

DISTANCE EDUCATION EXPERIENCES OF MIDDLE SCHOOL 7th GRADE STUDENTS IN THE TURKEY DURING COVID-19 PANDEMIC: VIRTUAL MUSEUM EXAMPLE

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ABSTRACT

The purpose of the research is to examine the contributions and limitedness of virtual museum visits according to 7th grade students. Therefore, the research was conducted in accordance with the holistic single case study. The study group of the research was 14 students ranging in age from 11 to 12, determined by the criterion case sampling method. Semi-structured interview form and various documents (daily, draws and text) were used as data collection tools. According to the thematic analysis, virtual museum visits have been found to contribute to academic and occupational development, contextualization in terms of past and present. On the other hand, it has been found that virtual museum visits have some limitedity in visual elements and socialization. Based on the results of the research, it is recommended to use virtual museum visits to increase students' participation in lesson and support their multifaceted academic development during the distance education process.

Keywords: Distance education, Turkey, virtual museum education, holistic single case study.

INTRODUCTION

On December 31, 2019, China notified the World Health Organization (WHO) of the discovery of pneumonia caused by a new type of Coronavirus infection in Wuhan, a city of its own country. The new type of Coronavirus (Covid-19) has been identified as a serious disease that causes death (Yuan et al., 2020). For this reason, many institutions, especially educational institutions, have had to take a break from their activities in many countries.

Due to Covid-19 disease, which is thought to be transmitted through breathing, whether the activities of educational institutions in Turkey can be continued has been a matter of debate. It has been reported by the Ministry of National Education (MoNE) that the activities of all educational institutions will be suspended for three weeks as of March 16, 2020. On the other hand, when the rapid spread of the disease caused a dramatic increase in the number of cases, the MoNE decided to switch to distance education in May 2020.

Distance education was maintained as synchronous and asynchronous. However, the break in face-to-face education caused various problems especially in the academic, artistic and occupation development of the students. As a result, out-of-school learning platforms were needed that could increase student achievement and support the teaching-learning process. Within this framework, recent studies have found that out-of-school learning platforms are particularly effective to increase students' academic achievements (Anderson, Kiesel & Storksdieck, 2006). One of these learning platforms is virtual museums.

LITERATURE REVIEW

Human history is being restructured through physical and intellectual works, which are considered a key element such as monuments and documents. In this sense, the use of physical monuments, history, architecture and archaeology, etc. it can be particularly useful for transferring features such as to students. However, the protection of such monuments as a valuable cultural heritage in museums may limit the access and use of such cultural monuments and resources. However, to bring social memory to future generations, it is possible to provide students with access to such cultural benefits and resources.

Museums can be visited at schools to enable students to explore cultural benefits and resources that have various characteristics. In many cases, however, this can create internal obstacles to economic hardship and the way students interact with potential learning resources in traditional museum context (Hein, 2010). On the other hand, these obstacles can lead to questioning of the old habits, together with the development of virtual reality and graphics technology e-learning platforms.

The affordability and the nature of e-learning platforms that are suitable for access anywhere and at any time has led to the concept of virtual museums, primarily aimed at improving and enhancing the museum (Ambusaidi & Al-Rabaani, 2019). The concept of a virtual museum was originally created in 1947 by Andre Malraux. Malraux (1996) has put the concept of an imaginary museum (*Le musee imaginaire*), without its location, walls or grounds, into a virtual museum. According to Werner (2004), the virtual museum is defined as a group of assets that provide a connection center with many touchpoints, create a digital symbolism system for exhibitions, and have network configuration consisting of various accessible environments from around the world.

According to ICOM (International Council of Museums) (2004), there are three categories of virtual museums on the internet, developed as extensions to physical museums. These are brochures, content and learning museums. The brochure museum aims to provide information about the museum to future visitors and is used as a marketing tool with key information such as location, opening hours and sometimes event calendar to guide visitors (Teather, 1998). The content museum has a database for objective information about museum collections, and the learning museum consists of websites that offer different access points based on age, history and interest to virtual visitors (Styliani et al., 2009). The purpose of the learning museum is to have the virtual visitor visit the museum again and establish a personal relationship with the online collection. This allows physical museums to be built in virtual environments in 3D form virtual museums, creates a relatively worldwide opportunity to visit museums, and provides access to the museum that users of all ages and cultures want online. In addition, virtual museums allow you to test different designs before deciding on the presentation style of a temporary exhibition, experimenting with the arrangement of various 3D objects within the gallery, creating and spreading more widely-open virtual cultural monuments that combine archaeological accuracy and reliability with aesthetic taste. Finally, visual representation of cultural objects via virtual and augmented reality interfaces, offering more realistic, interactive and easily explored virtual museum exhibitions to larger audiences (Eguz, 2020). Furthermore, virtual museums can overcome space restrictions in terms of the number of objects accessible in the physical museum (Barbieri, Bruno & Muzzupappa, 2017).

Cultural monuments, often exhibited in the physical environment of a museum, are often shown in showcase with limited knowledge of them. In the virtual museum exhibitions, museum monuments can be digitized and visualized in a virtual interactive environment. In this context, a virtual exhibition may contain information that a physical exhibition in a museum showcase cannot contain. This allows virtual museum exhibitions to allow virtual visitors to observe and review an object from all angles. In addition, a virtual museum can give the user control of the virtual tour, providing a museum with 3D views and a floor plan (Schweibenz, 2019). With these, it may be necessary to facilitate access to virtual museums to take advantage of these unique advantages of virtual museums.

Access to museums has become easier due to ever-increasing interactive techniques, the development of new information technology software and hardware, and consequently a reduction in costs. Thus, information technologies provide solutions to the concerns of space constraints, significant exhibition costs, and the vulnerability of museum-related monuments (Styliani et al., 2009). Therefore, virtual reality (Pletinckx et al., 2000; Wojciechowski et al., 2004), augmented reality (Liarokapis & White, 2005; Punako, 2018) and the potential benefits of emerging technologies (Sinclair et al., 2003) for virtual museums have been the subject of a series of studies and research (Patias et al., 2008).

Various studies are being conducted that provide theoretical information on virtual museums (Altin & Atci, 2012, p. 545-583; Barlas Bozkus, 2014; Demir & Karademir, 2015, p. 211-236; Kabapinar, 2014, p. 327-338; Styliani et al., 2009; Turan, 2015, p. 189-203). However one study conducted by Kaya and Okumus (2018), the use of virtual museums in History courses was examined and students stated that virtual museum visits were useful and interesting. Similarly, the Social Studies course found that teacher candidates (Caliskan et al., 2016; Peker, 2014) and teachers (Aladag et al., 2014; Eguz, 2020) had their opinion that the use of the virtual museum would be beneficial. In that context the study conducted by Aktas (2017), found that teachers of social studies had high perceptions of the use of a virtual museum. In some research studies, the use of a virtual museum in social studies education has increased student academic achievement (Ambusaidi & Rabaani, 2019; Okolo et al., 2011; Turgut, 2015; Ustaoglu, 2012) and their attitude to the course (Ambusaidi & Rabaani, 2019; Yildirim & Tahiroglu, 2012).

In summary, the contributions and limitations of virtual museum visits from the perspective of students have not been revealed through research. This case may cause deficiencies in determining both the strengths and weaknesses of virtual museums in terms of student development. However, during these periods of Covid-19 pandemic process, distance education tools are witnessed to play a critical role in teaching-learning time. In this context, virtual museums should be used in the teaching-learning process as a distance education tool. In this way, it will be possible to reveal how virtual museums play a role in the distance education process. In addition, it can be revealed how virtual museum visits can be used to support the development of students in the distance education process. Therefore, this research is important in terms of revealing the indicators regarding the contribution and limitations of virtual museum visits in the light of empirical evidence rather than theoretical basis and speculative connections. In this context, the main purpose of the study is to examine the contributions and limitations of virtual museum visits from the perspective of 7th grade students. Accordingly, the sub-questions of the research were determined as follows:

1. What are the contributions of virtual museum visits from the perspective of 7th grade students?
2. What are the limitations of virtual museum visits from the perspective of 7th grade students?

METHOD

The research was conducted in accordance with a holistic single case study. According to Yin (2003), the holistic single case study is based on the examination of a phenomenon, event, activity or the state of the process over time that has not been revealed before. So a holistic single case study can be any decision-making process or activity. However, it should be aimed to reveal the reflections of a specific case and activity / process (Baxter & Jack, 2008). Within this framework, in the research used a holistic single case study design to analyze the contributions and limitations of virtual museum visits, which were not revealed from the perspective of middle school students before. Therefore, in the research;

- Middle school 7th grade students' "virtual museum visits" were considered as the case examined,
- It is aimed to "reveal the reflections" of this case,
- In the relevant literature, the lack of research on the contribution and limitations of virtual museum visits from the perspective of middle school 7th grade students is considered to be a peculiar case.

The process flow of the research is indicated in Figure 1, "The Holistic Single Case Study Flow Chart".

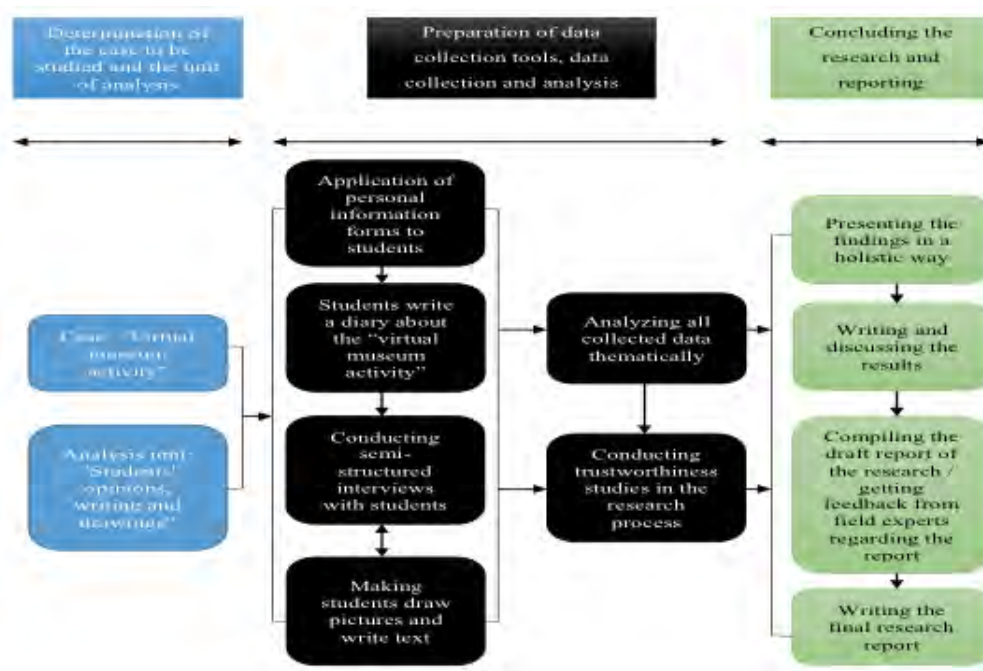


Figure 1. A holistic single case study flow chart

When Figure 1 is examined, the process steps related to the design structure of the research, it is seen that it is carried out in three stages:

- Determining the case to be studied and the unit of analysis,
- Preparing data collection tools, collecting and analyzing the data,
- Finalizing the research and writing the research report.

Context

During the five-month research period, the researcher; he shared the same virtual environment as interview and observer with the students he met before. Thus, the comments made on the findings were tried to be supported. At the same time, each student was allowed to visit the same virtual museums in order to make comparisons regarding the findings. In this context, virtual museums that students can visit are limited. For this, among the virtual museums on the website of the T.R. Ministry of Culture and Tourism (<https://ktb.gov.tr/TR-96599/sanal-gezinti.html>), in line with the requests of the students, "Adana, Ankara Painting and Sculpture, Ephesus, War of Independence, Troy, Anatolian Civilizations, Gobekli-tepe Ruins, Atatürk and Istanbul Toy" museums were selected. These virtual museums were visited 3 times for a total of 1 month, approximately 1 hour each day. Thus, it was tried to check the consistency of both students' opinions and writings within and among themselves.

The researcher interviewed the students in the study group in a virtual environment (via the Zoom program). The interviews lasted approximately 25 minutes with each student. The interviews were recorded on audio and each interview was transcribed into the computer's Excel program in the evening (06.00 pm) of the day of the interview. The pictures and texts were prepared in the students' homes under the supervision of the researcher (observed with the Zoom program). In the meantime, no opinion was given about the pictures and texts of the students in order not to be affected.

Participants

The participants of the research consisted of 14 students between the ages of 11-12, attending an official public middle school in Sakarya. The study group of the study was determined according to the "Criterion Case

Sampling” method, which is one of the purposeful sampling types. In criterion case sampling, observation units can be composed of people, events, objects or cases with certain characteristics, and units that meet the criteria for sampling can be included in the sampling (Buyukozturk et al., 2015). The criteria used for the purpose of this research are as follows:

- Conducting the research with middle school 7th grade students,
- Students have not done a virtual museum visit before,
- Students do not have any problems with internet access.

Some of the demographic features belonging to study group are as shown in Table 1.

Table 1. Demographic features of students

Demographic features		f	%
Gender	Female	8	57
	Male	6	43
Age	11	11	79
	12	3	21
Mother's education level	Illiterate	-	-
	Literate	1	7
	Elementary school	6	43
	Middle school	5	36
	High school	2	14
	University	-	-
Father's education level	Illiterate	-	-
	Literate	2	14
	Elementary school	7	50
	Middle school	4	29
	High school	1	7
	University	-	-
Monthly income level of the family	Below 2080 Turkish Lira* (TL)	1	7
	Between 2080-3000 TL	1	7
	Between 3501-4000 TL	1	7
	Between 4001-4500 TL	10	72
	4501 TL and above	1	7
Technological products belonging to students	Smartphone	2	13
	Computer	5	33
	Tablet	7	47
Total		14	100

*: The current buying rate of the Dollar is 8,2963 TL and the selling rate is 8,2992 TL. The Dollar rate was last updated on 7.5.2021 14:48:48. In line with this dollar rate data, 1 Dollar corresponds to 8,2992 TL.

Data Collection

Semi-Structured Interview Form

In the research, the interview method was used to learn the opinions of 7th grade students about virtual museum visits and thus to reveal how virtual museum visits reflect on their lives in the context of contribution and limitation. In this context, the semi-structured interview form was prepared by considering the information in the literature. There were 6 questions in the interview form. In addition, 2 probing questions were added to the form to make the questions easier to understand.

The interview questions developed by the researcher and examined by two social studies educators were asked to 5 students at the same grade level before they were asked to the students. Afterwards, since it was seen that the students could not understand the “strong and weak points” expressions in questions 3 and 4, “features you like / do not like” phrases were added instead of these expressions. Finally, in accordance with the feedback from area experts and students, the necessary corrections were made on the questions and the interview form was made ready for application.

Documents (Diary, Picture and Text)

Students wrote a diary during their virtual museum visit. Thus, the feelings and thoughts experienced by the students during the process regarding a certain activity (virtual museum) were recorded. In order to act in line with the purpose and scope of the research, this diaries was not written randomly by the students, but by filling in the relevant fields in the word document prepared by the researcher. There are the following headings in the diary: “What is the virtual museum you visited, why this virtual museum attracted your attention, would you write the notes you received about the virtual museum, what your visit to the virtual museum felt like, do you write your thoughts about the virtual museum visit? If there are you, would you write it, and if you have anything missing, would you write it? Virtual museum visit date and time”. These diaries are written in relation to each virtual museum visit. Therefore, the diaries written by the students were collected every day by the researcher; then, the researcher re-sent the blank versions of the word documents related to the diary to the students via the internet.

Some of the students (Gokcen, Ikranur, Kamile, Nermin and Ozlem) stated that virtual museum visits had a positive reflection on the occupational they aim to be in the future. In this context, the students were asked to show the “reflections of the virtual museum on the occupational they target”. As a result of this, students with code named Ikranur, Kamile, Nermin and Ozlem drew pictures; on the other hand, the student named Gokcen wrote a text. The application process differed for each student. In this context, students completed their pictures in an average of 1 hours and the text in 1.5 hours. The pictures were analyzed with the help of the “Picture Analysis Form (PAF)” by two experts with at least PhD titles working in the area of children’s paintings. The text was analyzed with the help of the “Text Analysis Form (TAF)” by two experts with at least PhD titles working in the area of child / youth literature and structural analysis of the text.

Data Analysis

Thematic analysis was conducted on the data in order to answer the research questions. Since it offers a more systematic approach in thematic analysis, the thematic analysis approach of Braun and Clarke (2006) consisting of six phases was used.

Phase 1: Becoming Familiar with the Data

At this phase, the entire database has been read thoroughly to see both the details of each data item and the big picture that the data describes. This process step, based on data, helped find meaning and patterns in the database. While becoming familiar with the data, edge notes have been taken to develop potential coding for beginners for the database. Afterwards, the interviews and documents were coded line by line (Seidel & Kelle, 1995), and coding for beginners were created in which each code is noted together with a description of what it means and the source of the code.

Phase 2: Generating Code

The 90 codes reached in the first phase of coding are shown in a table. This reflected Merriam’s (2009) views that the codes that appear when the first analyzes are completed are preliminary and it is not yet known under which themes the codes can be classified. Later, code tags were created to data reduction unrelated to the purpose of the research (Coffey & Atkinson, 1996). It also enabled the researcher to infer what the codes mean. Then, the codes were combined or separated according to the sameness / separation characteristics of the codes.

Phase 3: Generating Initial Themes

The codes are grouped under 10 temporary themes that can accurately describe the data. Then, what these themes mean exactly is explained in the theme consistency chart. As a result, some themes were combined; it was seen that some of the codes were not suitable for class distinction and it was decided to keep them ready. Thus, temporary themes were kept ready to be used in case of need and the 10 temporary themes that appeared at the beginning were reduced to 3 main themes related to the contributions of virtual museum visits and 5 main themes related to the limitations, which could represent wider patterns in the data.

Phase 4: Reviewing Themes

At this phase, themes were reviewed according to the coded data. For this purpose, codes suitable for the main themes revealed were painted in red, and total citations were created by marking direct quotations representing them in the database. Thus, it has been tried to show how the themes support / validate the data. Then, the validity of each theme and their relationship with the database as a whole were examined. In this context, the database was re-read from beginning to end to determine whether existing themes are related to the database or not. However, in the first coding phase, additional elements that may have previously been overlooked were not found.

Phase 5: Defining and Naming Themes

In order to determine whether existing themes contain sub-themes and have more depth, themes were examined within the entire database as well as autonomous themes. Thus, the themes were evaluated against “excessive fragmentation or staying whole when it could be split” (Braun & Clarke, 2016). Then, the themes were defined, each theme was explained with a few sentences and the themes were named considering the harmony in the data pieces and codes.

Phase 6: Producing the Report (Reliability and Validity [Trustworthiness])

In order to ensure reliability in qualitative research, Silverman (2005) stated that the researcher should explain how the research process followed and the relational structure between the main theme and codes should be presented. In this context, the processes followed in the research are explained. In addition, the codes related to the themes were defined in the findings section and the themes were supported by direct citations. At the same time, the database (pictures and text) was coded by area experts for coding reliability. In order to ensure validity, triangulation was tried to be provided in the data collection tools, member checking was carried out regarding the data transcripts and the opinions of the students were presented objectively (Glesne, 2015; Lincoln et al., 2011).

FINDINGS

Contributions of Virtual Museum Visits According to Students

The results obtained regarding the contributions of virtual museums are presented in this subsection. Within this framework, the results are stated in tables, figures and direct quotes. The contributions of virtual museum visits according to students are indicated in Table 2.

Table 2. Contributions of virtual museum visits according to students

Themes	Codes	n	Total citations
Academic development	Learning history	9	18
	Obtaining geographic information	3	
	Revealing aesthetic sensitivities	3	
	Obtaining general knowledge information	3	
Contextualization	Feeling what happened in the past	7	11
	Feeling like you're in the sightseeing place	4	
Occupational development	Drawing a sketch as an interior architect	2	5
	Drawing a statue as a sculptor	1	
	Drawing on how to protect the museum as a policeman	1	
	Introducing the place that travels as a documentary host	1	

When Table 2 is examined, it is seen that the contributions of virtual museum visits according to students are classified under the themes of “academic and occupational development, contextualization”.

Academic Development

Historical learning: The majority of students (Burhan, Gokcen, Hakan, Ikranur, Kamile, Melahat, Nermin, Yasin and Zeki) stated that they learned about history through virtual museum visits. The student, codenamed Zeki, stated this case as follows: “As a ground, then as historical things, there was everything that had history in the virtual museum. Everyone is learning history and it’s a beautiful thing.” The student, codenamed Yasin, expressed similar views with the sentence, “Virtual museum visits should be made to learn history and for everyone to remember the old.” The student, codenamed Hakan, stated that he obtained various historical information about the archaeological periods as follows:

“I visited the early Bronze Age period. There were tent-shaped houses of t-ups and downs like the Stone Age. I studied human figures who had shaped the cliffs with nails and hammers. I studied the urinary period. During this period, arrows and bows were used on the horse. Cattle are sacrificed to God and Goddies. It’s very common to make writing and painting steles on the rocks.”

The student, codenamed Kamile, stated that she agreed with the opinions of the student codenamed Hakan as follows:

“Since the wife of one of the Kings of Pergamon was named Hierapolis, it was called Hierapolis. Many diseases are treated here to help primary and middle school students. -For example- There was a woman in the healing house, she was treating someone... Ankara Museum of Painting and Sculpture was built under Ataturk’s control. The number of works was around 4000.”

On the other hand, the student codenamed Ikranur stated: “I witnessed the story of wars and conquests while touring the Mona Lisa’s toy. The tour of such toys can give information because it is presented as a picture of wars.” Ikranur tried to explain how the virtual museum provided historical information through concrete examples with these sentences.

Obtaining geographic information: Some of the students (Gokcen, Nermin and Zeki) stated that they obtained geographical information through virtual museum visits. In this context, the opinions of the student codenamed Nermin are as follows: “I visited Adana museum. I’ve never been to Adana. I have learned Adana.” Similarly, the student codenamed Gokcen stated the following view: “The ancient city of Ephesus, located in Izmir Selcuk, was home to different civilizations.”

Revealing aesthetic sensitivities: Some of the students (Hakan, Gokcen and Kamile) were found to have expressed opinions about art and aesthetics. In this context, the student codenamed Gokcen stated:

"I liked the museum plan and the presence of 2 paintings at the first entrance of the Ancient City of Ephesus. Special and highly valued works were taken into glass. This feature shows the importance of sculptures. Another feature I liked was the coexistence of simplicity and panacity in each of the rooms."

Similarly, the student, codenamed Kamile, said of the meaning-producing effect of an artistic creation, "I visited the museum of painting and sculpture in the virtual museum. It's like the statues are telling you something. That's why I love sculptures."

Obtaining general knowledge information: Some of the students (Duygu, Hakan and Gokcen) stated that they obtained general knowledge information during virtual museum visits. In this context, the student, codenamed Hakan, said, "I understood the history of the city of Van from past to day. I learned how important soil testing is in the culture of van city." Hakan tried to express that he had obtained information about the economic and social structure of a city with these views. In parallel, the student codenamed Duygu said, "The Ataturk statue was built by Pietro Cononica and put in its current place in 1927. This statue is the first museum of Turkey and Ankara." With this explanation, Duygu expressed an opinion on both when and by who the statue of a historical figure (Ataturk) was made and the historical origins of museumism in Turkey.

Contextualization

Feeling what happened in the past: Half of the students (Burhan, Hakan, Ikranur, Kamile, Melahat, Yasin and Zeki) stated that they could feel the conditions of the past through virtual museums. In this context, the opinions of the student codenamed Zeki are as follows:

"The virtual museum I visited was the Canakkale Troy museum. The Troy museum was very beautiful and felt historic; so I felt what it meant to live in the past... The visit to the virtual museum reminds me of the difficulties we used to have. So the visit to the museum made me feel the old days."

The student, codenamed Burhan, expressed similar views as follows: "I thought, 'what would I have seen if I had lived in the old years?' so in short, virtual museum visits took me back to historical periods." Burhan tried to explain that he could feel a past period through the virtual museum with this view. However, the opinions of the student codenamed Melahat were as follows: "I felt as if I was living and traveling at that time with virtual museum visits. These museum visits took me on a historic journey." In this context, it can be said that the student codenamed Melahat tries to express her views in a more metaphorical and descriptive way.

Feeling like you're in the sightseeing place: Some of the students (Burhan, Kamile, Melahat and Nilufer) stated that they could feel that they were in places visited through virtual museums. The following opinion of the student named Burhan can be given as an example: "Everything was transferred to the virtual environment as in real life." The student, codenamed Kamile, stated: "I felt as if I was walking around there and drawing sculpture paintings with virtual museum visits." These two examples show that students are trying to explain through examples that they feel they are in the visiting museum.

Occupational Development

Drawing a sketch as an interior architect: Some of the students (Ikranur and Nermin) stated that they got to know the interior architecture profession more closely thanks to virtual museums. Accordingly, they have made various drawings for the reflections of virtual museum visits on their occupational development. Examples include a drawing in Figure 2 of a student codenamed Ikranur.



Figure 2. Sketch drawn by the student codenamed Ikranur

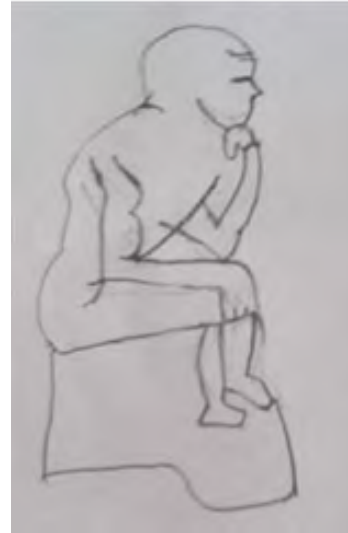


Figure 3. Statue drawn by student codenamed Kamile

The expert codenamed Sezai stated the following about the visual in Figure 2:

“This drawing shows that the child cares about visual imagination. In particular, the display of the position of objects together with the placedirection arrows hints at the developing perception of spacetime in this child. At the same time, this drawing used a much stylized image of the fields in the museum; this is reminiscent of the drawing of the zoning plan of the cities. As a result, when we examine this drawing, it can be said that the child wants to prefer professions suitable for visual/spatial memory such as map engineer, architect and designer.”

Some of the analysis of the expert codenamed Melis for Figure 2 is as follows:

“Typically, it is seen that a plan of a place is drawn. It seems that the child adds a spatial element to this plan with the ground direction arrows. Naturally, it is seen that the child exhibits the skills of describing the spatial and placing the plan in the sketch to find a place.... As a result, it can be said that the child has a tendency towards professions that are suitable for spatial design.”

The student, codenamed Ikranur, also spent hours drawing the Istanbul Toy Museum; but she enjoyed making this drawing, designing the objects in the drawing in her head thanks to virtual museum visits, thinking about sketching the spatial; thus, she stated that she had the opportunity to get to know the profession of interior architecture more closely and to apply what this profession requires.

Drawing a statue as a sculptor: The student, codenamed Kamile, stated that she knew the profession of sculpting more closely thanks to virtual museums. Accordingly, she made a drawing aimed at reflecting virtual museum visits on her occupational development. The drawing of the student codenamed Kamile is shown in Figure 3.

The expert codenamed Sezai stated the following about the visual in Figure 3:

“Although the design and drawing enough are not in good condition in this child, it can be said that the child tries to draw the human body in a certain balance and harmonious way. In this drawing, the object on which the person sits is capable of carrying the human being, and the body posture in the drawing is adjusted accordingly. This may be a clue that the child can take perspective in a symmetrical style. The child may be interested in professions that typically require visual/spatial ability, such as sculpting and interior architecture.”

Some of the analysis of the expert codenamed Melis on Figure 3 is as follows:

“Not much attention has been paid to visual design; however, symmetrical posture is appropriate. Spatial and perspective are evident. Although the elements of depth, light and shadow are not very pronounced; there is a clear and clear account of the drawing... It can be said that this drawing of the child is suitable for the period of realism. This child may be interested in professions such as oil painting and sculpture making.”

The student, codenamed Kamile, tried to explain her reflections on the occupational development of virtual museum visits as follows:

“The visit to the virtual museum made me feel as if I was wandering there and drawing sculpture paintings... It’s as if the statues tell you something; that’s why I love sculptures so much... There was room when visiting the virtual museum. There was always pictures in the room. They could have put statues in those rooms. They could also put seats in the rooms and make the statues look like they were talking.”

Based on the above statements of the student codenamed Kamile, it can be said that even the missing points of virtual museum visits are tried to be evaluated in terms of the profession of “sculpting”. In addition, the student, codenamed Kamile, designed and drew while drawing sculpture and took into account the height, weight and mass of the object rather than the shape; they are also a good experience to get to know the profession of sculpting more closely.

Drawing on how to protect the museum as a policeman: The student, codenamed Ozlem, stated that she knew the profession of policing more closely thanks to virtual museums. Accordingly, she painted a picture of the reflection of virtual museum visits on her occupational development. The drawing of the student codenamed Ozlem is shown in Figure 4.



Figure 4. The picture drawn by the student codenamed Ozlem

The expert codenamed Sezai stated the following about the picture in Figure 4:

“It is seen that the child is trying to protect the museum from the air and land. However, the details of safety are not adequately processed in the picture. Despite this, figures in general composition; it reflects a thought about protection, environmental safety or infiltration. In addition, the figures in the picture have a moving and dynamic structure. This shows that the child is trying to express a form designed to take immediate precautions against hostile attitudes that may occur in the environment by forming protection.”

Some of the analysis of the expert codenamed Melis for Figure 4 is as follows:

“The picture is drawn in a way that can create integrity. Although not much attention is paid to proportional and depth, the message of the picture is clear. Although the detail is not clear in the picture, every angle in the picture shows that the instinct for protection is tried to be reflected in the picture. Typically, policing can characterize the occupational ideal of this child.”

The student, codenamed Ozlem, also conducts ideas about how to protect a museum; however, she said that she understood that this job was quite difficult.

Introducing the place that travels as a documentary host: The student, codenamed Gokcen, stated that she knew documentary host more closely thanks to virtual museums. Accordingly, she wrote a text aimed at reflecting virtual museum visits on her occupational development. Some of the text written by the student codenamed Gokcen is as follows:

“Hello everyone again. Today, we will get to know the Ancient City of Ephesus in Izmir, which has a spiritually important place with you. When we introduce this city, you will now know what works the Ancient City of Ephesus contains or what rooms it is decorated with. Then let’s get started. First, we will explain the importance of the Ancient City of Ephesus... We learned what works of art contained in the Ancient City of Ephesus, its meaning and importance. See you on the next trips.”

Some of the analysis of the expert codenamed Hasan for the text written by the student codenamed Gokcen is as follows:

“Alwithout a definitive name information, the child suggests that the importance of the establishment of Ephesus is due to female warriors. Here, assumptions and rhetoric that cannot be fully specific can be an example of intuition. Artemis Colonna from the Roman period, on the other hand, contains only a few of these sculptures. Therefore, it can be concluded that there are more sculptures; that is, these statements are an example of an implicit understanding. The age of Ephesus, thought to have been founded by these warriors known as the Amazon, is about 8,000 years old and has the most prominent features of the Polished Stone Age. Therefore, it is one of the oldest works... If the child can tell these works to the people next to him/her in an interview style, she can write more in-out and comment sentences.”

The analysis of the expert codenamed Merve on the text written by the student codenamed Gokcen is as follows:

“I think that the student tried to write down the details of the place (virtual museum) she saw in some way and made an effort (without skipping any details) for it. On the other hand, alhowever, the student gives information about time in many places, but not in a chronological order; according to the order of the place she visited. At some points, the student included implicit narration, claiming that she wrote texts introducing the places she had visited before. The student did not mention her own feelings and thoughts in the text she wrote. The student wrote the text as if there was a group of people or a camera in front of her, using a sincere language. The language used by the student and the detailed information given by the student gives the feeling that the student willingly and fondly write this text. However, I think the student will enjoy activities such as blogging, promotional guidance, travel program, documentary preparation, and presenter.”

Based on the analysis of experts, it can be said that the student codenamed Gokcen intends to introduce to others a place where the museum is. In addition, the fact that she intends to introduce the place of travel rather than her own feelings and thoughts indicates that she is trying to convey factual information. Moreover, her attempt to describe the place visited in a descriptive style shows that she aims to establish a sincere interaction with the audience. The student, codenamed Gokcen, also stated that she was excited to tell others about the places she visited with virtual museum visits and understood that this job was more difficult than she thought.

Limitations of Virtual Museum Visits According to Students

The limitations of virtual museum visits according to the students are shown in Table 3.

Table 3. Limitations of virtual museum visits according to students

Participants	Codes (Limitations Areas)														
	Font size	Dimensions	Social interaction	Interaction with the historical texture	Introduction-Advance information	Plan	Exit	Contact by hand	Clarity	Access to museums	Access to rooms	Control	Change	Design	Foreign language
Duygu	0	+	0	0	0	0	0	0	0	+	0	+	0	0	0
Gokcen	0	0	+	0	+	+	+	0	0	0	0	0	0	0	0
Hakan	0	0	+	0	0	0	0	+	+	0	0	+	0	0	0
Ikranur	+	0	0	0	0	0	0	0	+	0	0	0	+	+	+
Kamile	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Melahat	+	0	0	0	+	0	+	0	+	0	+	+	0	0	0
Murat	+	0	0	0	0	0	0	0	+	0	0	0	0	0	0
Nermin	0	0	0	0	0	0	0	0	+	0	0	0	0	0	0
Yasin	0	+	+	+	0	0	0	0	0	0	0	0	0	0	0
Zeki	0	+	+	0	0	0	0	0	0	0	0	0	0	0	0

+: Those understood as a limitation by the participants

0: Those that are not understood as a limitation by the participants

When Table 3 is examined, it has been determined that the limitations of the virtual museum visits according to students are the “font size, dimensions, social interaction, interaction with the historical texture, introduction-advance information, plan, exit, contact by hand, clarity, access to museums, access to rooms, control, change, design, and foreign language”. On the other hand, students named Burhan, Nihat, Nilufer and Ozlem stated that virtual museum visits are not limited. The data patterns formed regarding the limitations of virtual museum visits are shown in Table 4.

Table 4. Data patterns on the limitedity of virtual museum visits

Data patterns (types of limitedity)	Codes	n	Total citations
Visual elements	Clarity	5	12
	Font size	3	
	Dimensions	3	
	Design	1	
Feature restrictions	Control	3	7
	Exit	2	
	Access to rooms	1	
	Access to museums	1	
Interaction	Social interaction	4	6
	Contact by hand	1	
	Interaction with the historical texture	1	
Promotional brochure	Introduction-Advance information	2	3
	Plan	1	
Originality	Change	1	2
	Foreign language	1	

When Table 4 is examined, it is seen that data patterns on the limitedity of virtual museum visits are collected under the headings “visual elements, feature restriction, interaction, originality and promotional brochure”.

Visual Elements

Clarity: About half of the students stated that some of the writings and figures in the virtual museums had a blurry image. An example of this is the following statements of the student codenamed Ikranur:

“The writings written to give information were blurry; I mean, these texts were unreadable. I also couldn’t examine the toys near the ceiling; because the toys there looked blurry... When we zoomed in on the toys, the toys sometimes looked blurry.”

Font size: Some of the students stated that some of the writings in the virtual museums were small in size. This situation was tried to be explained by the student named Murat as follows: “I visited many virtual museums, and in all of them the writings were very small.”

Dimension: Some of the students stated that virtual museums should be spacious. This situation was tried to be explained by the student named Duygu as follows: “I noticed that the virtual museums were a bit small; the reason was that although I wanted to travel more, the place was narrow.”

Design: Only the student codenamed Ikranur stated that there were some problems with the design of virtual museums. This case was tried to be explained by the student named Ikranur as follows: “Some toys were close to the ceiling; so the toys couldn’t be examined much because they were up there.”

Feature Restrictions

Control: Some of the students stated that they had difficulty controlling because they did not have movers (directional arrows). This case was tried to be explained by the student named Melahat as follows: “It was hard to move around the virtual museum. I had to try a few times to get where I wanted to go. For this, they could put right, left, up, down, etc. keys.”

Exit: Some of the students stated that there are more than one way out in virtual museums and this case prevents them from focusing on the works. This case was tried to be explained by the student named Gokcen as follows: “It is confusing to have more than one way out in virtual museums.”

Access to rooms: Only the student, codenamed Melahat, stated that she “could not enter some rooms during a visit to the virtual museum.”

Access to museums: Only the student, codenamed Duygu, expressed the opinion that “some virtual museums do not open.”

Interaction

Social interaction: Some of the students stated that other people should be chatted with inside virtual museums. This case was tried to be explained by the student named Gokcen as follows: “At the entrance of the virtual museum should be seating benches on the right side. This should be spoken on sitting benches.”

Contact by hand: Only the student, codenamed Hakan, stated that he saw not being able to touch the artifacts as a problem during his visits to the virtual museum.

Interaction with the historical texture: Only the student, codenamed Yasin, stated that virtual museums should “make the historical texture feel more.”

Promotional Brochure

Introduction-Advance information: Some of the students stated that the museum should be introduced before visiting the virtual museum. This case was tried to be explained by the student named Melahat as follows: “No previous information was given about the virtual museum.”

Plan: Only the student, codenamed Gokcen, stated that there should be a museum plan at the entrance of the Ancient City of Ephesus and that the meaning and importance of the museum should have been explained in this plan.

Originality

Change: Only the student, codenamed Ikranur, drew attention to the imitation of this instead of the original work in the virtual museum.

Foreign language: Only the student named Ikranur said, “Some of the texts were in English.” she stated that instead of the original language, a foreign language is included in the virtual museum.

DISCUSSIONS AND CONCLUSION

Although many educational institutions both in Turkey and in the world claim that they contribute to the academic development of students by providing effective digitalization during the Covid-19 pandemic process, it has turned out that a significant part of these claims are advertisements (Karadag & Yucel, 2020). In addition, during the Covid-19 pandemic process, people have stayed away from environments and interactions that will reveal their aesthetic sensitivities, and artistic tastes (Mak, Fluharty & Fancourt, 2021). As a result of these, it can be said that the academic development, artistic tastes, and aesthetic sensitivities of students were negatively affected during the Covid-19 pandemic process. However, during the Covid-19 pandemic process, it has been concluded that virtual museums can support students' school learning, artistic tastes, and aesthetic sensitivities, as it has been determined in this research that virtual museum visits contribute to academic development. Similarly on 10th graders by Kaya and Okumus (2018); in studies conducted by Turgut (2015) on 8th grade students, it was determined that the students obtained new information with a virtual museum visit. However, other studies have shown that virtual museum visits also increase students' learning towards archaeology (Ambusaidi & Al-Rabaani, 2019; Fredric, 2010; Joma'a, 2012) and academic knowledge (Okolo et al., 2011; Stinson, 2001; Ustaoglu, 2012). On the other hand, in these studies, no determination was made regarding the artistic tastes of the students.

During the Covid-19 pandemic, students need to uncover layers of buried and hidden meaning in historical sources in various ways. In this case, students need to empathize with people in different historical contexts

in order to develop their historical inquiry skills. For this, students should be provided to combine visual and written data (Ewing & Reznick, 2020). When students deepen their appreciation for reviewing original source materials, they may also have discovered other ways to use their existing experience during the Covid-19 pandemic. In this framework, it was concluded that the students were able to empathize as it was determined that virtual museum visits contributed to contextualization in terms of past and present. Empathetic participation is particularly emphasized in both NCSS (National Council for the Social Studies, 2010) and the Social Studies Course Curriculum in Turkey (MoNE, 2018) as a useful the purpose of the curriculum. In this context, it is stated that the empathy of students with people, events and objects related to both the historical period and the present supports their skill development. However, students' contextual contact with historical periods through virtual museums can also support the development of their historical empathy skills. Because contextualization is a fundamental component of historical empathy (Barton & Levstik, 2004; Endacott & Brooks, 2013). On the other hand, it has been reported that students have the impression of visiting a physical museum (Kaya & Okumus, 2018; Turgut, 2015); however, no findings have been shared as to whether they were in contact with persons, events and objects of the historical period or present. However, virtual museums contribute to the understanding of the historical context by providing background information about historical periods according to the conclusion of this research.

During the Covid-19 pandemic, individuals' perceptions of the value and status of different occupational may change (Kramer & Kramer, 2020). For this, it may be beneficial to introduce different occupational to students through distance learning platforms. In other words, there is a need for digital platforms that can reveal the occupational interests of students, especially in this period (Covid-19). In this framework, this research it has been concluded that virtual museum visits can help to reveal students' occupational interests because they are found to contribute to occupational development. In this context, students have indicated that they have been working on the professions they are interested in for a long time without any difficulty, without being bored and after thinking about them and designing them through various documents. It can be said that this is an indicator of the revealing of occupational interest. Because occupational interest is defined as the work that a human pays attention to, observes, thinks about and enjoys without any special effort (Roe, 1957). According to this definition, occupational interest is that personal energy is released without any compulsion and focuses on a certain point for a long time (Kuzgun, 2009). As a result of this, the individual can reveal his/her interest in a profession by gaining a self-awareness about the professions s/he will do after gain various types of experience (Krapp, 1994). This can also increase the professional knowledge of the individual (Christensen & Knezek, 2017). In connection with this middle school is the educational step that has an important place in the career planning of students in terms of revealing occupational interest and increasing professional knowledge (Gulhan & Sahin, 2018). In this context, it can be said that virtual museum visits can have a positive effect on the career planning of middle school 7th grade students within the scope of this research.

As it was determined that virtual museum visits had some limitations, it was concluded that students had to deal with some problems that were puzzling their minds during their virtual museum visits. It can be said that the main problem is socialization. In this context, although an interaction has taken place on a digital platform, it can be said that social interaction is also needed. While no such case has been revealed in other studies, it has been determined that students deal with some other problems during virtual museum visits (Kaya & Okumus, 2018; Turgut, 2015).

The research is limited to 14 students, 9 virtual museums visited, students' opinions, texts and drawings. In this context, a few priority deduce can be made from the findings of the research by taking into account the results and limitedity of the research. The first of these is thought to be a positive reflection of virtual museum visits in many areas (historical, geographical, artistic and occupational) on the multifaceted development of students. Secondly, it is understood that virtual museums have some limitedity that can partially distribute student interest. Thirdly, the maximum contribution expected from virtual museum visits may not be fully achieved as long as virtual museums have limitedity. Finally it can be claimed that virtual museums can be used as an e-learning tool to support students' academic development during the Covid-19 pandemic.

Based on findings from the current study, the recommendations for further development of virtual museum visits are;

- i. Since it has been determined that virtual museum visits contribute to the versatile academic development of students, virtual museum visits should be used by teachers in the teaching-learning process, especially in the distance education process.
- ii. Virtual museum visits should be used as a teaching tool in the distance education process so that students can understand historical events depending on the conditions of the historical period.
- iii. Since it has been determined that students' professional interests are revealed through virtual museum visits, virtual museum visits should be included in the scope of vocational guidance studies carried out in secondary schools.
- iv. Since it has been determined that there are some access barriers and some problems in terms of social and visual aspects during virtual museum visits, it is recommended to visit the places that are closed to access in the virtual museum, to allow socialization in virtual museums, and to adapt the visual elements to the developmental characteristics of the students.
- v. Studies similar to this study should also be conducted on students at different grade levels.
- vi. Experimental studies can be carried out to test whether virtual museums are more effective in the context of academic achievement and attitude towards the relevant course than "physically visited museums".

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