's theses, and three theses were written as doctoral theses.

**Table 2.** Distribution of studies on virtual museums by postgraduate level.

Postgraduate level	f	%
Master's Degree	52	95%
Doctorate	3	5%
<b>Total</b>	<b>55</b>	<b>100%</b>

### 3.3. Distribution of Studies on the Subject of Virtual Museum According to the Fields in Which They Are Published

When the studies on virtual museum were analysed according to their fields, 14 studies were conducted in the field of Social Studies Education with a rate of 25%. 11 studies were conducted in the field of Fine Arts Education with a rate of 20%. Studies on Virtual Museum have been carried out not only in the field of education but also in a wide range of fields such as Art History and Museology, Graphic Design, Radio and Television, Architecture, Tourism Management.

**Table 3.** Distribution of the studies on Virtual Museum according to the fields of publication.

According to the field of publication	f	%
Social Studies Education	14	25%
Fine Arts Education	11	20%
History Education	4	7%
Mathematics and Science Education	4	7%
Architecture Department	3	5%
Fashion Design	1	2%
Modeling and Simulation	1	2%
Tourism Management	2	4%
Interdisciplinary Museum Education	1	2%
Classroom Education	1	2%
Tourism Guidance Department	1	2%
Computer and Educational Technologies Education Department	2	4%
Art History and Museum Studies Department	1	2%
Radio Television and Cinema Department	1	2%
Educational Sciences Department	1	2%
Art and Design Department	1	2%
Applied Arts Education	1	2%
Art History Department	1	2%
Graphic Design Department	3	5%
Interior Architecture and Environmental Design	1	2%
<b>Total</b>	<b>55</b>	<b>100%</b>

### 3.4. Distribution of the Studies on Virtual Museum According to the Method Used

When the distribution of the methods used in the studies on the subject of Virtual Museum is examined, the studies were conducted within the framework of qualitative, quantitative and mixed methods. The most commonly used method consists of quantitative studies with 40%, qualitative studies with 31%, and mixed method studies with 16%.

**Table 4.** Distribution of the studies on Virtual Museum according to the method used.

Method	f	%
Quantitative	22	40%
Qualitative	17	31%
Mixed	16	29%
<b>Total</b>	<b>55</b>	<b>100%</b>

### 3.5. Distribution of the Studies on Virtual Museum According to the University

When the distribution of the theses on the subject of Virtual Museum according to the universities is examined, the highest number of studies was conducted at Gazi University with a rate

of 16% and three studies were conducted at Marmara University with a rate of 5%.

**Table 5.** Distribution of studies on Virtual Museum according to universities.

Distribution According to Universities	f	%
Gazi University	9	16%
Hacı Bayram Veli University	2	4%
Sivas Cumhuriyet University	1	2%
Dokuz Eylul University	2	4%
Bartın University	1	2%
Giresun University	1	2%
Marmara University	3	5%
Gaziosmanpasa University	1	2%
Bahcesehir University	1	2%
Dumlupinar University	1	2%
Middle East Technical University	2	4%
Necmettin Erbakan University	3	5%
Istanbul University	1	2%
Celal Bayar University	1	2%
Onsekizmart University	1	2%
Trabzon University	1	2%
Hacı Bektaş Veli University	1	2%
Binali Yıldırım University	1	2%
Sinop University	1	2%
Erciyes University	2	4%
Ankara University	2	4%
Izzet Baysal University	1	2%
Mersin University	2	4%
Sakarya University	1	2%
Baskent University	1	2%
Ondokuz Mayıs University	1	2%
Afyon Kocatepe University	1	2%
Istanbul Gelisim University	1	2%
Pamukkale University	1	2%
Yasar University	1	2%
Adnan Menderes University	1	2%
Aksaray University	1	2%
Dumlupinar University	1	2%
Ihsan Dogra Bilkent University	1	2%
Hacettepe University	1	2%
Süleyman Demirel University	2	4%
<b>Total</b>	<b>55</b>	<b>100%</b>

### 3.6. Distribution of the Studies on Virtual Museum According to the Study Groups

When the distribution of the studies on Virtual Museum according to the study group is analysed, 21 studies with a rate of 38% were conducted with students, 12 studies with a rate of

22% were conducted with document analysis method, eight studies with a rate of 15% were conducted with prospective teachers, and seven studies with a rate of 13% were conducted with participants and teachers.

**Table 6.** Distribution of the studies on Virtual Museum according to the study group.

Working Group	f	%
Teacher Candidate	8	15%
Teacher	7	13%
Student	21	38%
Participant	7	13%
Document	12	22%
<b>Total</b>	<b>55</b>	<b>100%</b>

### 3.7. Distribution of the Data Collection Tools Used in the Studies on Virtual Museum

When the table is analysed, it is seen that questionnaire study was used the most with a rate of 25%, interview with a rate of 20%, pre-test and post-test data collection tools were used with a rate of 16% and attitude scale was used with a rate of 16%.

**Table 7.** Distribution of studies on Virtual Museum according to data collection tools.

Measurement Tools	f	%
Survey	14	25%
Audio recording	1	2%
Pre-posttest	9	16%
Interview	11	20%
Open-ended interview	1	2%
Semi-structured interview	4	7%
Attitude scale	9	16%
Camera recording	1	2%
Observation	5	9%
<b>Total</b>	<b>55</b>	<b>100%</b>

### 3.8. Distribution of the Studies on Virtual Museum According to the Subject

When the distribution of the studies on virtual museums according to their subjects was analysed, it was found that the most studies with a rate of 24% were in the field of social studies teaching. It was seen that there were 9% on the use of virtual museums, 9% on visual arts education, and 7% on attitudes towards science teaching.

**Table 8.** Distribution of the studies on Virtual Museum according to their subjects.

Subject	f	%
Virtual museum/Social studies education	13	24%
Virtual museum/Museum education	2	4%
Virtual museum/Out-of-school learning	2	4%
Virtual museum/Attitude towards science education	4	7%
Virtual museum/Virtual culture	1	2%
Virtual museum/Alternative approaches in museology	1	2%
Virtual museum/Space perception, analysis	2	4%
Virtual museum/Museology	2	4%
Virtual museum usage, application	5	9%
Virtual museum/Visual arts education	5	9%
Virtual museum/Cultural heritage education	3	5%
Virtual museum/Tourism	1	2%
Virtual museum/Media technologies attitude	1	2%
Virtual museum/Virtual reality	1	2%
Virtual museum/Fine arts education attitude	1	2%
Virtual museum/History teaching attitude	3	5%
Virtual museum/English education attitude	1	2%
Virtual museum/Architecture and documentation	1	2%
Virtual museum/Graphic analysis	1	2%
Virtual museum/Introduction to aviation education	1	2%
Virtual museum/Maritime archaeology	1	2%
Virtual museum/Panoramic image	1	2%
Virtual museum/Interface design	1	2%
Virtual museum/Virtual museum design	1	2%
<b>Total</b>	<b>55</b>	<b>100%</b>

## 4. Discussion and Conclusion

This study evaluated the current situation in this field by analyzing the trends of postgraduate theses on virtual museums between 2004 and 2024. The research findings reveal that the number of studies conducted is limited and more comprehensive research is needed.

According to the results of the study, 95% of the postgraduate studies on virtual museums consist of master's theses and 5% consists of doctoral theses. This situation shows that the studies on virtual museums at the doctoral level are insufficient and that more in-depth research is needed at this level. In addition, when examined from a methodological perspective, it is seen that 40% of the studies are quantitative, 31% are qualitative and 29% are mixed methods. The predominance of quantitative methods reveals that there is a need for further research on qualitative elements such as user experiences and interactive structure of virtual museums. When

examined in terms of data collection tools, it is seen that the most commonly used methods in the studies are surveys with 25%, followed by interviews with 20% and pre-test-post-test applications with 16%. In addition, Dilek et al. (2018) also found that the theses mostly consist of scale and survey-oriented research. This situation shows that more diverse tools should be used in data collection processes and that it is important to increase in-depth methods such as observation and structured interviews.

When examined by years, it has been seen that virtual museum studies have increased significantly since 2020. It can be said that the Covid-19 pandemic that emerged in 2019 was effective in this increase. It is thought that the fact that individuals were confined to their homes during the pandemic period increased the interest in virtual environments and this situation played an important role in the increase in research on virtual museums.

In the studies, it was seen that students were the most frequently preferred study group with 38%. In addition, it was determined that document reviews were selected as the study group with 22% and teacher candidates with 15%. These findings show that virtual museums are frequently discussed in educational environments and are especially focused on students. However, it is thought that research to be conducted on teachers, academics and other stakeholders can contribute to understanding how this technology can be evaluated in a broader context.

The findings reveal that a large portion of the research on virtual museums is concentrated in the field of educational sciences. 25% of the studies were conducted in the field of social studies education, and 16% in the field of fine arts education. Studies conducted in disciplines such as art history, architecture, tourism and technology remained below 10% in total. These results emphasize the importance of considering virtual museums with an interdisciplinary approach. In addition, Kaymakçı and Er (2009) also found in their study that more researchers from different fields conducted studies in the field of Social Studies compared to other fields.

In conclusion, this study has drawn attention to the deficiencies in the field by revealing the trends in virtual museum research. There is a greater need for qualitative method-based and interdisciplinary studies, especially at the doctoral level. In order to use the potential offered by virtual museums more effectively, applied research should be increased in both education and cultural heritage protection fields. Such studies will not only provide theoretical knowledge but also provide important clues on how virtual museums can be used more effectively in practice.

## Compliance with Ethical Standards

This study does not require an ethics committee approval.

## Conflict of Interest

The author has no conflict of interest to declare.

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