An Investigation of Gifted Students' Attitudes Towards Augmented Reality In The Context Of Social Studies Course

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Abstract

In this quantitative study conducted to determine the attitudes of gifted students towards augmented reality technologies to be used in the context of the Social Studies course, 167 gifted students attending the SAC (Science and Art Center) in the city center of Afyonkarahisar province in the 2020-2021 academic year were studied within the framework of Social Studies course. The data required for the research were collected using the "Augmented Reality Applications Attitude Scale - ARAAS" and "Personal Information Form". The data of the study were analyzed with a statistical program; arithmetic mean, percentage, frequency, t-test, ANOVA, one-way variance analysis, and Tukey test were used. The results of the research can be summarized as follows: it was observed that the attitude level of gifted students who constituted the study group of the research towards the use of augmented reality (AR) in the Social Studies course was high. It was seen that the level of AR attitudes of the students studying in the field of general ability was higher than that of the students studying in the field of music; the students who had used AR before had a higher level of attitude than the students who had not previously used AR. The results obtained within the scope of the research are discussed in light of related studies under the title of "Results and Discussion". Finally, recommendations are made based on the research results and the experiences of the researcher.

Keywords: Augmented Reality (AR), Gifted Students, SAC (Science and Art Center), Social Studies Teaching.

1. Introduction

There are many studies and teacher experiences (Hsu, 2017; Çınar, 2017; Ateş, 2018; Çankaya, Girgin, 2018; Coşkun, 2019; Gümbür, 2019; Vedadi, Abdullah and Cheok, 2019; Yetişir, 2019; Aslan, Çakmak, 2021; Ekici and Yeşilbursa, 2021; Çetintav, 2023; Yıldız, Yağcı and Özkan, 2023) that show that educators who catch up with the technological developments have a positive impact on the learning level and environment of their students when education and training environments and materials are supported by the products and studies that these developments reveal. However, the issue of which technological tool or application will be included in the learning process and by which method is of great importance in terms of achieving the goals of education and there are certain prerequisites to determine this most accurately. One of these is the determination of students' attitudes towards the technology in question. The use of tools that students have positive attitudes has the potential to positively affect the education and training process. Especially in recent years, there have been numerous initiatives regarding the use of technologies referred to as augmented, virtual, and mixed reality, which are used in many different sectors/fields, in educational environments. Especially with augmented reality (hereinafter referred to as "AR"), it is observed that activities that appeal to every educational level can be produced.

Although we know that learning is not only provided at school; it is the learning of individuals arising from their interaction with their social, physical, and cultural environment (Tekin, 2004), interaction with the technological environment has been added to this in recent years. This progress has opened new doors through which we can provide innovation in education. One of these is AR technology as mentioned. AR is a mixed reality environment created by adding virtual data to real-world images in a way that works simultaneously (Tutulmaz and Seferoğlu, 2017) and can be defined as a new-generation technology that works through a device and aims to make real objects more meaningful and attractive (Zhu, et al. 2004). In a study, it has been found that educators who use AR also use this technology to complement or support the curriculum, enrich the lecture with visuals and videos, or attract students' attention to the lesson (Boz, 2019). Some students with a technological perspective use AR for various purposes and with differentiated content in certain courses and project applications in schools.

In a study, the negative motivation sources of secondary school students regarding the Social Studies course were investigated and, as a result, it was found that the students found the lesson boring, did not like the Social Studies course and its subjects, did not like verbal lessons, did not like the fact that the Social Studies course was based on memorization, found the Social Studies course complicated, and did not understand the lesson (Tünkler, 2019). Based on this, researchers thought that AR technology would be an alternative to make the lesson more attractive, but, before introducing this technology into the classroom environment, students' attitudes towards AR were wanted to be determined. In other words, based on the knowledge that students' and teachers' developing positive attitudes towards the new technology to be used made learning easier (Erdem, 2005), students' attitudes towards AR were emphasized, especially in terms of creating an infrastructure for the use of AR in the context of the Social Studies course.

The study group of the research consists of gifted students. The education of gifted individuals, who constitute approximately 2% of the population, and raising them as individuals who produce and think about social benefit are important in terms of determining the welfare, future, and position of the society against the countries of the world (Ünal and Er, 2015). It should be taken into account that these students should be raised technologically equipped to keep up with the age and become citizens of the world and that they should be supported to construct themselves as individuals who produce rather than consume technology. In this context, it is predicted that the inclusion of AR in the Social Studies education process and supporting appropriate content with materials developed with this technology will be intriguing for these students and will be more advantageous than other methods in terms of realizing permanent learning.

In special education practices, technology is used to provide enriched learning environments that take into account the differences of gifted individuals who need special education (Çubukçu and Tosuntaş, 2018). In addition, according to Periathiruvadi and Rinn (2012), the attitudes of gifted individuals towards the use of technology in their learning processes are positive. The researcher's opinion is that gifted students have a high level of interest in next-generation technologies. For these reasons, this study was conducted within the framework of AR technology and gifted students.

The problem statement of the research is “What are the attitudes of gifted students towards AR?” and the sub-problems are as follows:

1. What is the level of AR attitudes of gifted students?
2. Do the AR attitude scores of gifted students differ according to their field/grade level, gender, parents' education level, technological devices they have, whether they have an internet

package or not, family income level, and whether they designed the AR application they use or not?

2. Method

In this section, the research design, the study group, data collection tools, the application of the data collection tools, and the method followed in the data analysis are explained.

Research Design

This study, in which the attitudes of gifted students towards AR applications in Social Studies course were examined, was designed according to the survey model, one of the quantitative research methods. The survey model, in general, is the studies that aim to investigate and explain the existing situation or reality as it is and is conducted on larger samples by determining the opinions, interests, skills, abilities, and attitudes of the participants on a subject (Büyüköztürk, 2015). To collect quantitative data, the study was conducted with 167 gifted students attending SAC (Science and Art Center) in the city center of Afyonkarahisar province. The data required for the study were collected using the "Augmented Reality Applications Attitude Scale - ARAAS" developed by Küçük, Yılmaz, Baydaş, and Göktaş (2014) and the "Personal Information Form" to measure students' attitudes towards AR applications.

Research Study Group

The study population of the research consists of gifted students who continue their education at Dumlupınar Science and Art Center in Afyonkarahisar city center. The sample of the study includes students who continued their education at SAC (Science and Art Center) in the 2020-2021 academic year. Due to the researcher's employment at Dumlupınar Science and Art Center in Afyonkarahisar, a convenience sampling method was chosen. In convenience sampling, the researcher selects a situation that is nearby (Yıldırım and Şimşek, 2016) and more easily accessible (Ekiz, 2013), aiming to prevent loss of time (Büyüköztürk et al., 2013). In the quantitative method, the Augmented Reality Applications Attitude Scale (ARAAS) developed by Küçük et al. (2014) was applied to 167 students (84 male, 83 female) to measure their attitudes towards AR applications. It was learned from the administration of Dumlupınar Science and Art Center that 412 students were enrolled in the 2020-2021 academic year. According to Gürbüz and Şahin, the minimum acceptable sample sizes for different populations were examined and it was concluded that 167 was a sufficient number (Gürbüz and Şahin, 2018).

While conducting the research, it was assumed that the students participating in the research had similar characteristics in terms of being gifted students and responded sincerely to the questions asked. The students who constituted the study group of the research; students who actively took Social Studies course in the formal education institutions they attended and who were in SAC;

- Support 2, support 3 in the field of General Ability,
- Special Ability Recognition Program (SAD) 1/ 2,
- Individual Ability Recognition Program (IARP) 1/ 2,
- Music Special Ability Recognition Program (SAD),
- Art Special Ability Recognition Program (SAD) and
- Were on these Project stages.

The distribution of the students in the study group in the fields of science and art center is shown in Table 1;

Table 1. Distribution of the Students in the Study Group of the Research by SAC (Science and Art Center) Fields

Field	N
General Ability	136
Art	18
Music	13

Data Collection Tool

The data required for the study were collected using the "Augmented Reality Applications Attitude Scale- ARAAS" developed by Küçük, Yılmaz, Baydaş, and Göktaş (2014) and the "Personal Information Form" to measure students' attitudes towards AR applications. As a result of the exploratory factor analysis conducted to ensure the construct validity of the Augmented Reality Applications Attitude Scale, a 3-factor structure consisting of 15 items was obtained. The results of the confirmatory factor analysis conducted to understand whether this structure was a good fit to the sample data showed that the fit of the scale to the sample was at an acceptable level. The internal consistency reliability coefficient of ARAAS was found to be .83 for the whole scale. The internal consistency (Cronbach's alpha) analysis applied to the obtained factors and the scale as a whole also showed that the scale was reliable (overall scale α= .835; 1st factor α= .862; 2nd factor α= .828; 3rd factor α= .644) (Appendix 3). With these results, it has been seen that ARAAS is a valid and reliable measurement tool. In this study, the internal consistency coefficient of the overall scale was calculated as .89. Kalaycı (2009) suggests that the limit of high reliability is above .80. According to this suggestion, it can be said that the scale has high reliability.

Data Collection

Necessary permissions were obtained to apply the data collection tools used in the study to the students of Afyonkarahisar Dumlupınar Science and Art Center. These are: permission to use the Augmented Reality Applications Attitude Scale (ARAAS) was obtained from Küçük, Yılmaz, Baydaş, and Göktaş (2014), permission from the ethics committee was obtained from Afyon Kocatepe University, and necessary permissions were obtained from Afyonkarahisar Provincial Directorate of National Education to examine and approve the scales to be used in a school. Before the application of the scales, the instructions were shared with the SAC students, the researcher made the necessary explanations about the application, and the data were collected with the "Personal Information Form" and "Augmented Reality Applications Attitude Scale".

Data Analysis

The data obtained in this study were analyzed with the statistical package program. The data were entered into the program and the reverse items on the scale were scored differently. The scale was a 5-point Likert type. The items on the scale were scored as "Strongly agree (4.20-5)", "Agree (3.40-4.19)", "Neutral (2.60-3.39)", "Disagree (1.80-2.59)" and, "Strongly disagree (1-1.79)". The first factor was "usage satisfaction" and there were 7 positive statements that would reveal students' satisfaction levels towards AR applications. The second factor was "usage anxiety" and there were 6 negative statements that would reveal students' anxiety about the use of AR applications. The third factor was named "usage willingness" and included 2 positive statements that would reveal students' willingness to use AR applications in the future. The scale was developed on a 5-point Likert scale with 1: Strongly Disagree; 2: Disagree; 3: Neutral; 4: Agree; 5: Strongly Agree; 5: Strongly Agree.

A normality test was applied to the data obtained as a result of the research. According to George and Mallery (2010), the fact that the skewness and kurtosis coefficients remain between $\mp$ 2.00 values indicates that normality is ensured. As a result of the data analysis, it

was determined that the answers given by all students in the sample were between skewness-.60 and .18, and kurtosis-.38 and -.37. When the answers of the students in the primary school group to the scale were analyzed, it was found that the skewness was between 1.33 and .27 and the kurtosis was between .68 and .53. This shows that the data obtained from the research have a normal distribution (See Table 2). The Histogram Box is shown in Figure 1.

Figure 1. Histogram Box

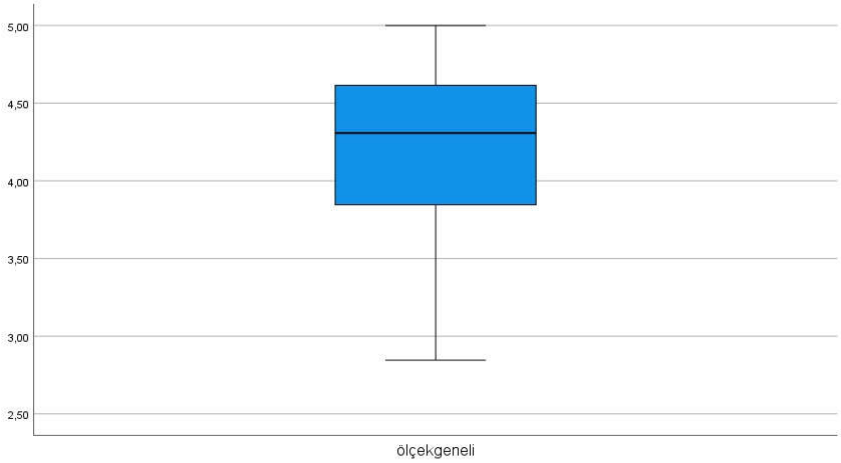

Table 2. Normality Test Analysis Results

Scale	Kolmogorov-Smirnov	Shapiro-Wilk	Skewness	Kurtosis
	p	p		
Augmented Reality Applications Scale	.00	.00	.188	.374

The t-test was applied to the sample's answers to each of the scales for the variables of gender, internet package ownership status, previous use of AR, and designing augmented reality themselves. Similarly, the one-way analysis of variance was applied for the variables of the field of study, level of education, mother's education level, father's education level, and family income level for each scale. When a significant difference was detected as a result of the one-way analysis of variance, the Tukey test was used to determine the source of the difference.

3.Findings

In this section, the quantitative data were analyzed and tabulated, and interpretations of these tables were made. The descriptive values of the averages of the answers given to the AR scale are shown in Table 3.

Table 3. Descriptive Values of the Averages of the Answers to the AR Scale

	n	Minimum	Maximum	$\bar{X}$	ss
AR	167	2.85	5.00	4.18	.57

Participants' answers to the AR applications attitude scale range from a minimum of X=2.85 to a maximum of X=5.00. The average of the participants' answers to the scale is 4.18. This shows that the participants in the sample responded to the AR applications attitude scale at the level of “agree”. From this point of view, it can be inferred that the participants' attitudes towards AR applications are high.

Table 4. Averages of the Participants According to their Fields in SAC

Field	N	$\bar{X}$	S	Source of Variance	KT	sd	KO	F	p
General Ability	136	4.23	.42	Between Groups	2.34	2	1.17	3.71	.02*
Art	18	4.07	.43	Within Groups	51.78	164	.31		
Music	13	3.81	.41	Total	54.13	166			

*p<0.05

As seen in Table 4, as a result of the test compared with one-way variance analysis, the average of the answers given by those studying in the field of general ability was $\bar{X}$=4.23, the average of the answers given by those studying in the field of art was $\bar{X}$=4.07 and the average of the answers given by those studying in the field of music was $\bar{X}$=3.81. The average of the answers given to all subcategories of the variable was at the level of agree. As a result of the Tukey multiple comparison test, a significant difference was found F(2-164)=3.71 p<.05). The difference was between the students studying in the field of general ability and the students studying in the field of music. When the averages of the answers given by the participants were examined, it was observed that the augmented reality attitude levels of the students studying in the field of general ability were higher than the students studying in the field of music.

One-way analysis of the variance of the participants' answers to the augmented reality applications attitude scale according to their level in the science and art center is shown in Table 5 below.

Table 5. *Averages of the Participants According to their Grades in SAC*

Grades	N	$\bar{X}$	S	Source of Variance	KT	sd	KO	F	p
Support2	40	4.30	.48	Between Groups	5.02	9	.55	1.78	.07*
Support3	18	4.32	.64	Within Groups	49.10	17	.31		
IARP1	34	4.26	.54	Total	54.13	166			
IARP2	16	4.05	.47						
Music-SAD	6	3.48	.62						
Music-Project	6	4.00	.79						
General Ability-SAD	8	4.02	.68						
General Ability-Project	20	4.17	.52						
Art-SAD	14	4.12	.58						
Art-Project	5	3.96	.62						

*p<0.05

As seen in Table 5, as a result of the test compared with one-way variance analysis, the average of the answers given by those at the support-2 level was $\bar{X}$=4.30, the average of the answers given by those at the support-3 level was $\bar{X}$=3.32, the average of the answers given by those at the IARP-1 level was $\bar{X}$=4.26, the average of the answers given by those at the IARP-2 level was $\bar{X}$=4.05, the average of the answers given by those at the Music-SAD level was $\bar{X}$=3.48, the average of the answers given by those at the Music-Project level was $\bar{X}$=4.00, the average of the answers given by those at the General Ability-SAD level was $\bar{X}$=4.02, the average of the answers given by those at the General Ability-Project level was $\bar{X}$=4.17, the average of the answers given by those at the Art-SAD level was $\bar{X}$=4.12, and the average of the answers given by those at the Art-Project level was $\bar{X}$=3.96. The average of the answers given to all subcategories of the variable was at the level of agree. As a result of the Tukey multiple comparison test, a significant difference was found (F(9-17)=3.71 p<.05). The difference was between Support-2 and Music-SAD. It was seen that the augmented reality attitude levels of the students at the Support-2 level were higher than the students at the Music-SAD level.

The effect of gender variables on augmented reality is shown in Table 6.

Table 6. Analysis of Answers According to Gender Variable

Gender	N	$\bar{X}$	SS	sd	t	p
Female	98	4.19	.58	165	.30	.76
Male	69	4.16	.56			

*p<0.05

When the overall scale was analyzed, the average of the answers given by female students was $\bar{X}$=4.19 and the average of the answers given by male students was $\bar{X}$=4.16. The average of the answers given in both subcategories was realized at the level of agree. The difference between the averages was not significant according to the t-test $T_{(165)}$=.30; p>.05). It could be said that gender was not an effective variable in augmented reality attitude.

One-way analysis of the variance of the answers given according to the mother's education level variable is shown in Table 7 below.

Table 7. *Analysis of the Answers According to the Variable of Mother's Education Level*

Mother's Education	N	$\bar{X}$	S	Source of Variance	KT	sd	KO	F	p
Primary School	8	4.41	.66	Between Groups	1.83	4	.45	1.42	.22
Elementary School	7	3.96	.58	Within Groups	52.29	162	.32		
High School	27	4.29	.49	Total	54.13	166			
Undergraduate	93	4.19	.57						

Postgraduate	32	4.03	.57

*p<0.05

As seen in Table 7, as a result of the test compared with one-way variance analysis, the average of the answers given by those whose mother's education level was primary school was $\bar{X}$=4.41, the average of the answers given by those whose mother's education level was elementary school was $\bar{X}$=3.96, the average of the answers given by those whose mother's education level was high school was $\bar{X}$=4.29, the average of the answers given by those whose mother's education level was undergraduate is $\bar{X}$=4.19, the average of the answers given by those whose mother's education level was postgraduate is $\bar{X}$==4.03. The average of the answers given to all subcategories of the variable was at the level of agree. As a result of the Tukey multiple comparison test, no significant difference was found F(4-162)=1.42 p>.22). It could be said that the mother's education level was not an effective variable on the augmented reality attitude.

One-way analysis of the variance of the answers given according to the father's education level variable is shown in Table 8 below.

Table 8. Analysis of the Answers According to the Variable of Father's Education Level

Father's Education	**N**	$\bar{X}$	**S**	**Source of Variance**	**KT**	**sd**	**KO**	**F**	**p**
Primary School	2	4.46	.00	Between Groups	1.29	4	.32	.99	.41
Elementary School	5	3.92	.69	Within Groups	52.83	162	.32		
High School	24	4.27	.54	Total	54.13	166			
Undergraduate	102	4.20	.56						
Postgraduate	34	4.05	.61						

*p<0.05

As seen in Table 8, as a result of the test compared with one-way variance analysis, the average of the answers given by those whose father's education level was primary school was $\bar{X}$=4.46, the average of the answers given by those whose father's education level was elementary school was $\bar{X}$=3.92, the average of the answers given by those whose father's education level was high school was $\bar{X}$=4.27, the average of the answers given by those whose father's education level was undergraduate was $\bar{X}$=4.20, and the average of the answers given by those whose father's education level was postgraduate was $\bar{X}$=4.05. The average of the answers given to all subcategories of the variable was at the level of agree. As a result of the Tukey multiple comparison test, no significant difference was found $F_{(4-162)}$=.99 p>.41). It

could be said that the father's education level was not an effective variable on the augmented reality attitude.

One-way analysis of the variance of the answers given according to the use of the internet package is shown in Table 9 below.

Table 9. Analysis of Internet Package Usage

Internet Package	N	$\bar{X}$	SS	sd	t	p
Available	162	4.17	.56	165	-.56	.57
Not available	5	4.32	.76			

*p<0.05

When the overall scale was analyzed, the average of the answers given by students with internet packages was $\bar{X}$=4.17 and the average of the answers given by students without an internet package was $\bar{X}$=4.32. The average of the answers given to all subcategories of the variable was at the level of agree. The difference between the averages was not significant according to the t-test $T_{(165)}$=-.56 p>.05). It could be said that the internet package variable was not an effective variable on the augmented reality attitude.

One-way analysis of the variance of the answers given according to the family income status variable is shown in Table 10 below.

Table 10. Analysis of Family Income Status

Family Income Status	N	$\bar{X}$	S	Source of Variance	KT	sd	KO	F	p
0-2000	2	4.15	.00	Between Groups	.25	2	.12	.39	.67
2000-5000	28	4.26	.58	Within Groups	53.87	164	.32		
5000 and above	137	4.16	.57	Total	54.13	166			

*p<0.05

As seen in Table 10, as a result of the test compared with one-way variance analysis, the average of the answers given by those whose family income was 0-2000 was $\bar{X}$=4.15, the average of the answers given by those whose family income was 2000-5000 was $\bar{X}$=4.26, and the average of the answers given by those whose family income was 5000 and above was $\bar{X}$=4.16. The average of the answers given to all subcategories of the variable was at the level of agree. As a result of the Tukey multiple comparison test, no significant difference was found $F_{(2\text{-}164)}$=.39 p>.05). It could be said that family income status was not an effective variable on augmented reality attitude.

The analysis of the answers given according to the AR usage status according to the t-test is shown in Table 11 below.

Table 11. *Analysis of AR Usage Status*

AR Usage Status	N	$\bar{X}$	SS	sd	t	p
Yes	131	4.29	.48	165	5.34	.00*
No	36	3.76	.66			

*p<0.05

When the overall scale was analyzed, the average of the answers given by the students who had used AR before was $\bar{X}$=4.29 and the average of the answers given by the students who had not used AR before was $\bar{X}$=3.76. The average of the answers given for both subcategories was realized at the level of agree. The difference between the averages was significant according to the t-test $T_{(165)}$=5.34 p<.05). It could be said that students who had used AR before had a higher level of AR attitude than students who had not used AR before.

4. Discussion, Conclusion, And Recommendations

The Augmented Reality Applications Attitude Scale developed by Küçük, Yılmaz, Baydaş, and Göktaş (2014) was applied to 167 students continuing their education and training activities at the Science and Art Center. Considering the results obtained, it was seen that the level of attitudes of gifted students, who constituted the study group of the research, towards the use of AR in the Social Studies course was high. This result means that we can predict that activities enriched with AR in the Social Studies course will positively affect the education and training process. Diem (2000), in his review study, concluded that the use of technological tools and methods would have a positive effect on Social Studies course teaching. According to the results of various studies such as Onbaşılı, (2018), Sırakaya, Alsancak Sırakaya, (2018), Eryılmaz, Özaydın Erdoğdu, (2019), Gümbür, (2019), Aslan, Çakmak, (2021), Kaufmann and Schmalstieg, (2002), Wojciechowski and Cellary, (2013), it was seen that activities enriched with AR positively affect the learning process.

Among the students who participated in the study, it was observed that those who were studying in the field of general ability in SAC had higher attitudes towards AR applications compared to those studying in the field of music; in particular, students in the general ability Support-2 stage had higher attitudes towards AR applications compared to those in the music SAD stage. As a reason for this, it was thought that students in the field of general ability participated in many activities enriched with new generation technologies such as AR in their lessons in various fields in SAC, so they were accustomed to such technology-based activities in lessons.

It was seen that variable such as gender and parental education level were not found to be effective variables for attitudes. In the research conducted by Raja and Priya (2022), no significant difference based on gender was found. It was concluded that the students who participated in the research in SAC had high levels of attitude towards AR regardless of gender and parental education level, and therefore, using AR in the Social Studies course would have positive effects on a wide audience.

It was observed that whether the students had an internet package or not was not an effective variable, and this was thought to be influenced by the fact that an internet infrastructure was provided in almost every home with students, especially after the COVID-19 process. In this case, it was thought that the situations in which the use of the internet and

technology for educational purposes would be supported for students who could access the internet in some ways were advantageous.

It was observed that family income status was not an effective variable on the result because it is a fact that there is at least one smart device in every home regardless of income level and that internet access was provided in homes without internet by maturing the conditions for access to distance education during the covid-19 pandemic. According to TurkStat (Turkish Statistical Institute) data, 49.1% of households in Turkey access the Internet via fixed broadband connections such as ADSL, cable Internet, fiber, etc., while 86.9% access the Internet via mobile broadband connections. The rate of households with mobile phones is 98.7% (Tokyay, 2020).

Before this research was conducted, it was observed that there were many students who used AR and some of them had enough knowledge to create their own AR content. It was also concluded that the students who used AR before the research had a higher level of attitude than those who did not use AR. When the students who used AR were asked about the reasons for their appreciation of this technology, it was seen that they put forward opinions such as the fact that using AR was fun, it increased the retention rate of information, it concretized the content, it was interesting, it made the content clear and understandable, and it offered the opportunity to see places where it was not possible to go as if they had been there (Özden Çınar et al., 2023). With the effect of these opinions, it was thought that the attitude level of those who used this technology was high. As a result of the research conducted by Onbaşılı (2018), it was concluded that teaching with AR applications in the classroom was fun, increased students' interest in the lesson, and facilitated their learning.

There were many studies that concluded that the use of AR in the educational environment would have a positive effect on attitudes towards the course (Onbaşılı, 2018; Sırakaya and Alsancak Sırakaya, 2018; Eryılmaz and Özaydın Erdoğdu, 2019; Gümbür, 2019; Aslan and Çakmak, 2021; Gürel, 2021; Ekici and Yeşibursa, 2021; Övez and Şeker, 2022; Cai et al., 2013; Sun et al., 2019; Osuna et al., 2019; Drljević et al. 2022; Wojciechowski and Cellary, 2013). The results of this study, in which gifted students participated, were in the same direction; it was concluded that with the right choice of subject and method, the use of AR would provide desirable opportunities to develop positive attitudes towards the course.

As a result, it is predicted that using enriched activities using AR in the Social Studies course will have positive effects on the learning process and students' development.

- Activities using AR technology can be developed for many of the Social Studies course learning outcomes,
- AR technology can be used to make content with abstract concepts or content that students are not likely to see or experience easily understandable and to increase retention in learning,
- Teachers, in collaboration with school administrations and parents, can provide opportunities/ give time for their students to experience such technologies,
- In cases where AR application will be used for the first time, it can be ensured that students gain experience through 'first show, then make it try',
- It is noteworthy that there are few studies in which the Social Studies course and AR are handled together. To contribute to the field, products can be designed for different grade levels and different learning outcomes, and studies can be conducted on how these products will affect the classroom environment and students in various dimensions,
- Since there are not many studies in the context of gifted students and AR, studies can be conducted in this context,

- There are a limited number of AR-themed scales. In this sense, new AR-themed scales can be developed to respond to different needs and to enable new studies.
- The Social Studies curriculum can be prepared with the support of new-generation technologies, especially AR.
- Technical equipment that will enable the use of new-generation technologies in the classroom environment can be made available.

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