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The Effectiveness of Using Augmented Reality Technology on Developing Tenth Grade Students' English Language Skills in Jordan

Majid Mohammad AL-khataybeh[1], Sonia Abd AlHameed AlDarawsheh[2]

Abstract

The purpose of the study was to determine the effectiveness of augmented reality on developing English language skills of 10th graders in the Southern Al-Mazar District in Jordan. A descriptive and semi-experimental approach was used. The sample of the study consisted of (58) tenth-grade students that was distributed into two groups; the experimental group consisted of (30) students that was taught using augmented reality, and the control group consisted of (28) students that was taught conventionally. An achievement test was used to achieve the purpose of the study. The results of the study revealed that there are statistically significant differences at (0.05≥a) between the mean scores of students of the experimental group , and students of the control group in favor of the experimental group. In light of the results of the study, the researcher recommended some notable recommendations; the necessity of using augmented reality technology in teaching English Language skills.

Keywords: *Augmented Reality; English Language; skills.*

1. Introduction

The present era is witnessing a digital information revolution in various fields. Because of that revolution, an incredible information and knowledge explosion occurred, covering all sectors, including the education sector. Which is the foundation-stone on which peoples' cultures are built, and it is the reason for their development, advancement, and prominence among nations. Technological and digital development has driven scientific progress to tremendous and rapid steps forward within short periods. It has become imperative for us to keep pace with this rapid technological and digital development in all fields of our daily lives and to take advantage of these technological innovations in education and to learn in particular because of their great benefits in obtaining knowledge and information and completing tasks in the least time and effort possible. So, that the student is a discoverer and able to produce knowledge and not only a recipient of it(AlKhataybeh,2020a).

Recently, noted in the development of information and communication technology, which has entered education. A new educational model has emerged, known as E-learning, which uses information and communication technology in the educational process beyond classroom teaching and the traditional school (Alkhatabeh,2020a). Many

[1] Professor of Teaching English Language, Curriculum and Instruction Department, Faculty of Educational Sciences, Mutah University, Jordan, E-mail: majid@mutah.edu.jo

[2] Counseling and Special Needs Department, Faculty of Educational Sciences, Mutah university, Jordan, E-mail : soniadarawsh @gmail.com

up-to-date concepts have been associated with E-learning, such as distance learning, E-school; electronic classroom; virtual Museum. In addition to video conferencing, multimedia, and many other modern concepts specialized in the field of E-learning (Baniomar,2022). One of the most contemporary learning approaches is E-learning which uses the computer, its tools, and its audio and visual techniques such as images, videos, various software, and other tools. This learning style is distinguished by its simplicity and ability to deliver information to the learner in the least possible time and effort. It is considered one of the learning methods with a positive effect .

Moreover, augmented reality technologies help the teacher play a role as a mentor and guide in the educational process and lead to the fact that the use of technological innovations makes learning last for the longest possible period for the learners (Aqel,2017). As a result of technological and industrial developments, new technology has emerged that works through the Internet, called Augmented Reality. Augmented reality is an updated term for the beginnings of using this technology in 1990 when some companies were using this technology to represent their data, train their employees, and inform them of changes in the data. A researcher at Boeing Company launched the term Augmented Reality on a digital display screen, guiding workers during their work to electrical wires in the plane. (Al Sayed, 2011).

Augmented reality technologies can be classified according to the nature of their applications and tools, the type of tracking systems used with the technology, the type of viewing and visual style (direct viewing or a mixture of video scenes), the workplace (internal or external) or the type of wireless communications, wired). The most famous classification is related to the second type, the visual style, that is, the way the technology is presented to the user. There are multiple ways to work the augmented reality technology, including markers technology, GPS-based technologies, and recognition applications-based technologies for Image Recognition through visual identifiers, cameras, receiving digital signal processing applications, and smart devices equipped with augmented reality applications. Among the visual browsers used in augmented reality applications are Aurasma, Aris, and Fresh Air (Alkhataybeh and Alahdal,2020).

Augmented reality is a system that combines two environments, one of which is real and the other virtual, through special techniques and methods (Hsu, 2017). Augmented reality technology adds virtual information simultaneously to actual reality in the form of images, educational videos, or enrichment information that helps enhance understanding of content excitingly and excitingly. It differs from virtual reality technology. Augmented reality technology adds virtual information simultaneously to actual reality in images, educational videos, or enrichment information that helps enhance understanding of content in a fun and exciting way. It differs from virtual reality technology, which depends on creating a three-dimensional virtual environment through special glasses. Where there is no interaction with the actual reality, augmented reality, on the other hand, works to support reality with natural three-dimensional virtual objects without separating from the existing reality. Virtual reality has some drawbacks, as things do not appear natural to the learner's visual system. In such a case, the learners' experience is useless. It leads to health problems such as headaches and nausea, unlike the augmented reality technology, where the learner can see the real world (Abu Bayh 2016 ; Chapelle,2003).

English is one of the most widely used languages in communication between countries of the world. For this vital role, Jordan has adopted the teaching of English language where English language departments in different universities were established , as English language is considered as the backbone of these departments. It is worth mentioning that the beginning of the application of English language teaching goes back to the beginning of teaching in Jordan, as English is taught now from the kindergarten (Al-Khataybeh,2022 ; Chen,2017).

Statement of Problem and Research Question

Studies such as Solak and Cakir (2015)found that there are problems in education in general and in teaching languages where in teaching English language in particular, represented by a lack of modern methods of teaching and relying on the conventional techniques, where students are passive. It also does not consider their environments, needs, and abilities, affects the students' achievement. The researchers also noticed their great passion and inclination to use digital devices such as smartphones and tablets.

Therefore, the researchers consider directing their inclinations and passion for these intelligent devices through using smart devices to support the process of learning the English language. Because these devices have great potential in enhancing information among learners and enriching the learning process with multimedia, such as ; staple and moving images and sound videos, and 3D objects to make the learning process enjoyable and exciting and make it easier for learners to imagine and visualize what was difficult for them to imagine. Therefore, augmented reality technology was chosen to teach the English language because it is cutting-edge technology that enriches learners with diverse and distinct information and expands their imaginative and conceptual perceptions. In addition, to investigate the effect of using augmented reality technology in teaching English language skills of the tenth-grade students in Southern Mazar region. The study can be achieved by responding to the following question: What is the effectiveness of using augmented reality techniques in developing tenth grade students' English language skills in Southern Al-Mazar District?

The significance of the research

The significance of this research lies in its practical and theoretical fields:

1. Contribute to the success of the continuous educational development processes by utilizing modern technologies and means in teaching English language to achieve the desired goals.

2. The utilization of augmented reality technology is a modern technology that may help learners gain knowledge, break the learning deadlock, and make learning fun. There is no study conducted in Jordan, according to best knowledge of the researcher.

3. This study compares the effect of teaching using augmented reality technology with the conventional method of teaching English language skills.

4. This study is likely to direct the view of specialists and those in charge of authoring curricula in general and the English language by integrating augmented reality technology as part of the textbook and providing it with unique markers and linking it with information that would enrich that subject with all that is useful, such as videos, animations, static images, sounds, and stereoscopic images.

Purposes of the research

- Investigating the effectiveness of using augmented reality technology in developing tenth-grade students' English language skills in Southern Al-Mazar District.

- Comparing the effect of using augmented reality technology and the conventional method in teaching the English language on the achievement of tenth-grade students in Southern Al-Mazar District.

The Limitations of the research

The study was limited to the English language skills of the tenth-grade students where (modules 4 and 5) were taught in Al Iraq secondary school for boys during the second semester of 2021/2022.

Operational Definition of Terms

- Augmented reality technology: It is a digital visual technique through which a digital cognitive extension is added to realistic content by enhancing this content with visual links through computer applications that generate a rapid response code, optical scanning, or other tools through which the content can be recalled Digital and linked it to realistic content via smart devices equipped with high-definition cameras

- Achievement: It is the outcomes that the tenth-grade students achieved using augmented reality technology in chemistry. It was measured by employing a test that was prepared for this purpose by the researcher.

- Tenth-grade students: They are the tenth-level students from the basic stage in the Jordan, whose ages range from 16-15 years and who are studying English for ten years.

The theoretical framework of the research

The concept of augmented reality and its characteristics: augmented reality is a technique for identifying and linking physical reality to virtual one by generating relationships between them and creating a cognitive extension of information in the form of visual links such as Quick Responses Codes or digital scanning techniques or classifying.

Augmented reality has several synonyms as a term, including augmented reality, and augmented truth, term augmented reality has been used as a result of its repeated uses in studies and literature (Alkhataybeh,2020b)

Augmented reality includes three technologies: image recognition, interactive leadership, and computer graphics (Ghasemi and Raidan,2014). The most important feature of the capacity of augmented reality applications is that they focus on the learner and make him the focus of attention in terms of meeting his needs and aligning them with his preparations, interests, inclinations, trends, desires, and preferences. Through augmented reality technology, learners are able to explore the physical world around them in an interactive way. The principles of Cognitive Flexibility Theory indicate that providing students with vital opportunities to interact with content in educational environments full of multimedia provides the necessary cognitive alternatives to achieve learning regardless of the level of difficulty of this content, and also allows the structural integration of the nature of this knowledge content.

Bani Amer and Alkhataybeh(2022) pointed out the importance of harmonizing the material knowledge content with an integrative complementary content that reveals the dimensions of this content and facilitates the processes of understanding, realizing, analyzing, and extracting the ideas contained in it. Shea (2014) pointed that the concept of augmented reality is also influenced by the ideas included in just-in-time learning theory, which suggests that learners learn the information they need to know now and that a technology that provides them with this service such as augmented reality technology contributes to raising the efficiency of their learning and meeting their cognitive needs also she indicated that augmented reality has contributed to the reformulation of the concept of learning, the development of learners' view of its strategies, and the reconsideration of what they should study. Augmented reality allows increasing the capacity of learning resources by using new and attractive technology to display aspects of the real world in unique and advanced ways.

According to the principles of the situational learning theory, learning occurs naturally during activities, especially if the available environment for practicing the activity is based on action and active practices, and this is consistent with the characteristics of the augmented reality environment. Some learning will occur naturally because it takes place in the problem-solving environment to which they belong, and through which they

practice their activities and learn. They will practice social interaction and cooperation to learn from each other.

Alghamdi and Kotb (2020) have identified that augmented reality can be linked to the theory of "self-determination" or the theory of self-determination, which showed that learning processes are linked to motivation. People have a natural tendency to do what is healthy, interesting, important, and effective. The practical situations of the virtual learner create from the virtual worlds that this study focuses on; state that students participate because they have the willingness and desire to learn, and the same concepts apply to other educational situations.

Among the studies that dealt with the applications of augmented reality and its educational uses is a study by Alexandera et al (2020) which dealt with the study of technological trends in the field of education for the period from 2004 to 2014 through a biometric analysis of Horizon reports about augmented reality as well as other topics of Enhanced learning technology, where the overall results of the study concluded that the number of articles that touched on augmented reality technology is increasing, but according to the analysis, this technology is in its initial stages of education (Radu,2014).

Blake(2016) compares students' learning of language skills through augmented reality technology applications and the learning of students who do not use augmented reality applications in traditional learning) The results of the study concluded with many positive effects of technology on the levels of students who learn through augmented reality applications, and this positive effect is to increase the understanding of the content.

The study of Alghamdi and Kotb (2020)examined scientific papers published in the IEEE Explore scientific research database on augmented reality technology and its educational applications using meta-analysis and qualitative analysis in the dimensions of display size, content creation, and methods of providing enhanced content. The applications of augmented reality contributed to enhancing the explanations and clarifications of true-for-reality, contextual visualization, and tactile visualization. The study also identified three possibilities supported by the prevailing theories such as the theory of learning by using multimedia, the theory of experimental learning, and the theory of vision.

As indicated by the results of the study by Anderson and Liarokapis (2014) the effectiveness of using augmented reality technology as an auxiliary mediator in the teaching process in higher education stages. And Shea's (2014) study on students' perceptions of augmented reality games presented through mobile phones and their willingness to communicate with each other through the Japanese language. I have come to the conclusion of the positive role that results from the use of augmented reality games in the educational process and the integration of learners and their immersion in its practices.

Learning Environment Analysis

A learning environment based on augmented reality has been visualized so that it provides the interaction necessary to move between the real and virtual environments, analyze the content of the textbook, classify information, and identify the appropriate tools to link between printed content and the virtual environment that supports it and identify the applications necessary to achieve this interaction.

Analysis of educational, material, and technical requirements

The resources, educational resources, course materials, technical supplies, equipment, and tools needed to provide a connection over the World Wide Web, the Internet, technical factors associated with making links, recalling the contents of links on the web, reviewing the efficiency of smartphones, tablets, desktops, and applications necessary to operate the augmented reality environment.

Design stage: It is a stage in which the structural construction, the initial scheme, the visualization, ideas, and proposals for the program are drawn. It is a processing stage that includes the processes of setting procedural goals, designing tools, the list of activities, the process of designing the interface, as well as interacting with the system, and structural design procedures with the aim of setting the initial design, which includes, in general, the following operations:

Defining learning outcomes: The researchers take into account the diversity of learning outcomes including the cognitive, skill, and emotional aspects. According to the learning outcomes, the educational outcomes are evaluated, and among those outcomes are the following:

The learner's ability to pronounce the English letters from their correct exits. A quick reading of English language texts. Write the words correctly. Show signs and gestures when speaking. Focus while listening.

- Start reading: Linguistic communication between learners. Correct answer from the widget. Use the toning feature in its proper place.

Related Previous studies

After referring to the previous theoretical literature and studies related to the content of this study, some proximity studies were identified in terms of the study content; they were arranged .

Ayshi (2018) designed an AR-based model to investigate the development of English language skills among secondary school students. Two English language modules were designed for third graders in accordance with the proposed model criteria by employing enhanced reality tools learn to cover receptive and productive. These skills were applied to a sample of students in the third-grade secondary school of 124 students whom were divided into two groups, one experimental and a control group, The results indicated the effectiveness of each skill was examined separately to determine the capacity of the tools of Augmented Reality in the development of each skill separately. The results indicated that there were statistically significant differences in favor of listening, speaking, and reading while there were no differences due to the groups with respect to writing skills.

Alghamdi and Kotb (2020) studied the effect of AR in developing achievement and critical thinking for high school female students in Dammam Governorate in Saudi Arabia and their attitudes towards it . The research sample consisted of (44) female students from the first secondary class students, they were divided into two groups, the experimental group of (22) students use AR, and the control group of (22) students use traditional education, the research used three tools; an achievement test, scale of critical thinking, and a scale of trends were used. The research found that there are statistically significant differences at ($0.05 \geq \alpha$) between the mean scores of students of the experimental group and students of the control group in the post-application of the achievement test and the scale of critical thinking in favor of the experimental group, also, there are statistically significant differences at ($0.05 \geq \alpha$)between the mean scores of the students of the experimental group in the pre and post application of the scale of trends in favor of the post application, the research recommended the necessity of using augmented reality technology in teaching library material and research in particular and the higher-order thinking skills included in the various subjects in general.

Al-Asheeri (2017) studied the effect of applying augmented reality strategy to enhance English language learning for first-year students in the primary stage in the Kingdom of Bahrain, and its results concluded that employing augmented reality techniques in designing English language education programs for first-grade students in the primary stage facilitates their learning It helps them to acquire the required learning competencies quickly and easily and also supports their learning so that they are active participants in the lesson and contribute to their learning.

Zhou,;Sun and Shi (2020) studied the effect of using augmented reality in increasing arithmetic problem-solving skills and empath intelligence of preschool children with math learning disabilities. A sample of students with learning difficulties in mathematics from the Tabuk region was selected, consisting of (30) female students divided into ; control and experimental groups. The researchers used two tools to achieve the purposes of their study, a test for solving arithmetic problems and a scale of empathy intelligence. The two tools were applied in two pre and post-tests. The test results showed the effect of the augmented reality technology on the achievement of the experimental group.

Al-Sharif and Al-Massad (2017) conducted a study investigating the effect of using augmented reality technology in the computer on the achievement of the higher school students in the Jazan region. The researchers used the achievement test as a measurement tool in their study. The study results showed the superiority of the experimental group over the control group at the level of significance (α0.01=) due to the use of augmented reality technology.

Al-Hussaini (2015) conducted a studied the effect of using augmented reality technology in students' achievement in computer material. A quasi-experimental study was conducted on a sample of female students in the city of Makkah Al-Mukarramah. The sample consisted of (55) female students that was divided into; experimental and control groups, to achieve her research objectives. The tools of the study were ; achievement test and a scale of attitudes. The study showed that there were differences in the results of the two groups in favor of the experimental group in both achievement and attitude.

Al-Sayed (2011) studied use of augmented reality as a technological application in Egypt’s education field. (51) students whose ages ranged between (15-10) years were chosen as a sample of the study. A pre and post-test and a measure of attitude were used. The study concluded that the test results were high in favor of the experimental group.

By reviewing previous studies that dealt with the impact of augmented reality technology on achievement in the educational process related to different subjects, the studies agreed that there is progress in students who used this technology compared to their counterparts who used the conventional method.

Considering the results of the previous literature, all of them searched the presentation of the impact of augmented reality technology on the level of students’ achievement in different courses. This study is distinguished from above studies, that it came to study the effect of teaching English Language skills using augmented reality technology, which previous studies have not conducted.

Sampling: The population consists of all tenth-grade students in Southern Al Mazar District (2021/2022), totaling 890 students. The study sample was selected from the population of the tenth-grade students in Southern Al Mazar District intentionally. The sample consists of 58 students whom they were randomly distributed into two groups, a control group of 28, and an experimental group of 30 students.

Instruments of the study

1. The researchers used augmented reality applications designed to teach English language skills, such as 4D elements and layers, etc.

2. A pre and post-test a tool to investigate the effect of augmented reality technology in teaching English language skills.

Validity and reliability

To verify the validity of the tool, the researchers handed the tests to a group of experts in EFL methodology, applied linguistics, educational supervision, and EFL teachers. The jury was asked to add, omit, and make any appropriate changes on the tests. To ensure the reliability of the tests, they were carried out according to the following procedures:

1. A pilot study of (21) students whom they have been excluded from the sample of the study.

2. Reliability of the tool was calculated through Cronbach's alpha which was (0.84) was.

Instructional material

The material of this study was the English textbook "Action Pack 10"(Johnson Edwina, 2019) which was accredited for the 10th grade in Jordan. It includes six modules, three modules for each semester. Each module consists of two units that concentrate on a theme that is divided into sub-topics that in turn are presented in one unit, these units have a similar format but the content of each is different. The researcher selected modules 4 and 5 to apply the augmented reality technology. Module 4 was entitled journeys and Module 5 was entitled exploring wildlife. Those modules cover all the receptive and productive language skills and sub skills.

Procedures of augmented reality technology strategy

1- Constructing procedural objectives:

The educational objectives contained in the chosen modules of the study were used for each of the four skills, and the levels of these objectives were determined and categorized according to the relative weight to evaluate each objective when formulating test questions.

2- Identifying supporting learning theories.

3- Augmented Reality Media Design.

The media is designed in an augmented reality environment to include everything that appears on the screen at a given time, which is a mixture of symbols and written text, 2D, 3D, or animated static graphics, still and moving images, photographs, sounds, and musical interludes, and sound effects both annotating and using In the stage of presenting the original or augmented material for the response patterns through which the learner interacts with the program, or for the patterns of the feedback process, and even the media that include control methods, and those used in sub-frames; Putting an initial design on paper.

4- Description of the roles of the elements of the learning system.

A- Human elements: they are the teacher, the learner, and the peers.

B-Physical elements include books, supporting media, educational devices, and the educational environment, which includes the classroom environment and the school environment.

5- Designing methods for linking augmented reality to the learning environment.

6- Designing learning strategies and accompanying activities: here, the steps of the teaching process were set and the necessary procedures to complete the study steps, which contain a set of activities, as well as the use of tools and methods, and then the process of continuous formative evaluation. A design was also made for the accompanying educational activities, in which the suspense, attractiveness, immersion, and interaction were taken into account so that these activities constitute stabilization and the survival of the learning impact of the learner. There, the researcher finds a set of educational strategies that fit the design of this software, dealing with it, and the content as a whole, such as the Dialogue Language strategy and the training and practice strategy.

7- Drill, practice simulation, modeling and other appropriate strategies adopted by the research Inclusion of the augmented reality environment in the teaching plan:

The content in the study modules was classified into precise study elements that were enhanced with augmented reality tools and applied during the course of the study plan in

the preparation stage for the lesson, the presentation stage, and finally in the evaluation stage.

8- Designing interaction strategies: The augmented reality-based interaction strategies are designed according to the following:

A- Strategies for interaction between the learner and the content according to the augmented reality environment.

B- The control group studied through the same learning resources, but it was not supported with augmented reality tools.

C- The duration of the exposure to the experiment lasted a full academic month for two educational modules, during which the teachers were keen to encourage the members of the experimental group to interact, immerse themselves, and be absorbed with the target content of the scientific curriculum generated and produced by.

Augmented reality technology is a different experience they did not use to practice during previous years.

D- Conducting the post-application of the study tool represented in the achievement test for each skill and monitoring the results.

To implement the study, the researchers followed the following procedures:

The researchers reviewed the relevant related literature related to augmented reality technology. The researchers gained approval for applying the study from the Ministry of Education. The researchers selected the school for conducting the study where two classes are available for conducting the study; experimental and control groups. A pilot study of (21) students was applied. The researchers constructed the tools of the study where validity and reliability were ensured. The study was conducted. Data was gathered and analyzed. Results were discussed and recommendations for the concern were proposed. Means and standard deviations were used.

Findings and discussion

To answer the research question, means and standard deviations were obtained for the achievement of the study two groups (experimental and control group) on the pre and post-achievement tests and their scores. Table (1) shows the results of the pre and post achievement test.

Table (1) Means and Standard Deviations of the Pre - Post Test

The strategy	Group	No.	Pre- test		Post test	
			Means	Standard deviation.	Means	St.D.
Augmented	Experimental	30	3.16	1.44	4.34	1.19
Conventional	Control	28	2.89	1.42	3.24	1.40
Total		58	6.05	2.87	7.58	2.59

Table (1) reveals that the means of the experimental group that was taught by using the augmented reality applications in the post-test was higher than the mean of the pre-test, since it was (4.34), while the means of the control group that was taught by the Conventional method was (3.24) in favour of the members of the experimental group . This means that there is a statistically significant difference between the mean scores of the experimental and control groups in the overall performance level of the four English language skills (Listening, Speaking, Reading, and Writing).

This result indicates that the augmented reality effected on developing English language skills in general.The results indicated the effectiveness of augmented reality in improving

the performance level of all language skills;listening,speaking,reading and writng. The current result can be interpreted according to what was indicated by the theory of cognitive flexibility, whose principles indicated that providing a variety of methods of learning can correspond to the differentiation and individual differences between individuals and contribute to providing the appropriate environment for learners with different learning styles

Results related to Speaking skills

To calculate the significance of the difference between the means of the members of the experimental and control groups for the research according to the level of performance of the speaking skill, a t-test was used. Table (2) shows the results of the T-test

Table (2) T-Test of the speaking skills

The strategy	Group	No.	Means	St.D.	T value	DF	Sig.
Augmented	Experimental	30	11.41	3.28	7.85	29	0.05
Conventional	Control	28	5.0833	3.55		27	

Table (2) shows that there is a statistically significant difference between the means of the experimental and control groups in the level of speaking skill performance due to using augmented reality in the learning resources available to students, where the calculated (T) value was (7.85).

The experimental group that was exposed to learning resources supported by augmented reality applications was (11.41), while the average score of the control group individuals was (5.08), it is clear that the difference was in favour of the experimental group that was taught using the augmented reality model.

This means the augmented reality model has a statistically significant effect on developing the speaking skill in the English language.

This result can be attributed to the fact that the augmented reality tools included in the English language learning resources improved the capabilities of the experimental group members with regard to speaking skills since the augmented reality environment provided a rich environment with voice conversations included QR codes in the available learning resources that helped the student hear the conversation And even the repetition of conversation, which positively affected his understanding to the content of the conversation to improve his skills by conducting it. This result agrees with the results of the studies (Aqel,2017; AlHussaini,2014), whose results indicated the effectiveness of augmented reality in improving the performance level of speaking skills.

Results related to listening skill

To calculate the significance of the difference between the means of the experimental and control groups in the listening skill, a t-test was used. Table (3) shows the results of the T-Test of the listening skills

Table (3) T-Test of the listening skills

The strategy	Group	No.	Means	St.D.	T value	DF	Sig.
Augmented	Experimental	30	8.58	0.64	9.03	29	0.05
Conventional	Control	58	5.69	2.79		27	

Table (3) found that the average scores of the experimental group members exposed to learning resources supported by augmented reality was (8.58), while the mean scores of the control group was (5.69).

This result can be attributed to the fact that the applications of augmented reality in the English language learning resources according to the proposed model led to the improvement in the abilities of the experimental group members with regard to listening skills due to the audio environment provided by the augmented reality environment associated with printed images, written texts and audio clips used for training and are included in the content. The material helped the learners to improve their listening abilities, and interpret and understand its contents.

This result is in agreement with the results of the studies (Solak&Cakir, 2015;Alghamdi and Kotb,2020) .

Results related to reading skills

A t-test was used to calculate the significance of the difference between the means of the experimental and control groups according to the reading skill variable. Table (4) shows the results of the T-Test according to the reading skill

Table (4) T-Test according to the reading skills

The strategy	Group	No.	Means	St.D.	T Value	DF	Sig.
Augmented	Experimental	30	29.50	3.73	9.79	29	0.05
Conventional	Control	28	15.55	7.68		27	

Table (4) shows that there is a statistically significant difference between the means of the experimental and control groups in the level of reading skill performance due to the impact of employing augmented reality in the learning resources available to students, where the calculated (T) value was (9.79).

The experimental group that was exposed to learning resources supported by augmented reality applications was (29.50), while the average score of the control group was (15.55), it is clear that there is a difference in favour of the experimental group for whom the experiment was taught using the augmented reality model.

Based on the foregoing, there is a significant difference at (0.05) between the mean scores of the experimental and control groups in the level of performance of reading skills in the English language due to the effect of using learning resources supported by augmented reality technologies model. This result indicates that the augmented reality model has an effect on developing reading skills in the English language.

This result can be attributed to the fact that the augmented reality tools included in the English language learning resources improved the capabilities of the experimental group members with regard to reading skills since the augmented reality environment provided a rich environment with visual texts in the available learning resources that helped students read the texts and dialogues and even the repetition of written materials, which affected their spelling to the content of the texts and dialogues to improve their skills. This result is in agreement with the results of the studies (Hernandez and Luerers,2017; (Abu Bayh,2016) ; Shea,2014), whose results indicated the effectiveness of augmented reality in improving the performance level of reading skills.

Results related to writing skills

A t-test was used to calculate the significance of the difference between the means of the experimental and control groups according to the writing skills. Table (5) shows the results of the T-Test according to the writing skills

Table (5) T-Test according to the writing skills

The strategy	Group	No.	Means	St.D.	T Value	DF	Sig.
Augmented	Experimental	30	8.30	2.82	10.29	29	0.05
Conventional	Control	28	1.66	2.64		27	

Table (5) shows that it is clear that there is a statistically significant difference between the means of the experimental and control groups in the level of reading skill performance due to employing augmented reality in the learning resources available to students, where the calculated (T) value was (10.29).

The experimental group that was exposed to learning resources supported by augmented reality applications reached (8.30), while the average score of the control group was (1.66), and it is clear from this that the difference was in favour of the experimental group whom the experiment was conducted using augmented reality model.

Based on the foregoing, there is a statistically significant difference at (0.01) between the means of the experimental and control groups in the level of performance of writing skills in the English language due to the effect of using learning resources supported by augmented reality technologies.

This result can be attributed to the fact that the augmented reality model included in English language learning resources improved the writing abilities of the experimental group members.

This result might be attributed to the fact that the augmented reality tools included in the English language learning resources improved the capabilities of the experimental group with regard to writing skills since the augmented reality environment provided a rich environment with various choices in the available learning resources that helped the student write and record notes as well as their HomeWorks, which affected their writing styles. This result is in agreement with the results of (Ayashi,2018;Solak and Cakir,2015), whose results indicated the effectiveness of augmented reality in improving the performance level of writing skills.

Recommendations

EFL language teachers should use Augmented Reality technology in their classes. It is also recommended that textbook authors create Augmented Reality -based books to make using this technology easier and more accessible.

References

Abu Bayh, Mohamed (2016). All you need to know about virtual reality and augmented reality. An article published on the Arab Gateway for Technical News (ARTNEWS), https://aitnews.com.

Alexandra D. et al (2020) . The Effects of Virtual Reality, Augmented Reality, and Mixed Reality as Training Enhancement Methods: A Meta-Analysis . Month XXXX - Human Factors. DOI:10.1177/0018720820904229

Al sayed, N. (2011). Applying Augmented Reality Techniques in the Field of Education. Computer Systems Engineering. Unpublished master's thesis, Benha University, Egypt.bu.edu.eg/portal/index.php?act=143&thesis ID=4940

Alghamdi ,E. and Kotb, E. (2020). The effectiveness of augmented reality in developing academic achievement and critical thinking for high school female students in Dammam and their attitudes towards it .Journal of Educational Sciences,4(25).DOI:http://doi.org/10.26389/AJSRP.D260120

Al-Hussaini, Maha (2015), The effect of using Augmented Reality technology in a computer course unit and the attitudes of high school female students.International Journal of Education and Pedagogyical Sciences,9(6). Scholar.waset.org/1307-6892/10006339

Al-Khataybeh,M.(2022). A study of the Jordanian postgraduate students' perceptions on research writing through online learning . Journal of Language and Linguistic Studies,18(1).JLLS.org/idex.php/jlls/article/view/3823.

Al-Khataybeh,Majid (2020a).Female Representation in EFL Elementary Stage Textbooks in K.S.A.The Asian ESP Journal,Vol.16(1:1).aesp-generic-cover.jpg(612X792)asian-esp-journal.com

Al-Khataybeh,Majid (2020b).The Effect of Using the Six Thinking Hats and Fishbone Strategy on Developing EFL Fourth Year Students' Writing Skill in Saudi Arabia.Asian EFL Journal ,Vol.27(1) .https://scopus.com/sourceid/12100156666333

Al-Khataybeh,Majid and Al-Ahdal Arif Ahmad (2020). Enhancing Students' Vocabulary through a Cross-Cultural Simulation Game . International Journal of Innovation, Creativity and Change 14(3). WWW.ijicc.net

Al-Sharif and Al-Massad (2017) Effectiveness of using augmented reality strategy in in computer science on third secondary class students in Jazan District. Specialized International of Education Journal. 6(2).

Alsheri,A.(2017)Effectiveness of using augmented reality strategy in enhancing learning English for cycle one students in the elementary stage in the Kingdom of Bahrain.China Foreign Language,15(7).DOI:10.17265/1539-8080/2017.001

Anderson, E. & Liarokapis, F. (2014). Using Augmented Reality as Medium to Assist Teaching in Higher Education. Coventry University, UK.DOI:10.2312/eged.20101010

Aqel,M.(2017) A new model for an Augmented Reality Based Content : A case tudy on the Palestinian curriculum. IOSR Journal of Research and Method in Education,7(1).www.iosrjournals.org.DOI:10.9790/7388-07010195100

Ayashi,M.(2018). The effectiveness of a proposed model for employing augmented reality technologies in the development of English language skills among high school students.Journal of Educational Technology : Researches and Studies,(2).MD:1086303. ISSN:3364-2636

Bani Amer Mohammad and AlKhataybeh Majid (2022) An analysis of life skills in the content of seventh -grade English language books in Jordan? BirlE-Journal, ,5(1).

Baniomar,K.(2022)The impact of the shift to distance learning on the seven principles of good practices in university education in light of COVID-19 pandemic.Cypriot Journal of Educational Science,17(5).1533-1548.htttps://doi.org/10.18844/cjes.v17i5.7218. DOI:https//doi.org/10.33258/birle.v5i1.3696

Blake ,R.(2016) Technology and the four skills . language learning and technology,20(2). http://IIt.msu.edu./issues/june 2016blake.pdf

Chapelle,A.(2003) English language learning and technology. Language Learning & Language Teaching. Doi:10.1075/111t.7.

Chen,Y.:Zhou,D.;Wang,Y.& Yu.J. (2017) Application of Augmented reality for early childhood English teaching.International symposium on educational technology. Doi:10.1109/iset.2017.34.

Edwina,J.(2019)Action Pack(10).Educational research.York Press.ejor.net/edu/?app=content.show.1358

Ghasemi,M.& Javidan,R.(2014) A new model as English tutorial assistant based on augmented reality. Journal of Educational & Management Studies, 4(3).www.science-line com.ISSN2322-4770

Hernandez,M.& Lumberers,A. (2017) Characterization of English through augmented reality. Augmented Reality for Enhanced Learning Environment Advances in Computer and Electrical Engineering .doi:10.4018/978-1-5225-5243-7.ch007.

Hsu,T.(2017) Learning English with augmented reality :Do learning styles matter?Computers and Education.106.doi:10.1016/j.copedu.2016.12.007

Rdu,L. (2012) Why Should my students use AR? A comparative review of the educational impact of AR, IEEE international Symposium on mixed and AR, Atlanta.

Shea, A. (2014). Student Perceptions of a Mobile Augmented Reality Game and Willingness to Communicate in Japanese. Education in Learning Technologies, Doctoral Dissertation, Pepperdine University. California-united states. ERIC No:ED568984. ISSN:978-1-3038-9441-1

Shehata, Hassan, and Al-Najjar, Zainab (2003), A Dictionary of Educational and Psychological Terms, The Egyptian Lebanese House, Cairo. Noor-book.com/en/book/review/362989

Solak,E.&Cakir,R.(2015) Exploring the effect of materials designed with augmented reality on language learners' vocabulary learning. The Journal of Educators Online,13(2).DOI:10.9743/JEO.2015.2.5corpus ID:3088875

Zhou,S.;Sun,X. and Shi,Z.(2020) The Use of Augmented Reality for Solving Arthimetic Problems for Preschool Children in Learning and and Collaboration Technologies .DOI: 10.1007/978-3-030-50506-6 39.