Psychological and pedagogical innovative technologies for teaching English to university students

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Abstract

The purpose of this research is to get the opinions of academics about augmented reality technology, which is one of the psychological and pedagogical innovative technologies to teach English to university students. In this study, the qualitative research method, one of the research methods and techniques, was used. The study group of the research consists of 25 academicians who teach English at various universities in Kazakhstan. Research data were collected with a semi-structured interview form developed by the researchers. As a result of the research, it has been determined that the majority of academicians participating in the research do not use augmented reality applications in English education. Academics have made suggestions regarding the effect of using augmented reality, one of the innovative technologies in English education, on student achievements. These recommendations are that augmented reality applications increase a student's learning performance, provide a flexible learning environment, allow students to pay more attention to the lesson, enjoy the lessons more, increase students' curiosity about the lesson and increase students' desire to learn foreign languages. Students benefit from technology and different methods while learning to take advantage of it. In addition, it has been determined that the majority of academicians participating in the research tend to use augmented reality applications in English education. In line with the results obtained from the research, the necessity of creating English education curricula in universities in accordance with augmented reality technology has emerged.

Keywords: Innovative technologies in education, augmented reality technology, English education;

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1. Introduction

Rapidly advancing technology increases the needs of individuals to access information. It is considered important to adapt technological developments in education and to carry out studies in this field, especially today, where Internet and mobile applications are becoming widespread. The level of development of contemporary societies is generally measured by the science and technology they produce. This can only be achieved through education. In this sense, the rapid developments in communication science and technologies in recent years and the prevalence in practice are closely related to the existence of creative producers and consumers raised by advanced education systems.

1.1. Theoretical and conceptual framework

Learning is a lifelong process. Today, with the development of technology, technology integration is frequently encountered in educational environments. The importance given to the use of technology in education is increasing day by day (Cetın, Cakiroglu, Bayilmis, & Ekiz, 2004). The use of mobile devices by large masses also leads to the development of mobile learning. In this way, learners integrate learning into their lives without worrying about place, time and device. This should be seen as an advantage and these technologies should be included in activities that can contribute to teaching English to students. For this reason, various studies are carried out to benefit from various mobile technologies such as augmented reality and contribute to education (Azuma et al., 2001).

Thanks to the use of augmented reality technology in education, teaching materials have become more interesting; kinaesthetic and spatial learning are supported, which makes learning permanent. It also enables students to learn individually wherever they want, whenever they want and at the pace at which they want (Singhal, Bagga, Goyal, & Saxena, 2012). Considering the wishes of today's university students against the use of technology in education, the problems in language education in the world and the educational potential of augmented reality technology, it is thought that augmented reality technology can be a helpful tool for students in learning foreign words (Hong, Hwang, Tai, & Chen, 2014).

Augmented reality is a variation of virtual reality. In virtual reality, the user is in an artificial environment and has no communication with the real world around him. This environment was created by computer simulation. In general, visuality is at the forefront in virtual reality, but with some devices produced, thanks to today's technology, it is possible to experience other emotions, such as auditory and motion as well as visual experiences. On the other hand, augmented reality is created by integrating data (sound, image, picture etc.) created in the computer environment into the real environment in real time (Kipper & Rampolla, 2012).

Although it is stated that augmented reality applications provide great benefits to education, it is seen that the applications developed in this field are still in the early stages. In order for augmented reality technology to be used efficiently and effectively in the field of education, it is necessary to increase the examples made in this field. At this point, one of the most important issues to be considered is to examine the reactions and behaviours of students towards this technology. In addition, students' success and cognitive load are important variables in determining the efficiency and effectiveness of the teaching methods used (Clark, Nguyen, Sweller, & Baddeley, 2006). The usage rate of augmented reality technologies is increasing day by day in different fields, such as education, health and sports. With augmented reality technologies, virtual learning materials and textbooks can be used interactively by creating multimedia material with images from the real world (İbili & Sahin, 2015).

1.2. Related research

In recent years, it can be said that academic studies on augmented reality have become widespread and have gained more and more importance in many specialties in education (Bower, Howe, McCredie, Robinson, & Grover, 2014; Lai & Hsu, 2011; Luckin & Fraser, 2011; Somyürek, 2014). When the researches in the field are examined, it is seen that there are studies suggesting that

augmented reality learning environments provide permanent learning by enabling students to participate actively in the process and by supporting learning by doing and experiencing (Chen, Chi, Hung, & Kang, 2011; Wojciechowski & Cellary, 2013). In addition, it is seen that various studies have been conducted on the benefits of using augmented reality technology in different fields of education (Leighton & Crompton, 2017; Shelton & Hedley, 2002). In his study, Liu (2009) determined that the augmented reality application he developed for foreign language learning at the high school level had a positive effect on students' listening and speaking skills. Liu, Tan, and Chu (2008), on the other hand, concluded that as a result of the augmented reality application developed within the scope of mobile learning, augmented reality can increase students' reading, speaking and listening skills. Ogata et al. (2011) focused on teaching vocabulary to students with the augmented reality application they developed and positive results were obtained.

Milgram and Kishino (1994) stated in their research that students' augmented reality applications create a sense of reality for students and embody the subject. In the research, it was emphasised that augmented reality technology is very effective in creating a sense of reality, as it provides simultaneous interaction between real and virtual objects by adding virtual objects to the real world image. A study was conducted by Shelton and Hedley (2002) to measure the effectiveness of augmented reality supported applications in teaching the earth–sun relationship to undergraduate students. In the study, 34 students were studied at a university. In the study, it was reported that the participants experienced various phenomena related to the earth–sun relationship in 3D through augmented reality supported materials, and as a result of the analysis of the data, it was determined that these experiences supported learning and also reduced erroneous learning.

Yuen, Yaoyuneyong, and Johnson (2011) examined five types of augmented reality technology used in the field of education in their study. They are augmented reality books, augmented reality games, invention-based learning, object modelling and skills training. In addition, an augmented reality-supported book interface with a traditional story was developed and implemented by Tomi and Rambli (2013). In this direction, it was stated that an enjoyable learning environment where active participation takes place is provided, and it is also stated that the material attracts a high level of attention and that even the young age group can use it without assistance.

In their research, Tashko and Elena (2015) aimed to measure the effects of technology as an educational material for students within the framework of engineering higher education courses. In this context, lecturers from various faculties formed the sample of the research. Data were collected through a skill test and a questionnaire was applied through a computer-based drawing programme. As a result of the analysis of the collected data, it was stated that the students were able to maintain their attention and interest throughout the learning process in the augmented reality-supported educational processes. A study was conducted by Chookaew, Howimanporn, Sootkaneung, and Wongwatkit (2017) to determine the advantages of AR technology on the motivation of teacher candidates to create educational materials. As a result of the research, it has been reported that augmented reality technology is very effective on teacher candidates' motivation for creating educational materials.

1.3. Purpose of the research

The purpose of this research is to get the opinions of academics about augmented reality technology, which is one of the psychological and pedagogical innovative technologies to teach English to university students. For this purpose, the following sub-objectives have been established:

1. What are the academics' views on the application of augmented reality, one of the innovative technologies, in English education?

2. What are the opinions of the academicians on the effect of using augmented reality, one of the innovative technologies in English education, on student achievements?

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3. What are the academics' views on the tendency to use augmented reality, one of the innovative technologies, in English education?

2. Method and materials

2.1. Research method

In this study, the qualitative research method, one of the research methods and techniques, was used. In the process of designing and conducting qualitative research, researchers have a flexible and dynamic workspace. Flexibility, which is expressed as the ability of researchers to develop new methods and approaches at every step of the research process and to make new arrangements that will increase the impact of the research, is one of the main features of qualitative research. The flexibility that allows the researcher to access new information also allows for an exploratory approach. The exploratory approach is an important feature that is frequently used in qualitative research and enables the diversification and elaboration of research data with new data, and it is a useful approach especially in examining subjects where data collection is relatively difficult or less studied (Bogdan & Biklen, 1997). Therefore, in this study, the opinions of academicians were evaluated based on the qualitative research method.

2.2. Participants

The study group of the research consists of 25 academicians who teach English at various universities in Kazakhstan. The study group of the research was chosen on a completely voluntary basis. Academicians actively taught in the 2021–2022 academic year. The demographic characteristics of the academicians participating in the research are given in Table 1.

Table 1

Demographic Characteristics of the Academics

Experience	Gender		Sum
	Female	Male	
1–5 years	-	1	1
6–10 years	6	3	9
11–15 years	3	7	10
16 years and above	5	-	5
Sum	14	11	25

In Table 1, the gender and experience distributions of the academicians participating in the research are given. One academician participating in the research has 1–5 years of experience, 9 of them have 6–10 years of experience, 10 of them have 11–15 years of experience and 5 of them have 16 years or more of experience. 14 academicians are female and 11 are male. A total of 25 academicians participated in the research.

2.3. Data collection tools

Research data were collected with a semi-structured interview form developed by the researchers. While preparing the semi-structured interview form, opinions were taken from two field experts. The form was rearranged in line with experts' opinions. The semi-structured interview form was applied to two academicians and the clarity of the questions in the form was tested. The semi-structured interview form, which was given its final form, is given in Table 2.

Table 2

Semi-Structured Interview Form

Demographic information
Your gender:
Your experience:

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Questions about teaching English through innovative technologies
1. What are your views on your application of augmented reality, one of the innovative technologies in English education?
I use augmented reality apps in education: (   )
I do not use augmented reality applications in education: (   )
2. What are your views on the effect of using augmented reality, one of the innovative technologies in English education, on student achievements?
Give your opinion:………

……..
3. What are your views on your tendency to use augmented reality, one of the innovative technologies, in English education?
I tend to use augmented reality apps in education: (   )
I am undecided about using augmented reality applications in education: (   )
I don't tend to use augmented reality apps in education: (   )

The semi-structured interview form used in the research is given in Table 2. In the semi-structured interview form, there are two questions about the demographic characteristics of the academicians. There are three questions regarding English education through innovative technologies. Two of the questions are closed-ended and one is open-ended.

2.4. Data collection process

While collecting the research data, in the first stage, the academicians were informed about the scope of the research and the implementation process. The academicians were contacted via email and they were informed about the steps to be followed in the research. They agreed to participate in the research. They were asked to respond to their email with a reply. In the second stage, an appointment was made for face-to-face interviews with the academics participating in the research. In the third stage, one-on-one interviews were conducted with the academicians in the university environment. The interviews lasted approximately 30–35 minutes. During the interviews, permission was requested from the academicians to take audio recordings. It took approximately 2 weeks for all interviews to be completed.

2.5. Analysis of data

The content analysis method was used in the analysis of the research data. Content analysis requires a more detailed examination of the collected data and reaching the concepts, categories and themes that explain this data. Content analysis focuses on collected data; codes are extracted from the events and facts that are frequently repeated in the data set or that the participant emphasises heavily. One can go to categories from codes and to themes from categories. In short, data (codes) that are found to be similar and related to each other are interpreted by bringing them together within the framework of certain concepts (categories) and themes. In content analysis, the content of participants' views is systematically separated (Merriam & Grenier, 2019). The answers given by the 25 academicians participating in the research to the questions asked during the interviews were transferred from the audio recordings to the semi-structured interview forms. The transfer of the audio recordings to the semi-structured interview forms was carried out by two researchers independently of each other. Then, the data transmitted by the two researchers were compared. As a result of the comparison, the researchers agreed that the answers overlapped. Next, the academics' responses were divided into categories. Findings are given by creating frequency and percentage tables. In addition, direct quotations from the answers given by the academicians to the open-ended question in the semi-structured interview form are placed under the table.

3. Results

In Table 3, the views of the academicians participating in the research on the application of augmented reality, one of the innovative technologies in English education, are evaluated.

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Table 3

Views of Academicians on the Situation of Applying Augmented Reality, One of the Innovative Technologies, in English Education

Academics' views	F	%
I use augmented reality applications in education	9	36
I do not use augmented reality applications in education	16	64
Sum	25	100

In Table 3, the views of the academicians participating in the research on the application of augmented reality, one of the innovative technologies in English education, are categorised. 36% of the academicians answered that they use augmented reality applications in education. 64% of the academicians participating in the research stated that they do not use augmented reality applications in education.

In Table 4, the views of the academicians participating in the research on the effect of using augmented reality, one of the innovative technologies in English education, on student achievements are evaluated.

Table 4

The Opinions of the Academicians on the Effect of Using Augmented Reality, One of the Innovative Technologies in English Education, on Student Achievements

Academics' Views	F	%
Augmented reality applications increase students' learning performance	21	84
Augmented reality applications provide a flexible learning environment	18	72
Augmented reality applications allow students to pay more attention to the lesson	14	56
Students enjoy the lessons taught with augmented reality applications more	11	44
Augmented reality applications increase students' interest in the lesson.	9	36
Augmented reality applications increase students' desire to learn foreign languages	7	28
Augmented reality applications enable students to benefit from technology while learning	4	16
Augmented reality applications enable students to benefit from different methods while performing their learning.	2	8

In Table 4, the views of the academicians participating in the research on the effect of using augmented reality, one of the innovative technologies in English education, on student achievements are categorised. 84% of the academicians stated that augmented reality applications increase the learning performance of students. While 72% of the academicians stated that augmented reality applications provide a flexible learning environment, 56% of the academicians stated that augmented reality applications allow students to pay more attention to the lesson. While 44% of the academicians stated that the students enjoyed the lessons taught with augmented reality applications, 36% stated that the augmented reality applications increased the students' curiosity about the lesson. 28% of the academicians stated that augmented reality applications increased students' desire to learn foreign languages. While 16% of the academicians stated that augmented reality applications enable students to benefit from technology while learning, 8% of the academicians stated that augmented reality applications allow students to benefit from different methods while performing their learning.

The opinions of the academicians participating in the research on the effect of using augmented reality, one of the innovative technologies in English education, on student achievements are given below.

'I think that augmented reality applications will create a fun learning environment for students. It is a fact that such practices increase the learning performance of students'.

'I think it is an application that will increase the learning potential of students. It makes students more motivated for the lesson'.

'Such technology-based applications provide a flexible learning environment by enabling students to learn not only in the classroom but also anywhere'.

'I think it increases students' performance, increases students' desire to learn English, and enables students to use technology in education'.

'It is both an effective application in terms of learning performance and allows students to benefit from different methods while learning'.

In Table 5, the views of the academicians participating in the research on the tendencies of using augmented reality, one of the innovative technologies in English education, are evaluated.

Table 5

Opinions of Academicians on the Tendency of Using Augmented Reality, One of the Innovative Technologies, in English Education

Academics' views	F	%
I tend to use augmented reality apps in education	22	88
I am undecided about using augmented reality applications in education	2	8
I don't tend to use augmented reality apps in education	1	4
Sum	25	100

In Table 5, the views of academicians on the tendency to use augmented reality, one of the innovative technologies in English education, are categorised. 88% of the academicians stated that they tend to use augmented reality applications in English education. While 8% of the academicians stated that they were hesitant to use augmented reality applications in English education, 4% of the academicians stated that they did not tend to use augmented reality applications in English education.

4. Discussion

The majority of academicians participating in the research stated that they do not use augmented reality applications in English education. Academics have made suggestions regarding the effect of using augmented reality, one of the innovative technologies in English education, on student achievements. These recommendations are that augmented reality applications increase the students' learning performance, provide a flexible learning environment, allow students to pay more attention to the lesson, enjoy the lessons more, increase students' curiosity about the lesson and increase students' desire to learn foreign languages. Students benefit from technology and different methods while learning to take advantage of it. When the studies on the use of augmented reality applications in education are examined, it is seen that teaching situations based on augmented reality technology have a positive effect on the learning process in terms of variables such as success, attitude, motivation and attention (Billinghurst, Kato, & Poupyrev, 2001; Kerawalla, Luckin, Seljeflot, & Woolard, 2006; Pérez-López, Contero, & Alcaniz, 2010; Wojciechowski & Cellary, 2013; Zhou, Cheok, & Pan, 2004). Wu, Lee, Chang, and Liang (2013) stated in their research that augmented reality applications have a significant effect on learning in terms of making complex subjects more understandable. Sotiriou and Bogner (2008) concluded in their study that augmented reality technology positively affects students' motivation to learn. Vate-U-Lan (2012) also revealed in his research that augmented reality technology has a significant effect on increasing students' motivation.

Radu, MacIntyre, and Lourenco (2016) revealed in their research that augmented reality applications increase permanence in learning. Rasalingam, Muniandy, and Rass (2014) observed that children constantly repeat the object names they see with augmented reality-supported materials, and

it is stated that the material can provide permanent learning. On the other hand, Cascales, Laguna, Pérez-López, Perona, and Contero (2013), on the other hand, focused on teachers' augmented reality-supported educational processes. It was found that they evaluated factors such as applicability, time to be spent on implementation, distribution of content and resources and approached the relevant material positively, considering that they had the appropriate infrastructure.

The majority of the academicians participating in the research stated that they tend to use augmented reality applications in English education. In their research, Rasimah, Ahmad, and Zaman (2011) revealed that perceived usefulness and perceived ease of use according to augmented reality technology are effective on the intention to use it.

5. Conclusion

One of the most remarkable studies in the field of information technologies in recent years is augmented reality technology. Augmented reality is a technology that works in many fields and has started to take place more and more in our daily lives day by day. Considering that augmented reality applications are becoming more and more common in English education, in this study, the opinions of academics about augmented reality, which is one of the psychological and pedagogical innovative technologies for teaching English to university students, were taken. As a result of the research, it has been determined that the majority of the academicians participating in the research do not use augmented reality applications in English education. Academics have made suggestions regarding the effect of using augmented reality, one of the innovative technologies in English education, on student achievements. These recommendations are that augmented reality applications increase students' learning performance, provide a flexible learning environment, allow students to pay more attention to the lesson, enjoy the lessons more, increase students' curiosity about the lesson and increase students' desire to learn foreign languages. Students benefit from technology and different methods while learning to take advantage of it. In addition, it has been determined that the majority of the academicians participating in the research tend to use augmented reality applications in English education.

6. Recommendations

In line with the results obtained from the research, the following suggestions have been developed to increase the applications of augmented reality, one of the psychological and pedagogical innovative technologies, to teach English to university students.

1. English education curricula at universities should be created in accordance with augmented reality technology.

2. Seminars on the use of augmented reality technology in education should be organised for academics working in English education departments at universities.

3. Augmented reality applications, one of the psychological and pedagogical innovative technologies, should be included in the education curricula not only in English education, but also in all educational fields within the university.

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