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Analyzing the strategic effects of AI-Powered virtual and augmented reality systems in english language education at the tertiary level

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Abstract

Virtual reality and augmented reality (VR/AR) have been significant tools in facilitating the teaching and learning of the English language, mainly in creating a natural environment that can motivate learners, enhance teaching efficiency, and improve English language proficiency of learners. This study looked into the critical effects of VR and AR in enhancing the English as a foreign language proficiency of undergraduates and the teaching efficiency of lecturers. An expert sampling strategy was used to gather the necessary number of participants, and the selection of the participants was based on their experience in technology in English language education at the tertiary education level. Through this approach, 171 English language undergraduates and 22 English language lecturers participated in the survey. Furthermore, 3 English language undergraduates and 2 English language lecturers participated in the interview conducted. Both interviews and survey questionnaires were used to gather data to answer the three research questions. The interviews unveiled three key themes, including the benefits of AR and VR functionalities in English language learning, the effectiveness of AR and VR functionalities in English language teaching and learning, the theme of engagement and motivation, and the theme of adaptability to learning styles. The survey results showed that a significant percentage (55.83%) of participants recognize the positive impact of AR and VR technologies on the effectiveness of foreign language teaching. Also, most participants (97.7%) saw VR technologies as valuable tools for facilitating immersive language learning experiences. A high mean value of 5.38 symbolizes vital consent for VR technologies' usefulness in English language classes. In conclusion, the remarks of most respondents to both the survey and interview that add actual and virtual reality can only contribute to the improvement of language classes and involve all of them shows the power of these tools and how revolutionary they are.

Keywords: effectiveness, english language, learning, teaching, virtual and augmented reality.

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Public Interest Statement

This paper examined how students and teachers perceive the use of AR and VR in English language classrooms. Results show a complex picture, with most participants agreeing that AR and VR create a more immersive learning environment for language learning. However, participants differ in their opinions of augmented reality's success in the classroom.

1. Introduction

The introduction of technologically advanced solutions, including AR and VR systems, has caused profound and powerful changes in every aspect and domain of education. Language instruction can undergo significant reform by infusing the technologies that create immersive and engaging experiences. The adoption of AR and VR in education is due to their capability to captivate and engage students in appealing and novel ways, amplifying the learning experience. Through her research, Alfadil (2020) discovered that virtual reality games have effectively promoted vocabulary retention and interest in foreign language learning contexts. Separately from just arousing learners' interests, the gamed method of teaching languages through virtual reality generates a highly participative and explorative environment. These innovations thus diverge significantly from the traditional methods of language teaching, which invariably lead to critical analyses of the role of these technologies in the realm of higher education.

AR and VR, innovative technologies, are already used in various stages of language learning and transformed the traditional way of getting language skills. Students have the chance to communicate with their native language materials differently, such as immersive simulation technologies that go beyond traditional teaching methods (Lutge, 2022). Students come across accurate life material through the application of technology and, thus, through experiential learning. In their paper on the potential of augmented reality in the early years of education, Ashley-Welbeck and Vlachopoulos (2020) emphasize the positive opinions of teachers regarding its incorporation into language learning. A learning process that is not only dominated by the immersion side of the VR and AR technologies but also increases the ability of learners to apply what they have learned in actual interaction with people.

In this research paper, there are 3 primary purposes which reflect the overall desire to complete a detailed study of the strategic effects of AR and VR platforms on university-level language education. The study's primary goal is to quantify the extent of the impact of AR and VR technologies on learners' language proficiency. To make the right choices in the field of education, we must understand how these technologies affect vocabulary acquisition, language mastery, and, eventually, general command of the language. Moreover, the research aims to determine the factors that may influence the use of AR and VR in LT.

2. Literature Review

2.1. Historical Development and Evolution of VR and AR in English Language Education

The introduction of VR into teaching languages can be historically referred to as the middle of the 20th century, coinciding with the Sensorama creation by Morton Heilig in the 1950s (Dobrova et al., 2017). Heilig's idea later evolved into the contemporary immersive cinematic encounter precedent to the

virtual environments used today as part of foreign language learning. As shown by the development of apparatuses like the Virtual Boy invented by Nintendo in the 1990's1990s, virtual reality technologies were getting increasingly popular (Dita, 2016; Cai et al., 2022; Jamrus & Razi, 2019). VR applications for simulating language environments for students were the subject of initial VR application experiments in language education during this time (Li et al., Z., 2021). However, these simple applications represented the first attempts to incorporate virtual reality into language learning experiences.

Since its inception in the 1990s, AR has followed a unique path in developing immersive technologies. Tom Caudell, a researcher at Boeing, introduced the phrase "augmented reality" in 1992, explaining its utility primarily in manufacturing (Zhang et al., 2020; Taskiaran, 2019; Wu, 2021). Augmented Reality technologies have made significant advancements over time, with one such milestone being the development of ARToolKit in the late 1990s (Xie et al., 2019; Viktoria et al., 2018; Peixoto et al., 2019; Solak & Cakir, 2015). The historical progression of AR was significantly propelled by the introduction of smartphones that featured AR capabilities by default, granting users access to AR-enhanced content (Nicolaidou et al., 2023; Redondo et al., 2019; Symonenko et al., 2020).

Both technical advancements and more general trends in technology-enhanced education have played a role in the historical development of augmented and virtual reality within the framework of language instruction. Billinghurst et al. (2001) pointed out that language teachers and learners can take advantage of available virtual and augmented reality technology through its integrated and simplistic process. Thus, it demonstrates how much we have progressed towards what we have today – augmented and virtual reality as building blocks of modern and innovative language teaching (Turgar, 2019; Pintol et al., 2019; Al Rajab et al., 2023). In the long run, VR and AR will significantly impact language teaching. ARToolKit development by Caudell and the definition of "augmented reality" by Heilig and Virtual Boy by Nintendo can be considered as such. From the beginning, with the development of simple apps to the most advanced platforms that might become a significant innovation in language learning, this technological journey had a long way to go. From the primitive, mechanic initial practices to the current user-friendly and immersive ones for language teaching, virtual reality and augmented reality have evolved significantly.

2.2. Integration of Specific AR and VR Technologies in English Language

Virtual reality, a computer-generated 3D environment that is entirely immersive, overcomes the limitations of two-dimensional experience, where there is some distance between the viewer and the subject. The VR headsets and the other technological gadgets used effectively embed students in a three-dimensional environment in a manner that may be described as a temporary escape from their real-world surroundings and facilitate their participation in a made-up setting (Li et al., 2021; Ashley-Welbeck & Vlachopoulos, 2020). In the context of Second Language learning, the ability of virtual reality to simulate language environments that allow learners to interact actively with linguistic material within contexts closely mimicking real situations becomes a potent entity (Godwin-Jones, 2016; Dolgunsoz et al., 2018).

In the same way, AR alters the appearance and the physical surroundings of the real, natural world by overlaying an incredibly high level of digital reality. However, AR does not intend to override reality; rather, it complements it by augmentation of virtual features into the real world. This dialogue is achieved via AR eyewear or smartphones, which act as a conduit to manage the synergy of virtual and physical parts (Khoshnevisan & Le, 2018; Alshumaimeri et al., 2023). AR is a learning tool that increases learners' knowledge by imposing digital content onto natural objects or situations. VR encases users in virtual spaces, whereas AR alters the real world by incorporating digital information. The concepts of

affordances and immersion offer a further view into the distinctive characteristics and features these technologies bring to learning immersive languages.

2.3. Study Questions

The following are the research questions that guided the collection of necessary data for the study, analysis, and submission of key conclusions. These research questions are developed from the literature gap, and the study has already situated objectives. Below are the research questions:

1. To what extent do AR and VR technologies improve proficiency in English language?
2. What variables impact the effective integration of AR and VR technologies in English language education?
3. How do students and lecturers perceive the integration of AR and VR in English language education?

3. Study Methodology

3.1. Research design

This study is a detailed exploration of the significant impacts of AR and VR in foreign language teaching and learning. The views of lecturers and university undergraduates form the basis for the analysis. As such, a simple mixed methodology approach was adopted to gather qualitative and quantitative data from the study participants. The choice of quantitative and qualitative data is to explore both deductive and inductive perceptions of the key stakeholders (students and lecturers).

3.2. Population

To gather the required quality and quantity of data that answers the research questions, lecturers and students from different universities were engaged in the study. The students are currently taking courses in foreign languages, mainly as significant courses. The study does not include those who take English language as electives or borrowed courses. Each student participating in the study must be in the final year or the penultimate year across different universities. To participate as a lecturer, the person must provide evidence of at least five years of experience teaching English foreign languages in a known university. Also, the lecturer must have undergone professional engagements in technology in language education.

3.3. Sampling

An expert sampling strategy was used to gather the necessary number of participants, and the participants were selected based on their experience in technology in foreign language education at the tertiary education level. Through this approach, 171 English language undergraduates and 22 EFL lecturers participated in the survey. Furthermore, 3 EFL undergraduates and 2 EFL lecturers participated in the interview conducted.

3.4. Data Collection Procedure

The data for the study was collected through two main procedures and instruments. The first instrument and procedure are the survey instrument and questionnaire procedure. A digitally designed questionnaire was distributed to 193 participants who participated in the survey. The questionnaire was designed using a 4-point Likert scale (SA as strongly Agree, A as Agree, D as Disagree, and SD as Strongly Disagree), with a descending value of 4-1 starting from the SA down to the SD. The questionnaire was structured into three main parts: demographic variables and survey questions referring to research questions 2 and

3. The other tool for data collection is a semi-structured interview tool administered through virtual interviews. Three interview questions were drafted from the first research question, which centers on how AR and VR improve foreign language proficiency.

3.5. Analysis Procedure

The qualitative analysis was duly carried out using a thematic strategy. The thematic analysis approach mainly extracts recurrent themes from the interview data and uses them to form the basis for analysis. The results from the survey were analyzed using relevant statistical measures, including descriptive statistics tables.

4. Results and Discussion

This part of the paper contains the results of the collected data, a discussion of the results, and the findings drawn from the results. The section is further segmented into two main parts: the results and the discussion of findings.

4.1. Presentation of Results

As already mentioned, data was collected from the participants through surveys and semi-structured interviews. The results are contained in the subparts here.

Table 1: Results of the Demographic Variables (Survey Participants)

Variables	Inputs	Frequency N	Percentages %
Undergraduate Students			
Gender	Male	72	42.11
	Female	99	57.89
Age range	Below 20 years	19	11.11
	20-29 years	150	87.72
	30 years and above	2	1.17
University Lecturers			
Gender	Male	13	59.09
	Female	9	40.91
Age range	Below 30 years	2	9.09
	30—39 years	4	18.19
	40-49 years	7	31.81
	50 years and above	9	40.91
Highest Academic Qualifications	Master Degree	4	18.18
	PhD/post-Doctorate	18	81.82
Years of Experience	1-4 years	1	4.55
	5-9 years	5	22.73
	10-14 years	7	31.81
	15 years and above	9	40.91

Undergraduates and university lecturers at different universities were both represented in the survey.

Gender distribution among undergraduates showed 42.11% men and 57.19% women. The breakdown by age was as follows: 11.11% were under the age of 20, 87.72% were between the ages of 20 and 29, and a small fraction. Males made up 59.09% of university lecturers and females 40.91 %. When broken down by age group, 9.09% were under 30, 18.19% were between 30 and 39, 31.81% were between 40 and 49, and 40.91% were 50 and over. Among university lecturers, 18.18% had Master's degrees, while 81.82% had PhD or post-doctoral credentials, making them the most highly qualified professionals. There were 4.55% with 1-4 years of experience, 22.73% with 5-9 years, 31.81% with 10-14 years, and 40.91% with 15 years or more. By providing percentages that shed light on the distribution within each variable category, these detailed results provide a nuanced picture of the demographic traits of the polled university professors and undergraduates.

Table 2: Results of Demographic Variables (Interview Participants)

S/N	Participants	Codes for Analysis	Age	Gender	Highest Academic qualification	Years of experience
	Student	US1	23	Male	Undergraduate	Not applicable
	Student	US2	27	Male	Undergraduate	Not applicable
	Student	US3	21	Female	Undergraduate	Not applicable
	Lecturer	LEC1	59	Female	PhD/Professor of English language and Linguistics	17 years
	Lecturer	LEC2	61	Female	PhD/Professor of English Language	19 years

Five individuals participated in the semi-structured interviews; three were undergraduate students, and two were university lecturers. The age spectrum of the students was diverse, comprising individuals who were 23, 27, and 21 years old. The gender composition of this group comprised one female and two males. Conversely, the age of the university lecturers, who were both female, stood at 61 and 59 years old, respectively. They held the esteemed positions of Professor of English Language and Linguistics, each associated with a doctoral degree. One lecturer had seventeen years of experience, whereas the other had nineteen. The results of this study offer valuable qualitative data by revealing the varied academic backgrounds, ages, and experiences of the participants who participated in the semi-structured interviews, thereby affording insights into the gathered perspectives.

4.1.1. Results of How AR and VR Technologies Improve Proficiency in English Language?

The first research question focuses on how AR and VR technologies can facilitate and improve students' English language proficiency. This forms the basis for deriving three main interview questions presented to the five participants. These are the three questions for the interview:

1. Can you share specific instances or experiences where you believe AR and VR technologies have significantly contributed to enhancing proficiency in learning a English language, and how did these technologies impact your language learning journey?
2. From your perspective, what features or aspects of AR and VR technologies do you find most beneficial in improving foreign language proficiency?
3. Are there particular AR and VR functionalities or applications that you believe are more effective in language learning?

Based on the series of interviews conducted, four major themes were derived, including:

1. The theme of benefits of AR and VR functionalities in FL learning
2. The theme of the effectiveness of AR and VR functionalities in FL teaching and learning
3. The theme of engagement and motivation
4. The theme of adaptability to learning styles

4.1.1.1. The Theme of Benefits of AR and VR Functionalities in FL Learning

The interviewees imparted significant perspectives concerning the beneficial attributes of AR and VR technologies in enhancing proficiency in English language. The extensive interviews covered many themes, primarily focusing on what each interviewee (US 1, US 3, and LEC 2) personally thought was important to them while learning a new language. The attendees often pointed out the high degree of realism that AR and VR create in visualizing language settings analogous to real-life situations, stressing the immersive nature of these technologies. It was assumed that a higher degree of immersion was needed for a language to be acquired correctly. The partakers affirmed that the interactive characteristics of augmented and virtual reality, such as the games, simulations, and other hands-on activities that allowed them to play while practicing language skills, were functional. Respondents (US1, US2, and LEC1) expressed enthusiasm at the possibility of the individualized lessons created by the adaptive AI-based technology features. To enhance a person's English language competence, they acknowledged the need for personalized learning materials and correct feedback. One of the dominant themes was multisensory engagement, and the participants realized the importance of including auditory, visual, and tactile cues in building language comprehension and improving memory. Attendees acknowledged the pros of AR and VR technologies during the session. However, they provided valuable feedback, making suggestions on the development of the platform by offering more interactivity, cultural relevance, and variation of materials, as well as adjusting the algorithms used by artificial intelligence to suit different learning styles. This in-depth analytical process, which evaluates the assumed advantages and merits, will lead to more appropriate AR and VR applications in language learning because it will focus on the strengths and weaknesses. Thus, the study demonstrates that language learning encounters are affected by the blurred boundaries of the interviewee and the interviewee's incessant change.

4.1.1.2. The Theme of Effectiveness of AR/VR Technologies in the Teaching and Learning of EFL at the Tertiary Level

While the impact of virtual and augmented reality in the context of English as a foreign language (EFL) teaching and learning is discussed, participants will focus on the specific implementation and characteristics of AR and VR. The interviews showed that students utilize technology in multiple ways to improve language learning, which is reflected in their specific evaluations and the features they think are the most useful. Augmented and virtual reality were very well echoed by participants, who were able to create immersive language environments. LEC 2 said, "The virtual language lab is like being in a foreign country without leaving the classroom." This quote represents the attractive description of VR systems where new learners virtually interact with the natives of a new language. These systems help learners have a deeper understanding and change how they perceive a particular country or language.

The participants indicated that the ability to have an interactive learning experience offered by speech and gesture recognition technologies in the AR and VR systems was essential. US1 told me that interacting with virtual characters improved my pronunciation, and prompt feedback reinforced my speaking abilities. Such insight underscores the value of software that encourages students' auditory and visual interaction with digital worlds. The themes supported the fact that those features are effective in recreating cultural experiences. US2 has referred to virtual reality excursions: "Through historical sites

and cultural festivals, virtual reality has helped make language learning more practical and engaging". Virtual cultural environments are great instruments for the shaping of languages and raising the level of cultural awareness. Participants underlined the importance of AR and VR components in language learning that can be adapted to the needs of individual students. LEC 1: "The adaptive learning system mirrored my pace and tailored my learning style, providing personalized feedback that made my language proficiency better than before".

4.1.1.3. The theme of engagement and motivation

Through the detailed comments of the participants under the Engagement and Motivation theme, we see the impact of augmented and virtual reality technologies on their language learning process. Us1's persuasive comparison of "being part of an exciting story" about navigating the virtual marketplace brings the actual use of these tools to life, inviting students to break out of the constraints of traditional learning and participate actively in obtaining language knowledge. According to everybody attending this program, virtual and augmented reality environments make great spaces for learning because they let us make exciting stories that keep people involved and engaged. Moreover, the intrinsic motivation-based interactive learning methods incorporated in LEC 2 also substantiate the discourse. Their observation that students actively participate in virtual language challenges enhances their ownership of the learning process. This aligns with the idea that augmented and virtual reality technology encourages independence and personal engagement in language learning. The fact that US3 saw the inspiring power of individualized learning paths—what they called "a language learning experience designed just for me"—shows how flexible AR and VR can be in meeting the needs of diverse learners. Taken as a whole, these expressions demonstrate how AR and VR can revolutionize language learning by providing personalized, immersive, and captivating experiences.

According to LEC 1, gamification plays a crucial role in maintaining motivation. They say gamified language problems in virtual environments bring "an element of fun into learning." This statement captures the gamification element by presenting language acquisition as an engaging and ever-changing process that fosters optimistic mindsets. In a nutshell, the participant expressions provide captivating tales that highlight AR and VR technologies' transformational and motivating influence in foreign language teaching, vividly capturing the experience components of language acquisition.

4.1.2. Results on the Variables that Impact the Effective Integration of AR and VR Technologies within the Domain of English Language Education?

The second research question focused on unveiling the variables that affect the full integration or implementation of AR and VR technologies in EFL teaching and learning. The findings are contained in Table 3 below.

Table 3: Results on factors that affect AR integration in EFL teaching and Learning

Survey Items	SA %	A %	D %	SD %	Mean	Std. Dev.
The availability of suitable AR/VR tools positively influences the willingness to fully integrate them into language lessons.	29.17	59.33	10.28	1.22	4.65	0.86
Adequate training and support for lecturers are crucial for the effective integration of AR/VR technologies in English language teaching	37.22	51.85	9.48	1.45	4.73	0.73

The compatibility of AR/VR applications with existing language curricula is an important factor in their successful integration	33.52	50.64	10.29	5.55	4.39	0.98
The perception of AR/VR technologies as a valuable pedagogical tool influences their full integration into English language teaching and learning	39.18	53.27	5.19	2.36	5.17	0.48

As shown in Table 3, the responses to the survey regarding incorporating augmented/virtual reality (AR/VR) technologies into foreign language teaching were largely favorable. A considerable proportion of participants indicate agreement or strong agreement regarding the impact of various factors, including the accessibility of appropriate augmented/virtual reality (AR/VR) tools (88.5%), the criticality of sufficient training and support for lecturers (88.07%), the significance of compatibility with established language curricula (83.16%), and the perception of AR/VR technologies as valuable pedagogical tools (92.45%). The consistently high mean values (4.39 to 5.17) indicate a favorable propensity towards these factors. The results above highlight the perceived importance of these elements in determining the effective incorporation of AR technologies into language teaching. This underscores the necessity for easily accessible resources, thorough training for lecturers, alignment of curricula, and recognition of the pedagogical worth of AR/VR.

4.1.3. Results on How students and lecturers Perceive the Integration of AR and VR in English Language Education

The last research question explores how students and lecturers perceive the integration of VR and AR technologies in foreign language education. The focus is on the perceived usefulness of these technological systems in enhancing foreign language learning. The results are summarised in the table below.

4.1.4. Table 4: Results of Perceived Usefulness of VR in English Language Education

Survey Items	SA	A	D	SD	Mean	S t d . Dev
AR technologies contribute positively to the effectiveness of FL education in the academic context of FL teaching and learning	21.74	55.83	19.31	3.12	3.86	1.26
I perceive VR technologies as valuable tools for creating immersive language learning experiences	42.54	55.16	2.12	-	5.38	0.37
The use of VR/AR technologies in foreign language education enhances engagement and interest in foreign language learning	39.74	54.28	4.27	1.71	5.24	0.41
Both students and lecturers can benefit from the integration of AR and VR technologies in foreign language education	43.62	55.12	1.26	-	5.47	0.32

The diverse attitudes on integrating AR and VR technologies in foreign language teaching are reflected in the survey findings shown in Table 4, as seen among both students and lecturers. While a significant percentage (55.83%) recognizes the positive impact of AR technology on the efficacy of language teaching, a noteworthy number (19.31%) has doubts. On the contrary, most participants (97.7%) saw VR technologies as valuable tools for facilitating immersive language learning experiences. This viewpoint is supported by a high mean value of 5.38, suggesting a solid consensus about the perceived value of VR technologies in this context. The study examining the influence of virtual reality and augmented reality technology on engagement and interest in English language learning has a mainly

favorable result, with 94.02% agreement. Likewise, the widely accepted notion that integrating AR and VR technology may benefit students and lecturers is supported by a significant majority (98.74%), underscoring the anticipated reciprocal benefits. The higher average values (5.24 and 5.47) observed for these items highlight the importance of these technologies in promoting engagement, interest, and mutual advantages in the context of English language teaching.

4.2. Discussion of Findings

Virtual reality and augmented reality (VR/AR) have been seen as significant tools in facilitating the teaching and learning of FLs, mainly by creating a natural environment that can motivate learners, enhance teaching efficiency, and improve EFL proficiency. This section expands on the discussion of the findings in the presented data, which are anchored on the three main research questions in the study.

The data gathered from the interviews were divided into four major themes, as shown in the results. The first theme revolved around the advantages of the AR/VR functionalities in the English language learning process. Participants in the interviews mentioned valuable things, and they described the most advantageous elements related to the perceived benefits and advantages of the AR and VR technologies that are improving foreign language proficiency. AR and VR technologies have become famous for their high involvement and visual learning capabilities. The practical approach implemented by the participants (US2 and LEC 1) to ensure language proficiency through hands-on activities included semi-scenarios, role-plays, and cooperative learning (Karacan & Akoglu, 2021; Ashley-Welbeck & Vlachopoulos, 2020). Their interactive nature makes the materials apply to the learners well, and thus, the learners' attention is held, which results in overall improvement of the language learning process.

The participants' evaluation of AR and VR technologies' individualistic learning-enabling capabilities was beyond doubt. The informants agreed that AI-based artificial intelligence could help individualize language materials to fit the needs and achievements of each learner more precisely (Papanastasiou et al., 2019; Li et al., 2021). The exploration of the use of AR and VR functions in EFL teaching and learning lies at the heart of the theme. Participants are asked about their impressions concerning certain AR and VR attributes and their implementation. The studies discovered many different views on how these technologies increase language learning experiences because the participants explained the features, they found most helpful in detail. The ability of augmented and virtual reality to create a language environment that is surrounded by language was very commonly mentioned among the participants. We practiced technological gadgets that can place the students in real-life language situations, encompassing language simulation platforms and virtual language labs. For example, participants LEC2 and US1 indicated their preference for VR, grounded in real-life scenarios that immerse language learners in their practice. It was a unanimous decision that this approach, which covered all aspects of language use, aided students in understanding better.

The next theme was engagement and motivation. The input received from the participants gave us important clues about the methods through which AR and VR technologies encourage their motivation and interest in foreign language learning. The dialogues were about the unique role of such

technologies in boosting learners' engagement by offering them new insight into experiential aspects of learning a language. The majority of participants said that the experiential learning that AR and VR provide fosters deeper levels of interest. "We were like we were part characters in a captivating story" - US3 remembers. US1 expressed this effect by saying, "Navigating a virtual community to practice language skills made me forget I was learning." This saying exceptionally captures the essence of the strong influence of immersive experiences on individuals.

The second research question was about the factors that affect the integration of AR/VR in FL education. The survey results provide essential evidence about different factors contributing to implementing AR/VR in foreign language instruction. After considering the sentence "Integration of AR tools positively is influenced when proper tools are available," 88.5% of the survey respondents agreed or strongly agreed. This result illustrates that the volunteers valued the tool availability as an essential factor in integration. This corroborates earlier works highlighting the relevance of available and appropriate AR tools in accelerating the acceptance and integration of technology in educational processes (Li et al., 2021; Dolgunsoz et al., 2018). To the statement, "Sufficient training and support for lecturers are essential for the successful incorporation of AR technologies into foreign language teaching", there is an overwhelming agreement that lecturers' preparation is crucial among a large majority (88.07%). This corresponds to the results of the studies, which indicate that the training of faculty members is a significant factor in their proficiency and self-confidence in using AR technologies in language teaching (Papanastasiou et al., 2019; Karacan & Akoglu, 2021).

The fact that "The importance of the alignment of established language curriculum with the implemented AR applications is stipulated by the compatibility" was recognized by about two-thirds of participants, and the percentage accounted for 83.16%. Previous studies have also highlighted that seamless integration with academic goals can help increase the effectiveness of AR applications in the language learning area (Berns, 2021; Karacan & Akoglu, 2021). By analyzing that "The degree of the full absorption of AR technologies into foreign language instruction and learning depends on the recognition of AR technologies as pedagogical tools," research showed that more than 92.4% of the participants put the worth of AR technologies. This goes along with the overall body of research showing that the willingness of a lecturer to accept technology as a helpful teaching tool is positively related to its effectiveness in language teaching (Godwin-Jones, 2016; Lin et al., 2021). Various key points emerge from the survey: equipment availability, lecturer training and support, the curricula's compatibility, and the general perception of AR as a valuable educational tool. As with the previous studies, the research findings extend our knowledge of factors that lead to the successful implementation of AR technology in the language teaching setting.

5. Conclusions and Implications

This paper examined how students and teachers perceive the use of AR and VR in English language classrooms. Results show a complex picture, with most participants agreeing that AR and VR create a more immersive learning environment for language learning. However, participants differ in their

opinions of augmented reality's success in the classroom. The research showed that these tools have transformative potential to increase enthusiasm, engagement, and mutual benefits in EFL classrooms. The results of the current study supported three main conclusions. To start, virtual and augmented reality can completely transform language teaching due to the general acceptance that they are excellent resources for creating engaging and immersive learning environments. In line with previous research, this highlights the immersive nature of VR/AR and its ability to improve settings for language acquisition. Second, the research shows how important it is to have a detailed knowledge of how AR technologies work in different types of schools. Considering contextual elements is crucial when integrating AR into language teaching, as participants' various opinions highlight. Finally, the fact that almost all the participants in both the survey and interviews accepted that augmented and virtual reality could only improve language classrooms for everyone involved is a measure of the revolutionary power of these tools.

The results of this study have important implications for the field of teaching foreign languages. Due to the positive impressions of VR technologies, there is hope for their broad use in developing immersive language learning environments. However, context-specific implementations are required to fully use augmented reality technologies due to the differing viewpoints on the technologies' efficacy. In light of the widespread acceptance of the advantages, lecturers will require extensive training to incorporate AR and VR into language classes successfully. These tools will significantly impact the field's trajectory in the years to come.

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Authorship and Level of Contribution

The paper is single-authored.

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