Teachers' Views on Teaching Social Studies Supported with Augmented Reality

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ABSTRACT

This study was conducted to evaluate the efficiency of activity-based teaching method supported with augmented reality on space perception skills of fifth grade students. The study group consisted of 12 volunteer classroom teachers in total, including eight female and four male teachers in a private school affiliated to the Ministry of National Education of the Turkish Republic of Northern Cyprus. It aimed to evaluate teachers' views about the contribution of instructional leadership of classroom teachers on students' motivation. The data were collected using a qualitative research method by receiving teachers' views. A semi-structured interview form was used to collect the data. The study results have shown that the augmented reality applications are inadequate in teaching space perception skills and there is a need for technological support. However, teachers cannot use technology-based educational applications in their lessons due to the lack of physical equipment.

Keywords: Augmented reality, social studies, teaching, teacher

INTRODUCTION

Every country has to query its own educational approach and applications consistently to monitor innovations and changes. Such query should focus on the knowledge and skills targeted for individuals and on how to do that. This knowledge and skills include using knowledge, creative and critical thinking, research, questioning, problem solving, adapting to scientific and technological developments (Hayırsever & Kısakürek, 2014).

The need for skill training from past to present increases day by day. There are a set of deficiencies in the skill training of today in the Turkish Republic of Northern Cyprus (TRNC). Considering the reasons behind these deficiencies, a significant part of the population is fundamentally deprived of some basic skills such as literacy, reading comprehension, comprehension of numbers, and numerical processing. Therefore, high level of competence in basic skills of the young and adult population depends on school-age students' being subject to skill-based education (TEDMEM, 2016). "Preparing individuals for life by providing them with these skills is burdened on educational institutions and educational programs" (Hayırsever, 2010). For this reason, within the education system that centers basic skills, it is necessary to design curricula. Thus, curricula have been renewed more frequently than in the past and radical changes have taken place. The basic education social studies lesson developed within the scope of the basic education program development project of the TRNC Ministry of National Education and Ministry of Culture (2015) is based on a constructivist approach within the scope of the curriculum of the 4-7 grades. On the basis of the program, skills, values and concepts are featured in accordance with the constructivist approach. Apart from the nine skills mentioned above, the social studies curriculum of 2015 was designed to provide six skills, including observation skills, social participation skills, the ability to perceive time and chronology, empathy skills, the ability to perceive change and continuity, and the space perception skills, to the 4th and 7th grades along with other lessons in the social studies curriculum. These skills in the curriculum can help students to learn the topics and activities more permanently, actively and meaningfully (Özdemir, 2009). Primary and secondary schools are an important step to provide children with space perception (Parker, 2001). Topics related to the space perception in the secondary school are usually included in the social studies lesson (Sönmez, 2010). The social studies lesson includes content belonging to many social science disciplines, particularly history and geography. In particular, the space perception skills are important for students to comprehend geographical knowledge. "Space, in the simplest terms, is the place where an individual or a group exists" (Merç, 2011). The space, where people carry out all their activities, is also the place where they have their experiences. Almost all events experienced in daily life are related to the space (Demircioğlu & Akengin, 2012). Thus, people should adapt to the space they are in. The objectives of the social studies lesson include the desire for children to get to know both the environment they live in, their homeland

and the world. The fulfillment of this desire begins with the realization of the space lived in. Perceiving the space involves processes such as people perceiving, knowing and making sense of the environment (Öcal, 2007). With the "ability to perceive space" in the social studies curriculum, the objective is that students can better read the spatial features of the place where they live and use this information more efficiently (MEB, 20015). The space perception skills should not be regarded as noticing and saying things that exist in an environment or recognizing them quantitatively or qualitatively. The space perception skills are "very important, particularly in expressing space in different ways, namely, in drawing it in the simplest sense" (Sönmez, 2010). The sub-skills determined for the space perception skills in the 2015 social studies curriculum are as follows;

1. The ability to see space relations:
A. Envisioning the form of an object on space or the form of a shape on paper
B. The ability to see a shape in three dimensions
C. The ability to visualize an area, sketch, street or building in mind
2. Drawing and interpreting a map, plan, sketch, graph or diagram
3. Using a sphere (MEB, 2015).

Space perception is one of the unique skills that the social studies curriculum aims to provide to the students and the space that covers the entire environment of the human being in three dimensions including aboveground, in the depth of the ground and space-bound is the perception of the external world that affects people psychologically, socially and economically (Tümertekin & Özgüç, 2004).

Space perception skills were first included as a skill in the social studies curriculum in 2004. It is extremely important for people to adapt to the environment they live in order to have such information as determining their location in daily life, finding the route and direction, and comprehending the geographical information of the space where they are.

With the social studies lesson, the aim is to prepare students for life. In doing so, students should be provided with knowledge of the space where they live and establish the relationship between their spaces as well as other spaces and the universe. With the skills to be gained from this course, students should be able to mentally internalize the geographical factors in the space where they are and use this information when necessary. While once it was important to learn the names of geographical elements such as mountains, seas, lakes and plains, today geographical information is used to organize living spaces and to facilitate life for human beings (Öcal, 2007).

The aim of the social studies curriculum is to ensure that students understand the society where they live, taking into account the global connections in the dimension of place and time; to esteem the nature where they live and the people, regardless of space or difference; to be able to make rational decisions by reasoning based on accurate information and to find creative solutions to the problems they encounter; to ensure that they gain knowledge, values, attitudes and skills aimed at ensuring their effective participation in the democratic process in all environments they are in. Nine learning domains were determined within the program. One of them is "space and people" learning space that contributes to students' understanding of space and the interaction of human with the space including the whole world, starting from their immediate surroundings. Where are people, spaces, and resources located and why are they there? How did the interaction of people with these spaces and resources affect space and people throughout history? How should this interaction be in the future for the future of space and people? The learning domains sought answers to these questions.

The integration efforts of interactive education models continue increasingly as a result of the development and transformation process in technology affecting the education systems. Teachers rearranging their educational environments by using interactive education models together with technological developments can play a role in gaining the skills determined by the Ministry of National Education. In this regard, activity-based learning is one of these interactive learning models. In the activity-based learning model, instead of classical lectures, lecturers prepare varied clinical scenarios and ask the learners to make solutions to the problems produced in these scenarios. The teacher's role in activity-based learning can be defined as a guiding coach for students to be motivated, find and reach sources for learning. This role also makes learning process pleasant and enjoyable. Providing students with real life samples, it aims at finding solutions to the problems faced in life through the projects the students prepare. These solutions entail making research and finding solutions in interdisciplinary topics. In this method, teacher asks the students a basic question that requires solution to the problem faced in an area. This question needs to be an open-ended one, which does not include certain assertions like yes or no.

Significance and Aim of the Study

Augmented reality applications, one of the reflections of technology to education in providing students with real life samples, concretization of concepts and turning into a skill, are an effective method.

Students need innovative creative and practical experience to make sense of such complex concepts and experience deeper learning (Sang, Valcke, van Braak & Tondeur, 2010). In order that students can learn the basic pedagogical concept, gain knowledge and strengthen its permanence, teachers' use of new methods and techniques in accordance with constructivist method can increase the efficiency of education. This is because

the use of augmented reality makes content more comprehensible since it is formed in the real world. The teacher's use of augmented reality teaching materials can allow students to bring their real experiences into the classroom and relate them to their real-life experiences (Donally, 2018). The use of augmented reality technology allows them to think in the real world and increases their creative thinking and interaction with the content. The use of the activity-based learning model supported by augmented reality in space perception skills in the social studies lesson is an effective way that can increase productivity in the ability to see space relations, drawing and interpreting a map, plan, sketch, graph or diagram, and using a sphere.

In this context, based on the unit titled "the location of our country" in the fifth-grade social studies course, it is important to examine the teachers' views of the activity-based learning model supported by augmented reality for the students' space perception skills to carry out the application efficiently.

METHOD

The aim of this study is to provide a comprehensive framework regarding the views of classroom teachers about the effect of the activity-based teaching method supported by augmented reality on the space perception skills. In line with this objective, embedded multiple-case design was used in this qualitative research. Case study is defined as the evaluation of events in certain environments such as educational environments by holistic and detailed observation, definition and interpretation (Yıldırım & Şimşek, 2016).

Study Group

The study data were collected from teachers in a private school of the TRNC Ministry of National Education in the 2021-2022 academic year. The participants of the study were determined using the criteria sampling.

In purposeful sampling, it is thought that participants consist of samples representing the research population in all its qualifications (Tavşancıl & Aslan, 2001). In this consideration, eight female and four male volunteer classroom teachers, 12 in total, were determined as participants of the study. Prior to the interview, they were informed that ethical rules would be followed during and after the research and that their real identities would not be disclosed, and females would be nicknamed as FT1 to 8 and males would be nicknamed as MT1 to 4. Attributes of the participants are given in Table 1.

Table 1. Attributes of the participants

Attributes		N
Gender	Female	8
	Male	4
Age	25-30 years	2
	31-35 years	6
	36-40 years	4
Seniority	1-5 years	2
	6-10 years	5
	11-15 years	3
	16 years and more	2
Education level	University	9
	Master's degree	3
Augmented reality training received	Yes	1
	No	11
Activity-based in-service training received	Yes	1
	No	11

Data Collection and Analysis

The study data were collected using a semi-structured interview form. The questions in the semi-structured interview form prepared by receiving expert opinion were first administered to two participants, then this pilot study was assessed and the necessary corrections were made on the interview questions and the form was prepared for the application. The data obtained from the interviews with the participants were transcribed and analyzed through content analysis. Content analysis evaluates data with an inductive approach that tries to reveal the sense of the content within texts using an interpretive approach (Güler et al., 2015). In content analysis, previously unspecified themes are revealed when analyzing the data in detail (Yıldırım, A. & Şimşek, H., 2021). The interview data obtained within this framework were analyzed and sub-themes were obtained. To increase reliability of the study, the participants' views were included as direct quotations in the findings section and nicknames were used for the quotations (FT1 to 5 and MT1 to 4).

FINDINGS

The findings from this study are provided in line with the research aims.

Table 2. Efficiency of the social studies curriculum for students

THEMES		Frequency of indication
Efficient	Appropriate to the program	8
Inefficient	Content should be developed	4

According to the table, the majority of the participants stated that suitability of social studies to the program was sufficient. Very few participants underlined that the content should be developed.

Table 3. Teachers' views about developing the social studies lesson

THEMES	Frequency of indication
Material support	11
Student-centered	3

According to the table, the majority of the participants declared that material support was necessary for the social studies curriculum. Few participants underlined that the social studies curriculum should be student-centered.

Table 4. Teachers' views on concepts that social studies students have difficulty learning

THEMES	Frequency of indication
Location of our country	6
Culture and heritage	4
Justice, equality and democracy	3
Population	1

According to the table, the majority of the participants stated that the concepts that the social studies students had difficulty in learning were due to the geographical location of TRNC. On the other hand, some participants stated that students had difficulty learning culture and heritage subjects. One participant expressed that there were difficulties with the demographic information in the social studies lesson.

Table 5. Teachers' views on the methods used in teaching related concepts

THEMES	Frequency of indication
Presentation	10
Demonstration method	7
Project-based	4

As shown in the table, the participants mostly used presentation method in teaching concepts. Few of them stated that they included the project-based applications in teaching concepts.

Table 6. Teacher' views about the adequacy of physical equipment of the school and classroom for the social studies lesson

THEMES		Frequency of indication
Inefficient	Technological equipment	12
	Visual materials	10

According to the table, all participants declared that technological equipment of both classroom and school was inefficient. More than half of them stated that there was deficiency in visual materials.

Table 7. Teachers' views on the use of technology-based education applications in their lessons

THEMES		Frequency of indication
Inefficient	Deficiency of physical equipment	12
	Deficiency of technological knowledge	10

All participants stated that teachers' inability to use technology-based educational applications in their lessons was due to the lack of physical equipment. The vast majority of the participants stated that they could not use technology-based educational applications in their lessons due to the lack of technology knowledge.

Table 8. Teachers' views on advantages and disadvantages of using augmented reality in education

THEMES		Frequency of indication
Advantages	Concretization of abstract concepts	11
	Increasing the interest and motivation	9
	Permanent learning	8
	Enjoyable	3
Disadvantages	No	10
	Inefficient infrastructure	2
	Lack of knowledge about usage	2

Almost all participants pointed out that it was an advantage to concretize abstract concepts. Very few of them expressed that it was enjoyable to integrate augmented reality in education. The vast majority of the participants stated that the use of augmented reality applications in education did not have a disadvantage. Very few of them stressed the lack of knowledge regarding the lack of infrastructure and augmented reality.

Table 9. Teachers' views on the school's physical and hardware activity-based learning model and the efficiency level of augmented reality

THEMES			Frequency of indication
Activity-based	Efficient		5
	Should be developed	Material support	7
Augmented reality	Inefficient	Technological support	12

All participants stated that the augmented reality applications were inadequate and emphasized the need for technological support. Very few them expressed that the inclusion of activity-based applications was at an adequate level.

Table 10. Teachers' views on activity-based learning model applications in school documents

THEMES		Frequency of indication
Activity-based application	Yes	10
	No	2
Activities for space perception skills	Yes	0
	No	12

As can be seen from the table, all participants stated that there were no activities aimed at space perception skills in the school documents regarding the practices related to the activity-based learning model. Very few of them expressed that there were no activity-based applications in the activity-based learning model.

DISCUSSION AND RESULTS

Regarding the use of augmented reality, the participants of this study expressed that the suitability of the social studies lesson to the curriculum was at a sufficient level. Very few participants underlined that the content should be developed.

The vast majority of the participants indicated the need for material support for the social studies program for the augmented reality. Few participants underlined that the social studies curriculum should be student-centered. A study evaluated the use of augmented reality in social studies lessons as an innovative approach, flexible, effective and interesting. The same study found that augmented reality applications created an effective learning environment. Furthermore, the use of augmented reality applications in the classroom also caused limitation in the access to the Internet and classroom discipline (Seyhan & Küçük, 2021).

The majority of the participating teachers stated that the main reason why the social studies students had difficulty in learning concepts was the geographical location of TRNC. On the other side, some participants stated that students had difficulty learning culture and heritage subjects. One participant expressed that there were difficulties with the demographic information in the social studies lesson.

The participants mostly used presentation method in teaching concepts. Few of them stated that they included project-based applications in teaching concepts. A study found that innovative teaching approaches increased productivity in digital learning processes (Köksal & Kara, 2022).

In this study, all participants asserted that technological equipment of both classroom and school was inefficient. More than half of them stated that there was deficiency in visual materials. Research indicated that the augmented reality applications supported different learning techniques and constructivist approaches (Delello, 2014).

In our study, all participants stated that teachers' inability to use technology-based educational applications in their lessons was due to the lack of physical equipment. The vast majority of the participants stated that they could not use technology-based educational applications in their lessons due to the lack of technology knowledge. They found that augmented reality applications ensured learning through practices and experiences (Singhal, Bagga, Goyal, & Saxena, 2012).

Regarding augmented reality of the current study, almost all participants stated that it was an advantage to concretize abstract concepts. Very few of them expressed that it was enjoyable to integrate augmented reality in education. The vast majority of the participants stated that the use of augmented reality applications in education did not have a disadvantage. Very few of them stressed the lack of knowledge regarding the lack of infrastructure and augmented reality. The study conducted by Koçoğlu, Akkuş and Özhan (2016) on the use of augmented reality applications in social studies, discussed their disadvantages such as technological limitations and technical difficulties experienced with the devices. Also, Taşkıran, Koral and Bozkurt (2015) conducted a study on augmented reality application in foreign language teaching and found some disadvantages due to technical reasons. It is suggested to review technical parts to avoid such setbacks.

In the present study, all participants stated that the augmented reality applications were inadequate and emphasized the need for technological support. Very few of them expressed that the inclusion of activity-based applications was at an adequate level. Durak and Karaoğlan Yılmaz (2019), in their study conducted on augmented reality applications, obtained similar results in terms of providing an enjoyable learning environment and using augmented reality applications in other lessons.

Regarding the practices related to the activity-based learning model of our study, all participants stated that there were no activities aimed at space perception skills in the school documents. Very few of them expressed that there were no activity-based applications in the activity-based learning model. Rizov and Rizova (2015) found that students who used augmented reality as a teaching aid in higher education increased their interest in the lesson and understood and internalized the learning content more easily. Faculty members however, stated that using augmented reality in the lesson contributed pedagogically and technically to the students' learning process. In consideration of all these conditions, the use of augmented reality technologies in teaching positively affects attendance to lesson, motivation, belief in the positive contributions of their use and learning performance.

SUGGESTIONS

- This research conducted augmented reality study by receiving teachers' views. It can also be performed by receiving students' views with further research.
- Teachers can be trained on the use of augmented reality applications in the classroom through in-service training.
- Augmented reality materials can be adapted to the curriculum and become accessible to students and teachers.
- Methods and techniques based on investigative and innovative approaches can be created and trainings can be provided to both students and teachers so that they can effectively use them. Further studies can be conducted on teachers from different branches.
- The current study focused on teachers' views about augmented reality. Further studies can focus on technical issues of augmented reality applications.
- Also, using different variables, further studies can be conducted on augmented reality.

REFERENCES

1. Seyhan A., & Küçük S. (2021). Sosyal bilgiler öğretmenlerinin ve öğretmen adaylarının artırılmış gerçeklik uygulaması geliştirme deneyimleri ve görüşleri. Yükseköğretim ve Bilim Dergisi/Journal of Higher Education and Science, 11(1), 56-63. https://doi.org/10.5961/jhes.2021.428
2. Singhal, S., Bagga, S., Goyal, P., & Saxena, V. (2012). Augmented chemistry: Interactive education system. International Journal of Computer Applications, 49(15), 1–5.
3. Koç, S.(2020). Okul Öncesi Dönemde Artırılmış Gerçeklik Teknolojisinin Kullanımı. Tasarım Enformatiği, 2(2), 59-64.
4. Köksal, O. & Kara, D. N. (2022). Öğretmen Adaylarının Çevrimiçi Öğrenmeye Yönelik Hazır Bulunuşluklarının Değerlendirilmesi. Retrieved from http://cujos.cumhuriyet.edu.tr/tr/pub/issue/70333/1110357

5. Koçoğlu, E., Akkuş, İ. ve Özhan, U. (2016). Yeni bir öğrenme ortamı olarak artırılmış gerçeklik uygulamalarıyla sosyal bilgiler öğretimi. R. Sever, M. Aydın ve E. Koçoğlu (Editör). Alternatif yaklaşımlarla sosyal bilgiler eğitimi içinde (s. 327-354). Ankara: Pegem Akademi

6. Durak, A. ve Karaoğlan Yılmaz, F.G. (2019). Artırılmış gerçekliğin eğitsel uygulamaları üzerine ortaokul öğrencilerinin görüşleri.

7. Şimşek, K., & Yıldırım, N. (2016). Constraints to open innovation in science and technology parks. Procedia-Social and Behavioral Sciences, 235, 719-728.

8. Tavşancıl, E. ve Aslan, E. (2001). Sözel, Yazılı ve Diğer Materyaller için İçerik Analizi ve Uygulama Örnekleri. Epsilon Yayınevi, İstanbul

9. Şimşek, K., & Yıldırım, N. (2021). Constraints to open innovation in science and technology parks. Procedia-Social and Behavioral Sciences, 235, 719-728.

10. Tybur, J. M., Inbar, Y., Güler, E., & Molho, C. (2015). Pathogen disgust requires no defense: A response to Shook, Terrizzi, Clay, & Oosterhoff (2015). Evolution and Human Behavior, 36(6), 502-504.

11. Öcal, M. E., Oral, E. L., Erdis, E., & Vural, G. (2007). Industry financial ratios—application of factor analysis in Turkish construction industry. Building and environment, 42(1), 385-392.

12. Tümertekin, E., Özgüç, N. (2004). Beşeri Coğrafya, Çantay Kitapevi, İstanbul.

13. Sönmez, T., & Ünver, M. U. (2010). Course bidding at business schools. International Economic Review, 51(1), 99-123.

14. Hayırsever, F., & Kısakürek, M. A. (2014). Evaluation of social studies textbook in terms of the aimed skills to be acquired by students according to the primary school curriculum. Uluslararası Eğitim Programları ve Öğretim Çalışmaları Dergisi, 4(8), 23-42.

15. TEDMEM. 2016. "Egitim Degerlendirme Raporu (Degerlendirme Dizisi: 3)". Ankara: Turk Egitim Dernegi Yayinlari.

16. Hayırsever, F. (2010). Sosyal bilgiler ders, öğretmen kılavuz ve öğrenci çalışma kitaplarının sosyal bilgiler öğretim programında kazandırılması hedeflenen temel beceriler açısından değerlendirilmesi.

17. Özdemir, S. M. (2009). Eğitimde program değerlendirme ve Türkiye'de eğitim programlarını değerlendirme çalışmalarının incelenmesi (ss. 126-149). Van Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi, 6(2), 126-149.

18. Parker, S. K., Wall, T. D., & Cordery, J. L. (2001). Future work design research and practice: Towards an elaborated model of work design. Journal of occupational and organizational psychology, 74(4), 413-440.

19. Demircioğlu, İ. H. & Akengin, H. (2012). Zaman ve mekâna ilişkin becerilerin öğretimi. C. Öztürk (Ed.), Sosyal bilgiler öğretimi: Demokratik vatandaşlık eğitimi (ss. 187-224). Ankara: Pegem Akademi.