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Effects of Using Virtual Tour Applications in Social Studies on Academic Achievement, Motivation, and Attitude*

İskender Daşdemir, Dr., Ege University, Türkiye, iskender.dasdemir@ege.edu.tr
0000-0003-4158-2388

Nusret Koca, Prof. Dr., Afyon Kocatepe University, Türkiye, nkoca@aku.edu.tr
0000-0002-1415-9683

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Abstract

This study investigated the effects of using virtual tour activities on students' motivation, attitude, and academic achievement in social studies. An exploratory sequential mixed -method design was employed for the study. Data were collected using the Journey in Turkish History Unit Achievement Test, which included learning objectives and was developed by the author, the Social Studies Motivation Scale, the Social Studies Attitude Scale, and the Semi-Structured Focus Group Interview Form for gathering students' opinions. The collected data were analyzed using statistical programs. Content analysis was performed on the qualitative data, while parametric tests were administered to the quantitative data with normal distribution. In the quantitative dimension of the study, no remarkable difference was detected between the control and experimental groups' attitudes, motivation, and academic achievement in the context of social studies before the process. However, at the end of the study, there was a statistically significant difference in favor of the experimental group. In the qualitative dimension, difficulties such as the program's structure, equipment, software, hardware, technological aspects, and teacher competence were addressed regarding the adaptation and use of virtual tour activities in social studies.

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INTRODUCTION

One of the most concrete indicators of today's educational approach is the use of technology in learning and teaching, processes (Kongar, 2003). Today, technology not only makes educational processes enjoyable, colorful, entertaining, and attractive for students, but it is also one of the most effective ways to convey costly, dangerous, and time-consuming learning situations. Beyond its use in learning and teaching processes within educational institutions, technology also influences the content and method of education, such as organizing educational institutions, archiving for their functioning, classification, and sorting (Aksoy, 2003).

The use of three-dimensional technologies in education, especially virtual tours, brings high scientific quality to education. Such technologies are perceived as applications that require technical knowledge and skills (Michael & Jodi, 2016; Peker, 2014). Virtual tour technology assists in the educational process by helping students transfer their learning to daily life and create a society that uses technology to solve everyday problems. One of the most important applications that bring technology (i.e., science) and daily life is virtual tour applications. With the help of computer technology, these applications create a sense of reality by transporting students to non-classroom environments, even though the learning environment is in the classroom. This situation encourages students to be willing to use virtual tours (Goetsch, 1984).

The content of social information provides crucial information about how variables between people and society are directed (Johnson, 1990). Social studies help us to acquire the knowledge, skills, attitudes, and values necessary to understand the past, present, and future along the axis of individuals and society, and to live in harmony, as well as pass them on to future generations (Welton, 2004). Expectations are the individual's expectations from society and society's expectations from individuals. Social studies aim to find a common denominator in the state to educate its citizens by regulating the relationships between individuals, considering their shared characteristics (i.e., the sovereign power). For this reason, social studies hold vital importance for people to coexist and form a society, and it maintains unchangeable characteristics as a course (Safran, 2008).

Virtual tours capture students' attention in the learning-teaching process by providing a realistic experience and motivate them towards the learning process. Virtual tours have significantly strengthened the existing methods, techniques, strategies, materials, and tools in all areas of education, and have provided new and advantageous opportunities for students (Bayraktar & Demir, 2007; Michael & Jodi, 2016; Kun-Hung & Chin-Chung, 2019).

The primary objective of this research is to examine the impact of virtual tours on students' academic achievements, as well as their attitudes and motivations towards social studies within the context of social sciences. Another aim of the research is to explore students' opinions about the use of virtual tour activities in social studies (Almeida & Yokoi, 2003). In its quantitative dimension, the study investigates the effect of using virtual tours on students' academic achievements, motivations and attitudes towards social studies. Meanwhile, in the qualitative dimension, students' opinions about learning social studies through virtual tours were gathered and analyzed (Azuma, 1997).

To achieve this goal, an experimental study was conducted, focusing on only four of the eight learning objectives in the third unit of the 7th grade social studies course, "Journey in Turkish History". This was because the structure and content of the other learning objectives were not suitable for virtual tour applications. Therefore, the virtual tour application was designed and implemented to help students attain the following learning objectives:

- The student evaluates the political and cultural activities of the Turks during the Seljuks period in Anatolia and their role in the Turkification of Anatolia.

• The student analyzes the conquests and struggles of the Ottoman Empire, with a focus on the significance of trade and maritime power.
• The student explores the interaction between Ottoman and European cultures, art, and aesthetics, and examines the impact of this exchange.
• The student draws inferences about social and economic changes resulting from the institutional reforms of the Ottoman Empire.

The learning objectives were taught using virtual tour applications, and students' academic achievement in social studies, as well as their motivation and attitudes towards the course, were examined.

In the quantitative dimension of the study, the research question "Does the use of virtual tour activities in social studies have an effect on students' academic achievement and motivation for social studies and attitudes towards the course?" was analysed. The sub-research questions of the study were as follows:

1. Do the pre-test academic achievement scores of the experimental and control groups differ from each other? Is there a significant difference?
2. Do the post-test academic achievement scores of the experimental and control groups differ from each other? Is there a significant difference?
3. Do the pre-test and post-test academic achievement scores differ in the experimental group? Is there a significant difference?
4. Do the pre-test and post-test academic achievement scores differ in the control group? Is there a significant difference?
5. Do the pre-test SSMS scores of the experimental group differ from those of the control group? Is there a significant difference?
6. Do the post-test SSMS scores of the experimental group differ from those of the control group? Is there a significant difference?
7. Do the pre-test and post-test SSMS scores differ in the experimental group? Is there a significant difference?
8. Do the pre-test and post-test SSMS scores differ in the control group? Is there a significant difference?
9. Do the pre-test SSAS scores of the experimental group differ from those of the control group? Is there a significant difference?
10. Do the post-test SSAS scores of the control group differ from those of the experimental group? Is there a significant difference?
11. Do the pre-test and post-test SSAS scores differ in the experimental group? Is there a significant difference?
12. Do the pre-test and post-test SSAS scores differ in the control group? Is there a remarkable difference?
13. What are 7th grade students' views on the use of virtual tour activities in social studies?

When examining the social studies curriculum, it is evident that it offers suitable conditions for the compatible and effective use of educational technologies within the context of learning areas, units, and objectives. However, technology has not been fully utilized in social studies today (Barth & Demirtaş, 1997). According to recent studies, although educational technologies such as smart boards, projectors, and computers are used in the classroom, the pace of development in information technologies does not show parallelism with the utilization of these technological products in social studies. Virtual tour technology is one of the significant reflections of these technological developments on education. In this context, the use of virtual tour applications in social studies aligns with the characteristics of today's educational approach, constructivism, such as engaging students, encouraging participation, and making them responsible for their own learning (Calongne & Hiles, 2018).

METHOD

STUDY DESIGN

In this study, a mixed research method was selected to address the study problems multidimensionally and comprehensively, as it broadens the perspective for understanding the researcher's verification processes and combines the features and superior aspects of both qualitative and quantitative research approaches in a single study (Johnson et al., 2007). The mixed research method, one of the research methods, is defined as the integrated and the combined version of qualitative and quantitative approaches, in which the researcher collects data using both qualitative and quantitative methods, analyzes this data, unifies the findings, and presents predictions for the future (Tashakkori & Creswell, 2007; Tashakkori & Teddlie, 1998).

A quasi-experimental design with a control group (CP) was employed for the quantitative research to examine the effect of using virtual tour activities on students' motivation, attitude, and academic achievement within the context of social studies.

STUDY GROUPS

The control group was identified among the 7th-grade classrooms from four public middle schools, and the experimental group (EG) was identified during the 2017-2018 academic year. Both groups' academic achievement and motivation for social studies, as well as their attitudes towards the course, were measured before and after the experimental procedure. The pre-test and post-test control group design is shown in Table 1 (Fraenkel et al., 2012).

Table 1. *Design of The Pre-test and Post-test CG*

Group	*Pre-test*	*Procedure*	*Post-test*
Experimental	• Achievement Test • SSMS • SSAS	• Social Studies with Virtual Tour Activities	• Achievement Test • SSMS • SSAS
Control	• Achievement Test • SSMS • SSAS	• Regular Curriculum	• Achievement Test • SSMS • SSAS

DATA COLLECTION INSTRUMENTS

As shown in Table 1, the "Journey in Turkish History Unit Achievement Test" (JTHUAT), the SSMS and SSAS were applied to both groups before the experimental procedure. Following this, the experimental group was taught using virtual tour activities, while the control group was taught using the existing curriculum activities. In order to observe the impact of the experimental procedure on the groups, the measurement tools used as pre-tests were also applied as post-tests to both groups.

Subsequently, the qualitative data collection process was developed and executed. A semi-structured interview was employed as a qualitative data collection tool to provide a more comprehensive understanding of the findings obtained through the quantitative data collection instruments.

DATA COLLECTION PROCESS

The population for this research consisted of 7th grade students studying in the center of Izmir. The sample, selected using group sampling method, comprised eight 7th grade classrooms during the 2017-2018 academic year. A three-phase sampling method was employed to determine the sample representative of the population. In the first phase, schools in the city center of Izmir were grouped, and those with 7th grade classrooms were randomly selected. Group sampling refers to the random selection of clusters from a larger cluster, which includes all clusters in the population (Johnson &

Christensen, 2010). In the second phase, four different classrooms from four schools with similar characteristics, such as the number of students, student achievement levels, and motivation and attitudes towards social studies, were selected to establish experimental and control groups. This is referred to as purposeful sampling in the literature. The purposeful sampling method involves the inclusion of individuals or clusters with specific characteristics determined by the researcher in the sample group (Johnson & Christensen, 2010). In the third phase, random sampling was employed to determine the classrooms that would form the experimental and control groups. The random sampling model is used to prevent subjective factors, such as the researcher's personal bias, or the inclusion of volunteers or the most convenient units (Moser & Kalton, 1985). In the random sampling model, all units in the population have an equal and independent chance of being selected, allowing results obtained from the sample to be easily generalized to the population. As the selection process is random, bias and sampling errors based on selection are expected to be minimal (Baştürk & Taştepe, 2013). the distribution of students in the groups according to schools is presented in Table 2.

Table 2. *Distribution of Students by Schools*

Schools	*EG*		*CG*	
	f	*%*	*f*	*%*
School A	28	29	25	25
School B	21	22	27	27
School C	24	25	24	25
School D	23	24	23	23
Total	96		99	

A total of one hundred ninety-five students participated in this study. with the experimental (*n* = 96) and control group (*n* = 99). The gender distribution of the students is shown in Table 3.

Table 3. *Gender Distribution of the Students in the Experimental Group*

Schools	*Male*		*Female*	
	f	*%*	*f*	*%*
School A	16	30	12	28
School B	13	24	8	19
School C	12	23	12	28
School D	12	23	11	25
Total	53		43	

The experimental group consisted of 53 male and 43 female participants (see Table 3). School A had 12 female and 16 male participants, School B had 8 female and 13 male participants, School C had 12 female and 12 male participants, and School D had 11 female and 12 male participants. The gender distribution of the students is presented in Table 4.

Table 4. *Gender Distribution of the Students in the Control Group*

Schools	*Male*		*Female*	
	f	*%*	*f*	*%*
School A	15	31	10	20
School B	12	25	15	29
School C	13	27	11	22
School D	8	17	15	29
Total	48		51	

In the control group, there were 51 female and 48 male participants (see Table 4). School A had 10 female and 15 male participants, School B had 15 female and 13 male students, School C had 11 female and 13 male participants, and School D had 15 female and 8 male participants.

For the qualitative dimension, criterion sampling, a purposeful method, was used to identify experimental and control group participants. From the experimental groups in the four public schools,

three 7th grade students with high, medium, and low pre-test scores were selected. A total of 36 students were chosen. In the criterion sampling method, conditions meeting a predetermined set of criteria are selected (Yıldırım & Şimşek, 2016).

Additionally, the qualitative data were collected using the JTHUAT, SSMS and SSAS, while the qualitative data were obtained through the “Student Interview Form”. Four learning objective tests, each consisting of 20 questions related to the “Journey in Turkish History” unit- a unit within the “Culture and Heritage” learning domain- were published on the official website of the Ministry of National Education and examined for their suitability for the virtual tour activities in the experimental groups. Based on these four learning objectives, an achievement test comprising 20 questions was developed. To achieve the objectives of the study, the achievement tests designed by the relevant ministry to measure social studies learning objectives were reviewed, and an academic achievement test was developed accordingly. Pilot applications of the developed achievement test were conducted in four middle schools, selected using random sampling methods in the Bayraklı and Bornova districts of İzmir. Following validity and reliability analyses, the achievement test was deemed appropriate for usein the experimental study with the reliability coefficient of .81.

In the study, the SSAS was used to measure students’ attitudes toward the course, while the SMSS was administered to determine students’ motivation towards social studies. In the qualitative dimension of the study, a focus group meeting was conducted to explore students’ views on the use of virtual tour activities in social studies. As a result, students were interviewed using a semi- structured interview form that consisted of six open-ended questions.

DATA ANALYSIS

In the experimental group, the teaching process applied to virtual tour activities focused on four learning objectives in the "Journey in Turkish History" unit of the "Culture and Heritage" learning area within the social studies course. The social studies learning objectives were taught for five weeks between 13 November 2018 and 15 December 2018 to 7th-grade students attending four schools in İzmir. The following steps were taken during the application process: In the first week, information about meeting and virtual tour applications was provided. Students were informed about the learning objectives of the "Journey in Turkish History" unit, which would be covered within the scope of the research, and examples were given to indicate which objectives were suitable for virtual tour activities. To measure academic success in the experimental and control groups before starting the teaching process, a success test, consisting of the learning objective tests for the “Journey in Turkish History” unit, was administrated Additionally, the” Social Studies Course Motivation Scale “and” Social Studies Course Attitude Scale" were applied by the researcher as pre-tests. It was observed that seventh- grade students completed the pre-tests in an average of 40 minutes. The data obtained from the pre-tests were transferred to a computer environment and analyzed. By examining the pre-test results, the success scores of the experimental and control groups were determined before starting the teaching process.

In the second week, for the seventh-grade social studies course's "Journey in Turkish History" unit, virtual tour activities were conducted related to the first learning objective: "the student evaluates the political and cultural activities of the Turks during the Seljuks period in Anatolia and their role in the Turkification of Anatolia." As part of these activities, students were given a virtual tour of Niksar Castle in Tokat province, showcasing examples of Seljuk architecture in Anatolia, as suggested in the teacher's guidebook for the related learning objectives. Additionally, students virtually visited the "Malabadi Bridge" in Diyarbakır province and the "Divriği Grand Mosque and Darüşşifa" in Sivas province, exploring their cultural characteristics and contributions. In the third week, activities focused on the second learning objective of the "Journey in Turkish History" unit for the seventh-grade social studies course: " the student analyzes the conquests and struggles of the Ottoman Empire, with a focus on the significance of trade and maritime power." Based on the activities recommended in the

teacher's guidebook, students took virtual tours of "The Bosphorus," "The Grand Bazaar," "Topkapi Palace," "Izmir Cesme Port," and Trabzon, exploring their historical significance and the role they played in the Ottoman Empire.

In the fourth week, for the seventh-grade social studies course's "Journey in Turkish History" unit, the focus was to explore the interaction between Ottoman and European cultures, art, and aesthetics, and examines the impact of this exchange. Based on the activity recommendations in the teacher's guidebook, students took virtual tours of "Istanbul New Mosque," "Topkapi Palace," "III. Ahmet Fountain," and "Hagia Sophia," exploring these locations and their significance. In the fifth week, the seventh-grade students drew inferences about social and economic changes resulting from the institutional reforms of the Ottoman Empire. Following the activity recommendations in the teacher's guidebook, students participated in virtual tour activities related to "Galatasaray High School" and "Ankara Ziraat Bank Museum."

RESULTS

FINDINGS AND INTERPRETATIONS ABOUT THE QUANTITATIVE DATA

The results of the t-test conducted to answer the sub-research question “Do the academic achievement pre-test scores of the experimental group differ from those of the control group? Is there a significant difference?” are presented in Table 5.

Table 5. *The T-Test Results of the Pre-test Academic Achievement Scores of Both Groups*

	N	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
EG	96	10.91	2.80	193	-.282	.779
CG	99	11.04	3.30			

According to Table 5, no significant difference was detected between the experimental group (EG) and control group (CG) students’ Journey in Turkish History Unit Achievement Test (JTHUAT) pre-test scores ($p > .05$). Based on this finding, the students in both groups were similar in terms of academic achievement. Büyüköztürk et al. stated that groups should be equal in designs containing two or more groups in experimental studies (2013). Thus, having equal groups was a necessary result to begin the research process.

The results of the t-test conducted to answer the sub-research question “Do the academic achievement post-test scores of the experimental group differ from those of the control group? Is there a significant difference?” are illustrated in Table 6.

Table 6. *The T-Test Results of the Post-test Academic Achievement Scores of Both Groups*

	N	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
EG	96	14.56	4.41	193	6.741	.000
CG	99	11.18	2.30			

As clearly seen in the Table 6, a significant difference occurred between the JTHUAT post-test scores of both groups ($p < .05$). Before the experimental procedure, no significant difference was observed between the JTHUAT pre-test scores of both groups. However, after the experimental procedure, it is evident that the difference is in favour of the experimental group (EG). This finding indicated that the use of virtual tour activities in social studies increased students’ academic achievement in the “Journey in Turkish History” unit.

The results of the t-test conducted to answer the sub-research question “Do the academic achievement pre-test and post-test scores of the experimental group differ from each other? Is there a significant difference?” are summarized in Table 7.

Table 7. *The T-Test Results of the Pre-test and Post-test Academic Achievement Scores of the EG*

	N	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
Pre-test	96	10.91	2.80	95	-6.632	.000
Post-test	96	14.56	4.41			

According to Table 7, there was a significant difference between the JTHUAT pre-test and post-test scores of the EG ($p < .05$). This finding indicated that the use of virtual tour activities in social studies increased EG students' academic achievement in the "Journey in Turkish History" unit. In this case, it can be concluded that using virtual tour activities is an effective method in increasing students' academic achievement in the "Journey in Turkish History" unit in social studies.

The results of the t-test conducted to answer the sub-research question "Do the academic achievement pre-test and post-test scores of the control group differ from each other? Is there a significant difference?" are presented in Table 8.

Table 8. *The T-Test Results of the Pre-test and Post-test Academic Achievement Scores of the CG*

	N	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
Pre-test	99	11.04	3.30	98	-.328	.743
Post-test	99	11.18	2.30			

Table 8 shows no significant difference occurred between the JTHUAT post-test and pre-test scores of the CG ($p > .05$). It indicates that the use of the existing curriculum activities is not an effective method in increasing students' academic achievement in the "Journey in Turkish History" unit in social studies.

The results of the t-test conducted to answer the sub-research question "Do the SSAS pre-test scores of the experimental group differ from those of the control group? Is there a significant difference?" are outlined in Table 9.

Table 9. *The T-Test Results of the Pre-test SSAS Scores of Both Groups*

	N	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
EG	96	60.80	4.53	193	.841	.402
CG	99	60.27	4.25			

Table 9 indicates SSAS pre-test scores of EG are very slightly different from SSAS pre-test scores of CG ($p > .05$). Based on this finding, the students in both groups were similar in terms of their attitudes towards social studies. Therefore, having equal groups was a necessary result to begin the research process.

The results of the t-test conducted to answer the sub-research question "Do the SSAS post-test scores of the control group differ from those of the experimental group? Is there a significant difference?" are reported in Table 10.

Table 10. *The T-Test Results of the Post-test SSAS Scores of Both Groups*

	N	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
EG	96	82.58	3.57	193	42.75	.000
CG	99	61.05	3.45			

Table 10 shows that no significant difference occurred between the SSAS post-test scores of both groups ($p < .05$). Before the experimental procedure no significant difference was observed between the pre-test SSAS scores of both groups. However, after the experimental procedure, the difference seen in the Table 10 is in favour of the EG. This finding indicated that the use of virtual tour activities in social studies improved the attitudes of 7th-grade students towards the course.

The results of the t-test conducted to answer the sub-research question "Do the SSAS pre-test and post-test scores of the experimental group differ from each other? Is there a significant difference?" are presented in Table 11.

Table 11. *The T-Test Results of the Pre-test and Post-test SSAS Scores of the EG*

Score type	*N*	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
Pre-test	96	60.80	4.53	95	-37.61	.000
Post-test	96	82.58	3.57			

Table 11 demonstrates that SSAS post-test of the EG increased significantly, ($p < .05$). This finding indicates that the use of virtual tour activities in social studies improved EG students' attitudes towards the course. In this case, it can be concluded that using virtual tour activities is an effective method for increasing students' attitudes towards social studies.

The results of the t-test carried out to answer the sub-research question "Do the SSAS pre-test and post-test scores of the CG differ from each other? Is there a significant difference?" are presented in Table 12.

Table 12. *The T-Test Results of the Pre-test and Post-test SSAS Scores of the CG*

Score type	*N*	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
Pre-test	99	60.27	4.25	98	-1.816	.072
Post-test	99	61.05	3.45			

According to Table 12, the SSAS post-test of the control group did not differ significantly from the SSAS pre-test score ($p > .05$). Although there was an increase in the attitude scores, this increase was not remarkable. This finding indicated that the use of the existing curriculum activities is not an effective method for increasing students' attitudes towards social studies.

The results of the t-test conducted to answer the sub-research question "Do the SSMS pre-test scores of the experimental group differ from those of the control group? Is there a significant difference?" are detailed in Table 13.

Table 13. *The T-Test Results of the Pre-test SSMS Scores of Both Groups*

	N	$\bar{X}$	*Ss*	*Sd*	*T*	*P*
EG	96	62.21	3.72	193	1.258	.210
CG	99	61.41	5.08			

No remarkable difference was seen between the SSMS pre-test scores of both groups' students ($p > .05$). Based on this finding, the students in both groups were similar in terms of their motivation towards social studies. In experimental studies, two or more groups being equal is a desired result for the research process and results. Therefore, this finding is crucial in terms of determining the effectiveness of the method applied.

The results of the t-test conducted to answer the sub-research question "Do the SSMS post-test scores of the experimental group differ from those of the control group? Is there a significant difference?" are presented in Table 14.

Table 14. *The T-Test Results of the Post-test SSMS Scores of both Groups*

	N	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
EG	96	91.70	4.66	193	45.12	.000
CG	99	62.06	4.51			

Table 14 clearly shows the difference between the SSMS post-test scores of both groups ($p < .05$). Before the experimental procedure, no remarkable difference was seen between the SSMS pre-test scores of both groups. However, after the experimental procedure, the difference demonstrated in Table 14 is in favour of the EG. This finding indicated that the use of virtual tour activities in social

studies has a positive impact on increasing 7th-grade students' motivation towards social studies compared to the existing curriculum activities.

The results of the t-test conducted to answer the sub-research question "Do the SSMS pre-test and post-test scores of the experimental group differ from each other? Is there a significant difference?" are demonstrated in Table 15.

Table 15. *The T-Test Results of the Pre-test and Post-test SSMS Scores of the EG*

Score type	*N*	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
Pre-test	96	62.21	3.72	95	-44.27	.000
Post-test	96	91.70	4.66			

Table 15 shows that there was a remarkable difference between the SSMS pre-test and post-test scores of the EG ($p < .05$). It indicated that the use of virtual tour activities in social studies increased the motivation of the 7th-grade students in the EG toward the course. In this case, it can be concluded that using virtual tour activities is an effective method for increasing students' motivation towards social studies.

The results of the t-test conducted to answer the sub-research question "Do the SSMS pre-test and post-test scores of the control group differ from each other? Is there a significant difference?" are detailed in Table 16.

Table 16. *The T-Test Results of the Pre-test and Post-test SSMS Scores of the CG*

Score type	*N*	$\bar{X}$	*Ss*	*Sd*	*t*	*p*
Pre-test	99	61.41	5.08	98	-1.685	.095
Post-test	99	62.06	4.51			

According to table 16, an increase can be seen in the motivation scores of the CG. However, this increase was not remarkably high ($p > .05$). In this case, it can be inferred that the existing curriculum is not effective in increasing students' motivation towards social studies.

FINDINGS AND INTERPRETATIONS ABOUT THE QUALITATIVE DATA

In this section, the qualitative findings of the study are presented. The findings are derived from the opinions of the 7th-grade students who participated in the virtual tour activities as part of the social studies curriculum. The results are organized according to the main themes that emerged during the data analysis, and they provide insights into the students' experiences, perceptions, and attitudes towards the use of virtual tours in social studies. After the virtual tour activities related to these learning objectives were conducted, focus group interviews were carried out with the students selected by criterion sampling. The data obtained from the focus group interviews were treated as documents and analysed using content analysis. The views of 7th-grade students' views on lessons conducted before the virtual tour activities are presented in Table 17.

Table 17. *Students' Views on the Lessons before Using Virtual Tour Activities*

The lessons were generally more boring.
There was less participation in the class.
There was less retention.
Learning the subjects was more difficult.
Our teacher predominantly lectured in the class.
I perceived it as a course based on memorization.
My exam grades were lower.

Table 17 indicates that students found the lessons prior to the virtual tour activities be generally more boring, with less participation and retention. They considered learning the subjects more difficult, and their teacher predominantly lectured in class. They also perceived social studies as a course based on memorization.

Table 18. *7th-grade Students' Views on the Contributions of the Virtual Tour Activities Regarding the Lessons*

The activities made the lesson more enjoyable.
The activities increased participation in the lesson.
The activities helped to the concretization of social studies.
The activities made it easier to learn difficult subjects.
The activities engaged multiple senses.
The activities made the subjects richer.
The activities promoted retention.
The activities improved exam grades -
The activities enhanced classroom communication.
The activities made the lessons less boring.
The activities increased our interest in the subject.
The activities heightened our curiosity towards the course.
The activities engaged the students.

Table 18 demonstrates that 7th-grade students believed virtual tour activities made the lessons more enjoyable, increased participation, and concretized social studies. They stated that the activities made it easier to learn difficult subjects, engaged multiple senses , made the subjects richer, promoted retention, improved exam grades, and enhanced classroom communication. Furthermore, they reported that the activities made the lessons less boring, increased their interest in the subject, heightened their curiosity towards the course, and engaged the students.

Table 19. *7th-grade Students' Views on the Individual Contributions of the Virtual Tour Activities*

Contributions outside the class	They guided me to use technological tools for learning purposes outside of class.
	They helped me satisfy my curiosity outside of class.
	They allowed me to learn about historical places I had not seen before.
	They enabled me to share the locations I visited during the lessons with my family.
Contributions within the class	The activities contributed significantly.
	The activities made me enjoy social studies more.
	The activities increased my curiosity about the subject.
	The activities heightened my interest in the course.
	The activities made me more active during lessons.
	The activities ensured better retention.
	The activities improved my exam performance.
	The activities facilitated their understanding of the subjects.
	The activities made the lessons less boring.
	The activities encouraged me to attend classes voluntarily and willingly.
	The activities made the lessons more productive for me.

As shown in Table 19, 7th-grade students expressed their views on the individual contributions of the virtual tour activities used in two dimensions: contributions outside the class and contributions within the class. Regarding contributions outside the class, the students mentioned that the virtual tour activities guided them to use technological tools for learning purposes outside the classroom, helped them satisfy their curiosity outside of class, allowed them to learn about historical places they had not seen before, and enabled them to share the locations they visited during the lessons with their families.

Concerning contributions within the class, students stated that the virtual tour activities contributed significantly, made them enjoy social studies more, increased their curiosity about the subject, and heightened their interest in the course. In addition, they mentioned that the activities made them more active during lessons, ensured better retention, improved their exam performance, and facilitated their understanding of the subjects.

Finally, they pointed out that the virtual tour activities made the lessons less boring, encouraged them to attend classes voluntarily and willingly, and made the lessons more productive for them.

Table 20. *7th-Grade Students' Views on the Problems Faced while using the Virtual Tour Activities*

The activities are time-consuming.
The activities cause difficulties in classroom management.
Classes are too crowded.
Getting permission to speak can be problematic.
Some students dominate.
Those who lack technological competence struggle.
There are issues with internet connection.
the places we visited on the virtual tours become confusing.
There was excessive noise in class.
Prolonged use of virtual tours makes the lesson boring.
The subject matter is not well understood when you only focus on the virtual tour.

According to Table 20, 7th-grade students identified problems faced while using virtual tour activities, such as the activities being time-consuming and causing difficulties in classroom management and obtaining permission to speak. They expressed that classes were too crowded, some students dominated, those who lacked technological competence struggled, and there were issues with internet connectivity. Furthermore, they noted that the places they visited on the virtual tours became confusing, there was excessive noise in class, prolonged use of virtual tours made lessons dull, and the subject matter was not well understood when they only focused on the virtual tour.

Table 21. *7th-Grade Students' Solution Recommendations for the Problems Encountered During the Use of Virtual Tour Activities*

Teachers should maintain stricter discipline.
Less time can be allocated to virtual tours.
In the event of internet issues, there should have a virtual tour saved on the computer.
Class sizes can be reduced.
Everyone should be given a chance to speak.
Those who lack computer skills can be taught outside of the classroom.

As illustrated in Table 21, 7th-grade students proposed solutions for the problems encountered during the use of virtual tour activities. They suggested that teachers should maintain stricter discipline, allocate less time to virtual tours, and have a virtual tour saved on the computer in the event of internet issues. In addition, they recommended reducing class sizes, allowing everyone a chance to speak, and teaching computer skills to those who lack them outside of class.

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this part of the study, the results from the JTHUAT, SSMS, and SSAS are presented and discussed in relation to other research findings. First, the results of each scale are provided, followed by a discussion that links the quantitative and qualitative data.

The JTHUAT analysis revealed no significant difference between the pre-test JTHUAT scores of both groups, indicating that students in both groups had similar academic achievement levels. However, the post-test JTHUAT scores of the EG were significantly different from their pre-test scores, demonstrating an increase in academic achievement for students taught the "Journey in Turkish History" unit using virtual tour activities. This suggests that using virtual tour activities is an effective method for improving students' academic achievement in the "Journey in Turkish History" unit in social studies. In contrast, the pre-test and post-test results of the CG were nearly identical, indicating that existing curriculum activities are ineffective at increasing students' academic achievement in this unit (Çetinkaya & Akçay, 2013; John et al., 2000; Kun-Hung & Chin-Chung, 2019; Richard, 2016). The literature on virtual tour applications shows that student achievement increases compared to traditional methods (John et al., 2000; Kun-Hung & Chin-Chung, 2019; Richard, 2016). Although these studies do not focus directly on social studies, their findings can be adapted to support the use of

technology and virtual tours in social studies education. The significant difference between the two groups found in this study aligns with the results of previous research (Demir & Akengin, 2010). Yuen et al. (2011) reported that using virtual tour technology for educational purposes leads to increased academic achievement. Similarly, Çakır et al. (2015) enriched the educational environment with technology and engaged students using augmented reality activities, finding that these activities positively affected students' achievement and class participation. In another study, Almeida and Shigeki (2003) developed a virtual tour guide to be used in virtual tour activities, particularly in museums and historical sites. This virtual tour guide increased student participation and academic achievement, with the results aligning with those of the current study (Hubalovsky & Sediyy, 2011).

The JTHUAT results and the students' views regarding the contribution of virtual tour activities, as discussed in the focus group meetings, were consistent with each other. Before the virtual tour activities, students described their social studies lessons as generally boring, with low attendance and less retention of learning. They found it more difficult to learn the subjects, experienced teacher-centered instruction, viewed social studies as a memorization-based subject, received lower grades. In contrast, students reported that the virtual tour activities made the lessons enjoyable, increased participation, helped concretize social studies concepts, facilitated learning of difficult subjects, engaged multiple senses, and enriched the content. They also mentioned that these activities enhanced the retention of learning, improved exam grades, increased classroom communication, made the lessons more engaging, and sparked curiosity and student activity. The focus group interview results revealed that students had difficulty learning subjects and received lower grades before using virtual tours. Furthermore, they stated that the virtual tours simplified learning of difficult subjects and raised their exam grades, supporting the study's findings that virtual tours positively affect academic achievement.

Additionally, the increase in students' interest and motivation, the alignment of experiences with individual learning styles, and the creation of a multi-sensory learning environment may account for this difference in achievement. Upon examining the SSMS results, it became apparent there was no significant difference between the pre-test SSMS scores of both groups' students, indicating that students in both groups had similar levels of motivation towards social studies. This finding is consistent with the study conducted by Özerbaş and Yalçınkaya (2018), which also found no significant difference between pre-test scores of the group before the experimental procedure. The analyses revealed that the experimental group's post-test SSMS scores increased significantly compared to those of the control group. This finding indicated that the use of virtual tour activities in social studies was more effective in increasing 7th-grade students' motivation towards social studies compared to the existing curriculum activities. This study finding is consistent with the studies conducted by Özerbaş and Yalçınkaya (2018), Erduran and Tataroğlu (2009), and Altınçelik (2009). Özerbaş and Yalçınkaya (2018) concluded in their study with 4th-grade students that the use of multimedia positively increased students' motivation. Erduran and Tataroğlu (2009) found that the use of technologies such as smart boards positively affected students' learning and increased their interest. Similarly, Altınçelik (2009) stated that the smart board attracted students' attention and motivated them to learn while teaching. Furthermore, the study showed a remarkable difference between the pre-test and post-test SSMS scores of the experimental group. This finding indicated that the use of virtual tour activities in social studies increased the motivation of 7th-grade students in the experimental group toward the course. In this case, it can be said that using virtual tour activities is an effective method for increasing students' motivation towards social studies. However, the control group's post-test SSMS scores did not show a remarkable increase. The quantitative findings from the SSMS support qualitative findings from the focus group interviews. While students considered social studies lessons boring before the virtual tour activities were used, they found the lessons more enjoyable afterward. They stated that the lessons became engaging, and their interest and curiosity towards the subject increased. These qualitative results support the findings obtained from the motivation scale.

The SSAS results indicated that there was no significant difference between the pre-test SSAS scores of both groups. Based on this finding, the students in both groups had similar attitudes towards social studies. This study finding is in line with the studies conducted by Yeşiltaş and Turan (2015) and Yıldırım and Tahiroğlu (2012), which also demonstrated no significant difference between pre-test attitude scores before starting the experimental procedure. Analyses showed that the experimental group's SSAS post-test scores significantly increased compared to those of the control group. This finding indicated that the use of virtual tour activities in social studies increased 7th-grade students' attitudes towards the course compared to the existing curriculum activities. This study finding is in consistent with some other studies. (Demirboğa, 2010; Ermiş, 2010; Yeşiltaş & Turan, 2015; Yıldırım & Tahiroğlu, 2012). Yeşiltaş and Turan (2015) found that teaching with virtual tour software developed for social studies positively affected 7th-grade students' attitudes towards the subject. Similarly, Yıldırım and Tahiroğlu (2012) found that activities supported by visual museum tours positively affected 5th-grade students' attitudes towards social studies. Demirboğa (2010) determined that activities supported by virtual museum visits positively contributed to students' affective and cognitive objectives. Finally, Ermiş (2010) emphasized that three-dimensional virtual museum visits contributed to visual arts education for 6th-grade students.

Moreover, the study revealed an increase in the experimental group's SSAS post-test scores compared to their SSAS pre-test scores. This finding indicated that the use of virtual tour activities in social studies positively affected the experimental group students' attitudes towards the course. In contrast, the control group's SSAS pre-test and post-test results did not show a significant alteration, indicating that the use of the existing curriculum activities is not effective in increasing students' attitudes towards social studies.

The results of the SSAS and the views given by the students regarding the individual contributions of the use of virtual tour activities in the focus group interviews were consistent with each other. Students expressed their opinions on the individual contributions of the virtual tour activities used in two dimensions: contributions outside the class and contributions for the class. Regarding virtual tour activities' contributions outside the class, students mentioned several benefits. They stated that these activities encouraged them to use technological tools for learning purposes beyond the classroom, satisfying their curiosity outside of class. In addition, virtual tour activities allowed students to learn about places they had not seen before, enriching their knowledge and broadening their horizons. Furthermore, these activities provided an opportunity for students to share their experiences and the places they virtually visited during the lessons with their families, promoting engagement and discussion at home. Regarding the contributions of virtual tour activities for the class, students expressed several positive outcomes. They highlighted that these activities significantly enhanced their enjoyment of social studies, sparked their curiosity, and increased their interest in the subject. Additionally, students noted that virtual tour activities made them more engaged during lessons, facilitated long-term retention of knowledge, improved their exam performance, and helped them better understand the subject matter. Furthermore, students pointed out that virtual tour activities made lessons more dynamic and engaging, motivating them to attend classes voluntarily and willingly. This, in turn, led to more productive learning experiences. The students' perspectives on the individual contributions of virtual tour activities, particularly concerning their impact on classroom experiences, are consistent with the results of the Social Studies Attitude Scale (SSAS).

The qualitative data from the focus group interviews revealed some challenges faced by students while using virtual tour activities in the classroom. Students reported that virtual tour activities took a long time, which led to difficulties in classroom management and getting permission to speak. They also noted that classes were too crowded, and some students stood out, while others who did not have the technological competence faced difficulties. Additionally, there were problems with the internet connection, and the places they visited on the virtual tours were getting mixed. There was also a lot of noise in class, and long-term use of virtual tours made the lessons boring, leading to

poor understanding of the subject when students only spent time on the virtual tour. To address these issues, students recommended some solutions. They suggested that teachers should be more disciplined, less time should be allocated to the virtual tours, and a virtual tour should be saved on the computer when there is no internet. They also suggested that the class size could be reduced, everyone could be given a chance to speak, and those who do not know how to use a computer could be taught outside of the classroom. During the focus group meetings, students were asked to evaluate the use of virtual tour activities on a scale of 1 to 10 . Of the 36 students, 19 (53%) rated the use of virtual tour activities in social studies as a 10 out of 10, 12 (33%) rated it as a 9 out of 10, 3 (9%) rated it as an 8 out of 10, and 2 (5%) rated it as a 7 out of 10. When asked whether they would like to continue using virtual tour activities in class, 25 (69%) students answered yes, 4 (11%) answered no, and 7 (19%) were undecided.

AUTHOR CONTRIBUTION

The first author contributed significantly to the conception and design of the study, as well as the acquisition, analysis, and interpretation of data. The second author contributed to the drafting and critical revision of the manuscript for important intellectual content. Both authors have approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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