

Implementing Augmented Reality (AR) for Improving EFL Students' English Listening Skills.

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ABSTRACT: This research aimed to 1) investigate implementing Augmented Reality to promote listening skills for EFL students. 2) compare EFL students' English listening skill pre-test and post-test, and 3) examine students' opinions on using Augmented Reality. The research used mixed methods (quantitative and qualitative) to collect the data. The research instruments employed firstly, 35 items of listening tests in the pre-test and post-test before and after the class; secondly, 20 items questionnaires were administered at the end of the course to examine students' opinions learned by using Augmented Reality (AR) implementation in the English classroom, lastly, the fieldnote for observing the students' interaction and engagement while implementing AR in the classroom. The sample group was 45 EFL students selected by simple random sampling in the Faculty of Education at Bansomdejchaopraya Rajabhat University, English program, in the second semester of the academic year 2021. The research statistics were used in mean, standard deviation, and t-tests.

The results of the research were as follows: 1) the EFL students' English listening skills showed that the posttest scores were higher than the pretest scores, with a statistically significant difference at the .01 level, and the students' opinions toward Augmented Reality (AR) at the highest level, ($t = 4.60$, $S.D. = 0.61$). In conclusion, the study found that using Augmented Reality to improve English listening skills is helpful and valuable. It encourages students to learn to listen to English and have a positive interest in learning the language. Augmented Reality could be a valuable tool for stimulating the audio-visual relation to improving listening skills development in EFL students.

Keywords: Implementing, Augmented Reality (AR), English listening skills

I. Introduction

Listening is a crucial skill for language and speaking. Listening is one of the essential receptive abilities in languages closely connected to word formation. Exactly, Rost (2011) stated that without auditory understanding, it is impossible to achieve communication competence; hence the importance and development of this talent are necessary when speaking any language. Despite this, Goh (2000) and Vandergrift (1999) argued that for English Foreign Language students (EFL), listening comprehension poses the most significant challenges during the English language learning process due to a variety of factors, including poor comprehension, poor information retention, poor word understanding, inadequate vocabulary, and difficulty differentiating between sounds, grammatical structure, intonation, stress, and context (Chen & Chen, 2019). Despite the challenges faced by their students, language instructors continue to use digital tools, video blogs, educational platforms, and textbooks.

Consequently, the most common resources used in the classroom by Colombian English teachers are course books, as seen in a video. (Macias, 2010). However, Kelly (2015) claimed that some of the most effective instruments for teaching are technological, including hardware, software, and the Internet. Additionally, it is challenging to introduce fresh approaches in the classroom that can be more beneficial for the learning process because EFL students need more knowledge, time, experience, beliefs, and technological vision of their teachers. The technology-integrated approach to teaching in this day and age is augmented Reality. These days, augmented Reality (AR) has been accepted as a technology that enables students to view the actual AR experience in a way that will allow it to be customized and tailored to meet local educational and curricular demands. (Mitchell, 2011). Natural items predominate in augmented Reality (AR), which projects virtual reality features such as photos, texts, movies, and

audio on a screen to enhance the visual experiences. (Milgram and Kishino, 1994). The report can be text, images, videos, sound, or three-dimensional objects scanned using tablets or smartphones to search them, and then the content is added." According to some research, this technology is already actively used in various areas of human activity (commerce, advertising, games, entertainment, military development, tourism, etc.) (Kahtanova & Bestybaeva, 2016).

Augmented Reality (AR) can be a material that encourages student interest in the class. As a result, augmented Reality has become an increasingly popular medium in recent years. The concept of fusing Augmented Reality is to implement 3D technology in authentic vision products or virtual environments. Therefore, it cannot be denied that AR technology has potential applications in all areas of augmented reality technology (Hongnimitchai., Namfah., & Kewara, 2022:197).

EFL students do listening activities anytime, anywhere, without having their smartphones. This research aims to design a social augmented reality platform called 'V-Player' that anyone can use by downloading the 'Android' and 'iOS' markets, where CDs, laptops, and computers are used to practice. This research also aims to create fun, learner-centered training that increases learners' motivation and interest in English to reduce language anxiety. To do this, researchers will examine how students' opinions of language lessons using augmented Reality improve their English listening skills.

Objectives

- 1) To investigate implementing Augmented Reality to promote listening skills for EFL students.
- 2) To compare EFL students' English listening skills during the pre-test and post-test.
- 3) To examine students' opinions on using Augmented Reality. Reality (AR) technology for improving their English listening skill.

Hypothesis

- 1) The implementation of Augmented Reality (AR) technology can improve EFL students' English listening skills in the EFL classroom
- 2) Students who learn using Augmented Reality (AR) technology improve their English listening skills.
- 3) Students are delighted with using Augmented Reality (AR) technology to improve EFL students' English listening skills.

II. Literature review

As this study aims to explore how to Implementing Augmented Reality (AR) to improve EFL Students' English Listening Skills, a brief introduction to these topics is given below.

Augmented Reality

Augmented Reality (AR) is a direct or indirect real-time view of physical, real-world experiences augmented by adding virtual, computer-generated information. Augmented Reality (AR) is a technology that allows computer-generated virtual imagery information to be overlaid onto a direct or indirect real-world environment in real time. Users can simulate the actual situation through visual, auditory, or other senses, e.g., standing in front of a picture and seeing 3D models explaining the vision or 3D models in front of a shop presenting the latest fashion. A strong interest in AR emerged with the release of the mobile game Pokemon (Hawkinson, 2018). Over the past two decades, Augmented Reality (AR) has rapidly increased in various fields, including business, architecture, and entertainment, thanks to the introduction of free or inexpensive web-based programs and mobile applications. AR technologies' ease of use and affordability has generated much interest among educators and students worldwide in such applications. Delaney (2022) claimed that the percentage of students who asked questions about applied fields such as AR was 41% for "education" and 61%, second only to games. Moreover, computer technology in education creates a friendly environment that helps motivate language learning (Subedi & Shrestna, 2020). The concept of augmented reality is to apply 3D technology to authentic products or natural environments. Consequently, augmented reality has gained popularity in the media in recent years. So there is no denying that augmented reality technology (AR) is a potential application for all fields.

Augmented Reality in EFL classroom

Today AR is considered a state-of-the-art technology that no longer requires any specialized equipment in the classroom, apart from a portable electronic device such as a tablet or a smartphone. Furthermore, AR and mobile applications positively increase students' motivation in the EFL classroom for listening skills. Liu et al. (2009) report that AR improves the ability to explore and absorb new knowledge and solve problems. This suggests that AR can support student-centered learning environments by enabling students to explore knowledge and solve problems

independently. Some studies have found that AR can help learners with new ways to individualize their learning according to students' abilities and enable students to learn more independently of teachers. Individualizing their learning according to students' skills would allow them to know more independently from teachers. Chen and Chan (2019) also believe that using AR in the classroom of young learners might come with some challenges. However, learners enjoyed the AR learning activities and could engage with the natural world in real time.

Similarly, in the industrial era 4.0, technology is an essential element in learning. Teachers must be more technological in their teaching process since technology has become a lifestyle. Augmented Reality (AR) is an interactive experience of a real-world environment that is considered an effective a suitable medium for learning, especially in English vocabulary (Sadikin & Martyani, 2020).

Teaching Communicative Listening to EFL students

Listening for EFL students is linked to speaking and pronunciation. If a student can pronounce something correctly and speaks in a natural and everyday way, they will understand it when they hear it. Teaching EFL listening is rewarding because students can often make good progress if appropriately guided.

Listening skill is critical that teachers have to practice every day. Teachers have the knowledge and technique to teach listening to the learners successfully.

OBEC (2014) claimed that there are three steps in teaching communicative listening as follows: Pre-Listening, While-Listening, and Post-Listening.

Pre-listening step to prepare students for what they will hear or view – The teacher should assess the student's background knowledge of the topic and the linguistic content of the text necessary to understand the listening passage or activate whatever knowledge the students have. There is also the need to clarify features of any cultural information, which is essential for the students to understand the passage without isolating it from its very context, which also gives them hints as to what type of text they will be listening to, the role they will play, and the purpose (s) for which they will be attending. This activity allows them to work collaboratively, do background reading, or even do class discussion activities.

Sample pre-listening activities:

1. Looking at pictures, maps, diagrams, or graphs
2. Reviewing vocabulary or grammatical structures
3. Reading something relevant
4. Constructing semantic webs (a graphic arrangement of concepts or words showing how they are related)
5. Predicting the content of the listening text
6. Going over the directions or instructions for the activity
7. Doing guided practice
8. Matching while-listening activities to the instructional goal, the listening purpose, and students' proficiency level.

While-listening step – This directly relates to the text as students do the task during or immediately after the listening. The teacher needs to ensure that the students are well instructed and understand every step they must follow to complete the task of listening. If students are to complete a written task during or immediately after the listening time, it is of great help for them to let them read through the script or text first. By doing so, students will have the foreknowledge as to what they will listen to and somehow get ideas for completing the task. In this phase, the primary goal is comprehension and not production. Letting them write while listening might distract them from achieving the primary goal. Asking questions that help students focus more on the details of the text is also crucial to their comprehension. Before the listening activity starts, allow students to review questions they must answer after listening. Listening to the answers will help the students figure out the crucial parts of the message of the listening material or text. Conducting predicting activities also helps the students bring their comprehension skills to a higher level. Do these indicating activities before the actual listening so the students will be reminded about what they will hear to see if it makes sense in the context of their prior knowledge and what they already know of the topic and events of the passage? Whenever possible, unleash necessary feedback to encourage the students and understand how they can examine how or why their responses need modifications.

Sample while-listening activities

1. Listening to visuals
2. Filling in graphs and charts
3. Following a route on a map
4. Checking off items in a list
5. Listening for the gist
6. Ching for specific clues to the meaning

7. Completing cloze (fill-in) exercises
8. Distinguishing between formal and informal registers

Post-listening step – Follow-ups play a vital role in this process stage. Follow up the while-listening part, which aims to use the knowledge acquired from listening to develop other skills like speaking. In real-life scenarios listening and speaking go together. They are integrated, so the teacher should teach these two skills interactively. The students may know how to listen to and speak the language, but it is a tendency that they may still need to be able to do communication using the language simply because these skills are not presented and used in a very integrated way. Using real-life scenarios as authentic materials could naturally lead to acquiring these two skills in an integrated manner. Integrating skills exposes English language students to the original language and challenges them to interact naturally using the language (Tavil, 2010). By doing so, learning English becomes a natural means of interaction and sharing among people. Furthermore, it helps the teacher be creative by putting color in their lesson using various activities because the range of tasks is more comprehensive. “Real success in English teaching and learning is when the learners can communicate in English inside and outside the classroom” (Davies and Pearse, 2000: 99).

Sample post-listening activities

1. Think, Pair, Share Activity
2. Inside-Outside Circle Activity
3. Role-play Activity
4. Survey activity
5. Information-Gap

Within the framework of this study, it was realized that the students were willing to participate in the tasks as the two skills were presented in integration through the activities that I mentioned above, which created real-life situations in the classroom. Listening is a receptive skill in that the listener receives a message from a speaker, but it should not mean the listener is passive during a listening task. The listening process is very active as the listener needs to use background knowledge to understand the speaker’s intended message; the listeners should deal with various tasks while listening to activate their schemata. The follow-up of these stages can easily be the production stage, which inevitably means integrating skills. Hence, teaching these skills will negatively influence communication in the classroom; therefore, the teachers should create real-life situations by combining listening and speaking skills and implementing Think Pair, Share Activities, Inside-Outside Circle Activities, Role-play Activities, Survey activities, Information-Gap, and Four Corners.

Related Studies

Arunsirot (2020: Abstract) studied the implementation of Augmented Reality technology to enhance Thai EFL students’ English pronunciation. The findings revealed that the post-test means of the experimental group were higher than that of the control group. It can be concluded that using AR technology could significantly enhance the student’s abilities to produce English consonant sounds. Furthermore, students’ satisfaction with AR technology was at the highest level. Related, Sadikin & Martyani (2020: Abstract) investigated the title of integrating Augmented Reality (AR) in EFL classes for teaching vocabulary. The results showed that AR and conventional flashcards could significantly improve young learners’ language. However, the experimental class’s mean post-test score was 74.83 and 62.5 for the control class. The data analysis revealed that the null hypothesis was rejected. In other words, the post-test score of the experimental course was higher than the control class.

Learning English vocabulary through augmented reality (AR) could improve students’ vocabulary mastery. It made young learners more engaged and excited to learn English vocabulary. Augmented Reality learning activities combined with the Task-based learning approach encourage students to participate in activities and improve student motivation in language learning. Thus, higher stimulation increases language achievement. (Hongnimitchai, Namfah & Kewara, 2022: Abstract). Belda-Medina (2022: Abstract) studied the teachers’ training and their attitudes towards AR and found that teacher candidates lack practical training in AR content creation and implementation from a technological and pedagogical perspective, but their attitudes towards AR integration as transformative technology were very positive, particularly regarding student attention, collaboration and shared enjoyment. Learning English vocabulary through augmented reality (AR) could improve students’ vocabulary mastery. It made young learners more engaged and excited to learn English vocabulary (Sadikin & Martyani, 2020).

III. Research Methodology

Participants

Population and Sampling

The population consisted of males and female 90 students of English Major in the English program, Faculty of Education at a University in Bangkok. The sample group was 45 students selected by simple random sampling to participate from the students who enrolled in the English course.

Time

The second semester of the academic year 2021.

Research instruments

The following instruments were used in this study were

- 1) 35 items of listening tests in the pretest and posttest before and after the class,
- 2) 20 items of the questionnaires were administered at the end of the course to examine students' opinions learned by using Augmented Reality (AR) implementation in the English classroom,
- 3) Field-noted for observing the students' interaction and engagement while using AR learning activities.

Data Collection

The research statistics were utilized in Mean, Standard Deviation, and T-Test.

Data Analysis

This study looks at how students interact with AR learning activities. The dependent samples t-test was used to evaluate learning achievement by employing AR teaching activities to improve listening skills in the English classroom and to analyze the study's findings. The other goal was to find out how the students felt that using augmented reality technology has improved their English listening skills. Questionnaires were used to gather the students' opinions after completing the English course.

Result

Table 1. Descriptive statistics of the Pre-test and Post-test

	<i>N</i>	<i>Mean</i>	<i>SD</i>
Pretest	45	1.67	1.78
Posttest	45	4.73	0.09

The results in Table 1 showed that the participants were engaged in every activity using the Augmented Reality (AR) application to promote listening skills after using AR technology. The data was collected by listening Pretest and Posttest to descriptive statistics and the dependent sample t-test. The results and descriptive statistics are presented in Table 1. The development of the Pretest and Posttest, as shown below, the participants' Pre-test mean score was 1.67 (SD=1.78), and the Posttest mean score was 4.73 (SD=0.09). The mean score on the post-test is greater than the mean score on the pretest. The study indicated that adopting Augmented Reality (AR) learning activities in English lessons helped students' test scores.

Table 2. t-test Results of the Pre-test and Post-test (N=45)

Paired Samples Statistics		Paired Samples Test		
Overall Mean		<i>S.D.</i>	<i>Meant</i>	<i>Sig. (one-tail)</i>
Average score	Total score 10			
Pretest	1.67	1.78-3.345	-25.328	.000
Posttest	4.73	0.09		
**Significant .01				

The results in Table 2 showed the significance of the study after implementing Augmented Reality (AR) to improve EFL students' English listening skills at the .01

Table 3. The mean of the students' opinion

<i>No.</i>	<i>Detail</i>	<i>Mean</i>	<i>SD.</i>
1	AR is an exciting and modern technology.	4.23	0.31
2	AR can attract the students' learning outcomes.	4.65	0.08

3	AR can help the students to understand the content clearly.	4.55	0.89
4	AR is appropriate for the students' knowledge level.	4.57	0.56
5	AR is easy for students to download the application to learn listening skills.	4.32	0.88
6	AR can encourage the students in English listening skills.	4.53	0.98
7	AR can help the student to learn and remember the new vocabulary.	4.38	0.53
8	AR technology can improve English listening skills.	4.63	0.64
9	AR can be fun for learning listening skills.	4.39	0.61
10	AR is suitable for teaching pre-listening, while-listening, and post-listening activity.	4.68	0.95
11	The teacher emphasizes students' engagement in the activities and their ability to communicate in the pre-listening, while-listening and post-listening activity.	4.72	0.53
12	The teacher uses a range of effective teaching strategies to develop students' listening skills.	4.52	0.45
13	The teacher provides the activity that ensures the students are adequately informed and comprehend each step required to finish the listening activity.	4.15	0.23
14	The teacher assigns several tasks for the kids to complete in order to have their listening skills active.	4.67	0.65
15	To improve listening skills, the teacher incorporates learning activities.	4.55	0.58
16	To assist students to grow in their ability to think critically and learn independently, the teacher uses activities.	4.36	0.89
17	After using the AR application, the teacher encourages the students to have faith in their capacity to listening skills.	4.78	0.54
18	The teacher provides students with opportunities to use their learning.	4.38	0.69
19	The teacher offers the task to make sure the students are sufficiently informed and comprehend each step required to finish the listening activity.	4.00	0.99
20	The teacher encourages positive listening skills development.	4.03	0.83
	Overall	4.60	0.61

The questionnaire on the students' opinions was collected from the ideas about implementing Augmented Reality (AR) to improve EFL Students' English listening skills. The questionnaires were five-point rating scale from 5 = highest to 1 = lowest. The analysis was Mean, and the meaning of the criteria was: 4.51 - 5.00 = highest level, 3.51 - 4.50 = high level, 2.51 - 3.50 = moderate level, 1.51 - 2.50 = low level, and 1.00 - 1.50 = lowest level.

The results in table 3 showed that the data analysis from this questionnaire indicates the result of analysis item no.6 shows the outcome, "AR can encourage the students in listening skills"

." gained the highest level (Mean= 4.53, SD=.98), while the lowest level is item no.19

" The teacher offers the task to make sure the students are sufficiently informed and comprehend each step required to finish the listening activity..." (Mean=4.00, SD=0.99) The overall mean perceived value was Mean=4.60, SD=0.61, which indicates that the students' opinion about implementing Augmented Reality applications to enhance listening production in the English classroom obtains the highest level.

The field notes presented the students' interaction and engagement using AR learning activities.

"QR code is easy to use, and I can create QR codes easily."

(Participant 1)

"When I used augmented reality in the classroom, I could understand listening lessons."

(Participant 2)

"After participating in AR activities, I discovered a variety of new vocabulary that enhanced my listening comprehension and allowed me to create my replies using the words I had learned."

(participant 3)

"The app inspired me to learn English, which I had never done before."

(participant 4)

"In the classroom, augmented reality can tell amusing stories that I can listen to and repeat."

(participant 5)

"It is straightforward to use this application, and using augmented reality helped me comprehend word meanings. It was also incredibly fascinating and beneficial. I can listen to the lines when I select the pictures."

(participant 6)

“As I utilize augmented reality, I might learn additional facts to share with my friends because augmented reality encourages interaction and participation.”

(participant 7)

“My focus on the listening task is improved when Augmented Reality is used in the classroom, and I feel more independent when I use it.”

(participant 8)

“Via smartphone applications, I could easily use augmented reality, which helped me use my imagination more creatively.”

(participant 9)

“Augmented Reality increased my motivation to learn English.”

(participant 10)

“Learning English no longer makes me feel bored, and I enjoy viewing the AR image and listening to the sound. After that, I can speak.”

(participant 11)

“Like playing a game, after scanning it, I can choose any topics I want to learn more about.”

(participant 12)

“I was more successful in my listening lessons because of it. My curiosity in the lesson was piqued by it...”

(participant 13)

“In class, I concentrated more on the material. The class quieted down while the augmented reality software continued to run.”

(participant 14)

In conclusion, the students' observations show that they could interact in English to communicate and express their opinions about the Augmented Reality photos they viewed via the program after the implementation of Augmented Reality Technology in the English classroom. Most of the students were attentive, and using Augmented Reality technology interaction helped them listen more clearly. Also, it has been discovered that most students are more at ease and confident when learning English.

IV. Conclusion and Discussion

According to the research findings, the students performed better on the post-test than on the pre-test. Students are encouraged to participate in learning activities when Augmented Reality (AR) learning activities are used. According to Marc et al. (2016), augmented reality (AR) helps learners pay attention, retain information, and feel satisfied. Also, according to Chen and Chan (2019), teaching younger students using AR can be difficult. The ability to interact in real-time with the natural world is a perk of augmented reality learning activities for students. Similarly, technology is a crucial component of education in the era of Industry 4.0. Since technology is now a way of life, teachers must include it more in their lessons. Particularly for learning English vocabulary, Augmented Reality (AR), which is an interactive experience in a natural environment, is regarded as an effective and acceptable learning tool (Sadikin&Martyani, 2020). Nonetheless, students appreciate AR learning activities and can have real-time interactions with the environment. In the age of Industry 4.0, technology is also a crucial component of education. In the real world, Augmented Reality (AR) is an interactive experience regarded as an effective and suitable teaching tool, particularly for learning vocabulary in English. Students can discuss and voice their thoughts in class using augmented reality technology, a real-world tool for communicative listening in English. Also, incorporating technology into English courses helps students learn English through interaction and involvement from other students while using AR technology in the English classroom. This suggests that AR can increase students' enthusiasm for language acquisition, particularly in English (Chang, Morreale&Medicherla, 2010). Practical experience-based built-in apps inspire students to be enthusiastic about learning the material. Tsai, Yu, and Hsiao (2012) present the educational idea of "edutainment," integrating the purpose of education into the game and highlighting the benefits of learning through digital play. In addition, technology integration in English classrooms also enhances students' listening abilities. AR technology in the English classroom improves student motivation for language learning and aids in acquiring English through student involvement and participation. According to the results, it is possible to raise students' enthusiasm and interest in studying English by improving their concentration while they are learning it, preventing them from ignoring it. The quantitative findings show that while augmented reality (AR) technology may boost learners' motivation and engagement, we also grasp the benefits and drawbacks of AR learning activities vs. the conventional learning approach.

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