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Using Virtual Reality in the Educational Process to Increase Students' Motivation and Interest

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Abstract: This article aims to identify some obstacles and opportunities for using virtual reality tools in teaching English to students. The research method is a case study focusing on the perceptions and responses of four teachers. Semi-structured interviews were used to collect this data. The results show the importance of pre-service and in-service training for teachers to use a



foreign language effectively - in this case, English - when teaching with these tools. Additionally, teachers highlight specific difficulties that hinder the realisation of the educational opportunities offered by virtual reality in the process of foreign language learning. The results show that, for example, despite the overall level of satisfaction, motivation is not always present in the use of smartphones. In contrast, satisfaction, motivation, and engagement are closely related in virtual reality. These differences emphasise the importance of technology in the learning process. The novelty of this paper is to study these discourses to find that the main motivations that drive teachers to use new virtual tools are related to both personal factors (curiosity, passion, interest) and pedagogical aspects (application, sharing experiences with colleagues, caring for students). These two forms of motivation, essential for proper technology integration, underline the strong desire of teachers to participate in the project to improve their teaching practice and optimise student learning. However, although motivation is an influential factor in integrating new technologies, teachers do not hide their doubts and concerns. The practical value of the study on using virtual reality (VR) in the educational process to increase students' motivation and interest is creating an interactive environment that can engage students and make learning more fun. This is especially important for those with difficulties with traditional teaching methods and individualising learning. VR allows you to adapt the material to the needs of each student, which contributes to more effective learning. Learners can work at their own pace and repeat the material as often as necessary.

Keywords: immersive immersion, torture, English language learning, motivation, advantages, disadvantages

Introduction

Since the early 1970s, technology has become an essential part of teachers' resources, particularly in language classrooms (Haleem et al., 2022). Thanks to advances in the field and the creativity of developers who have created increasingly user-friendly tools, technology integration into the classroom has accelerated significantly over the past twenty years. However, introducing digital technologies and materials that provide access to information raises issues related to educational policy and research in linguistics (Molenaar, 2022).

Consequently, research on digital technologies aims to assess the challenges faced by education in the context of digitalisation and explore teachers' experiences and main expectations in this area (Muñoz et al., 2022). From a scientific point of view, many studies on integrating technology into language courses mainly focus on its impact on language learning, identifying both advantages and disadvantages.

This case study examines the introduction of virtual reality into the educational process to increase students' motivation and interest.



Research Problem

Integrating virtual reality (VR) into the classroom has raised questions about its effectiveness in increasing student motivation and engagement, especially in language learning contexts such as English. While VR technologies offer unprecedented opportunities for immersive learning experiences, educators may face challenges and barriers when implementing them. Understanding these dynamics is essential to creating an effective learning environment.

Research Focus

This study explores how using virtual reality in the classroom can improve students' motivation and engagement in learning English. It uses observations and interviews with teachers to gather information about the barriers and enablers that influence the integration and use of virtual reality tools in English language teaching.

Research Aim and Research Questions

The key research questions guiding this study include:

- 1) What are the benefits of using virtual reality in teaching English?
- 2) What challenges do teachers face when implementing virtual reality into their curriculum?
- 3) How does the use of virtual reality affect student motivation?

Literature Review

Virtual reality pioneers describe it as “replacing the interface between humans and their physical environment with an interface with a simulated environment” (AlGerafi et al., 2023). This change enables one or more individuals to perform sensory, motor, and cognitive activities in an artificially created world, which can be either imaginary or symbolic or a simulation of certain aspects of real life (Jiang et al., 2023). Thus, the primary function of virtual reality is to help the user escape from physical reality by virtually changing the time, place and type of interaction: interaction with the environment that simulates reality or the imaginary world (Kamińska et al., 2023).

Thus, interaction is the first characteristic of virtual reality, with immersion and the sense of presence being the other two aspects. Immersion reflects “the stimuli generated by the virtual reality device” (Irwanto et al., 2023). In this context, virtual reality opens up new perspectives for learning and education. Liu and Liu (2023) point out several contributions of virtual reality to the learning process: increased motivation due to the game-like and engaging elements of the tool, the ability to access realities that are too remote or expensive, the availability of instant feedback through interaction, and the presentation of information in a more expressive visual format due to its three-dimensionality and multimodality.



Thus, thanks to virtual reality, teachers can organise language activities related to historical events, for example, by watching 360° documentaries (Acosta et al., 2019). Virtual reality devices can also bring learners into the future by allowing them to create three-dimensional models or introduce them to remote or inaccessible locations through virtual tours (Agbafé et al., 2023). In addition, learners can interact in a simulated or imagined real world, such as in an avatar interview setting or a role-playing restaurant with three-dimensional objects (Aithal & Maiya, 2023).

There has been a significant increase in research examining the impact of virtual reality on language learning (Alam, 2022). This is supported by review articles that indicate that one of the main contributions of virtual reality to language learning is to increase learners' motivation and engagement in the learning process (Al-Gamdi, 2019). Bacca-Acosta et al. (2021) note that these two aspects are enhanced by a sense of presence and immersion, similar to the concept of "flow" developed in positive psychology. The literature review also highlights improvements in the development of language competencies, particularly in vocabulary acquisition (Chen & Kent, 2019) and intercultural knowledge (Ciekanski et al., 2020). However, these indicators recorded by students depend entirely on teachers' experience using virtual reality tools. Teachers play a vital role in introducing VR technologies into the classroom. Therefore, Mädel (2023) suggests organising training programmes for teachers to introduce them to these tools and help them integrate them into the classroom. This includes developing a realistic and practical plan for transitioning from traditional teaching methods to new ones, as well as additional intensive courses for teachers most engaged in implementing the technology.

While there is a great deal of research on virtual reality's impact on student outcomes, limited work focuses on teachers' perceptions of using virtual reality tools and assessing student motivation across all disciplines. Therefore, there is a real need for subject-specific research to support better teachers who want to integrate this new technology into their lessons.

Materials and Methods

Through observations and interviews with teachers, information was gathered about the barriers and enablers that influence the integration and use of virtual reality tools to increase learners' motivation in learning English. After describing the context of the study and the participants, the methodology used to collect and process the data is discussed in detail. The findings are then analysed and discussed to provide some answers to the research question. The case study is part of the aim to experiment with a new method of teaching English through the use of virtual reality in order to increase learner motivation.

The project was implemented among first-year students of four educational institutions specialising in areas such as Commerce, Maintenance and Industrial Equipment, and Administration Management–customer and User Services. Virtual reality tools were integrated into implementing three pedagogical scenarios developed in project-based pedagogy, which helped students complete the assigned tasks.



The first option involved organising a 360° immersive tour of the school using the HoloBuilder app. The second option was to create a virtual interactive museum in a three-dimensional format using the CoSpaces app. The third option involved real-time communication in English between students from different classes represented as avatars in a virtual environment using the vTime application.

Four English teachers from the schools involved in the project participated in the study. Before joining the project, these teachers had typically implemented innovations in their teaching, such as adapting lessons to suit the profile of their students, using differentiated learning for those with difficulties, and offering interactive lessons with group work or mediation tasks between students. Although they had extensively used various digital tools, none had used virtual reality in their English teaching practice. In their practice, they had little or no knowledge of virtual reality before participating in the project.

Sample and Participants

This study aimed to identify barriers, opportunities, and motivational factors that prevent learners from using virtual reality in teaching foreign languages, including English. For this purpose, a qualitative methodology included semi-structured interviews with teachers. These interviews allowed us to find out the teachers' views, the problems they encountered, and the solutions they implemented. Regarding the interviews, participants were informed that they were invited to answer questions and observe student motivation lessons where students used virtual reality tools, particularly during the final tasks planned in the learning scenarios.

Instruments and Procedures

The semi-structured interviews were conducted after the first pedagogical scenario and the other two pedagogical scenarios. They were conducted individually and remotely, using two video conferencing applications (Zoom and Microsoft Teams). The day before, we agreed via email on the date and time of the two interviews and the format (software used and permission to record). The interviews lasted an average of one and a half hours, during which the teachers freely answered open-ended questions without interruption. The questionnaires (see Appendix) for the two sessions were quite similar.

Data Analysis

The surveys were organised into two categories. The first category focused on describing teachers' impressions and concerns at the beginning of the project about the future use of virtual reality tools introduced in English classes. The second set of questions focused on the students, including their attitudes and behaviour when working with virtual reality and their language performance, communication skills and motivation.

The interviews were fully recorded in writing by hand. We then carried out the coding in three stages: the first stage is open coding, which identifies the themes of the discussion; the



second stage is axial coding, which groups these themes into main categories; and the third stage is selective coding, which establishes links between the categories identified in the previous stage. The research was conducted with only four special needs English teachers (see Table 1) who were highly motivated to participate in this case study. Therefore, the results of this study cannot be generalised. However, it creates opportunities for further research into integrating virtual reality into the learning process in foreign language classes.

Results

We present the results obtained from the processing and analysis of the semi-structured interviews. To do this, we classified the teachers' statements into different categories that reflect the chronological process of technological integration. So, we asked them about their feelings before the project started, which involved integrating virtual reality tools into English lessons. Below is their feedback:

Table 1

Teachers' Perception of Virtual Reality

Review	Answers
Motivation	■ "I was interested to know how we would integrate virtual reality into our English lessons." ■ "I was excited and wanted to participate in this project, which seemed exciting for both the students and me." ■ "Cooperation with colleagues and other educational institutions will undoubtedly be exciting and allow us to combine our problems and successes." ■ "I was delighted to be able to participate, as I am always looking for new experiences for myself and my students."

Source: Author's development.

The study of these discourses shows that teachers' primary motivations for turning to new virtual tools are personal (curiosity, passion, interest) and pedagogical factors (use, sharing experiences with colleagues, caring for students). These two types of motivation, which are the key to proper technology integration (Alkhabra et al., 2023), emphasise the strong desire of teachers to participate in the project to improve their teaching practice and optimise student learning. However, while motivation is a strong driver for integrating new technologies, teachers do not hide their doubts and concerns.

This evidence points to the need for regular training that includes practical aspects. However, they have failed to meet teachers' expectations, as evidenced by these events' perceived ineffectiveness and costs. It seems that these trainings are detached from the context of integrating the tools into the daily activities of the classroom. This issue relates to professional skills and multitasking that needs to be done simultaneously in the classroom (Bogusevschi et al.,



2020). Teachers felt helpless when integrating virtual reality tools and when students used them; however, virtual reality significantly increases student motivation.

Table 2

Teacher Observation of Student Behaviour, Engagement and Motivation

Review	Answers
Student behaviour	■ "When we are working with equipment that is not efficient and ready, it can quickly become a problem, and we lose the students' attention." ■ "When I am alone, and the slightest technical problem arises, it becomes a challenge." ■ "Without support and with a class of twenty-four students, it is simply impossible because the students are very demanding, and if we do not answer their questions, they quickly get tired and lose interest in the class." ■ "Some students may be left out because I cannot give them the time they need, so I do not have time to manage everything simultaneously."
Student engagement	"Through virtual reality tools, students can approach learning from a new, more engaging perspective that is more relevant to them than what they have known before, and that is what they need." ■ "It allowed us to connect the language with something that the students had experienced, with their environment, their surroundings." ■ "These tools have helped to give importance to what students can do and to focus on that, as language learning is no longer important for young people." ■ "Students' results are unique and specific to each individual."
Motivation	- "Motivation has increased significantly thanks to virtual reality tools." - "My role was only to provide support, guidance and advice, and the students did most of the work themselves." - "I did nothing; they did everything on their own and successfully."

Source: Author's development.

Teachers' fears are mainly related to personal skills (role, ability to act) and pedagogical aspects (organisation, motivation of students) and may indicate low confidence in their effectiveness or "fear of losing face with students if the material does not work" (Cabero-Almenara & Roig-Vila, 2019). In such cases, teacher training can help by answering their questions and informing and educating them. Teachers express their opinions about the courses, emphasising that the student's motivation confirms Checa and Bustillo's (2020) view that integrating virtual reality increases learning motivation.



In addition, using virtual reality tools seems to add a particular dimension to learning: Students show a direct interest in the tools themselves (modern technology) and the material presented, which can contribute to their more active involvement in the learning process.

Finally, the teachers were asked about recommendations for those who want to implement virtual reality tools in the classroom. All teachers agreed on three main aspects. The first concerns the number of students in a class: in their opinion, it should not exceed 15. The second aspect is related to technical and pedagogical training, and the third is the level of student autonomy, further increasing their motivation.

Discussion

Virtual reality has many possible applications in education: the number of options for its use is snowballing, and this trend continues to evolve. VR can transform both teacher training and student learning. At the end of a lesson, students can conduct physical experiments that would be dangerous or difficult to perform in real life (Chen, 2019).

VR can be useful not only for studying foreign languages but also for all specialities. For example, engineering students can experiment with dangerous or difficult scenarios to implement in the real world, such as extreme bridge loads, and explore the potential consequences of such situations (Chen et al., 2022).

According to Chen et al. (2019), students at the primary stage can benefit from numerous virtual and augmented reality applications within STEM. For example, through tools like i3LEARNHUB, students can explore augmented reality (AR) by visualising cells and organs using Lifeliqe. Lifeliqe is an educational programme that allows students to visualise scientific concepts, such as organs or cells, using augmented reality (AR).

Fauzi (2022) emphasises the possibility of using virtual reality for foreign language learning in a study related to the work presented here. Based on this work, the first research question can be answered. After all, immersion in another culture is critical, and virtual travel to a country and communication with native speakers can facilitate this process. Students can immerse themselves in a virtual environment instead of being limited to videos or texts. One possible use case for virtual reality in foreign language learning could be ordering coffee or food in a restaurant, allowing students to feel confident in their language abilities in a safe context.

As noted by Frewen et al. (2022), one primary use of virtual reality is to allow students to participate in virtual field trips at a reduced cost. Virtual field trips cover a variety of subjects and educational areas, from history and geography to a fully simulated chemistry lab where students can conduct engaging experiments.

Virtual reality can also allow students with disabilities to visit places that would otherwise be difficult or impossible to access (Guerra-Tamez, 2023). In addition, students with limited social



skills can benefit from VR because they can stop the experience if they are uncomfortable (Guppy et al., 2022).

The second working question fits in with Huang's (2022) study, as virtual reality (VR) can significantly help students. For example, it allows one to experience the natural world differently. Virtual reality is safe; students can perform risky experiments or explore complex environments without leaving the classroom. In addition, VR can facilitate collaboration between students in new ways that were not previously possible.

The third question relates to the research by Javornik et al. (2022), who state that virtual reality promotes active learning through immersive experiences in virtual environments, allowing students to improve their problem-solving skills. For elementary school students, the fun aspect of virtual reality can help maintain attention and increase engagement in learning. VR can also be useful for students with difficulty concentrating in traditional classrooms (Sholihin et al., 2020).

Studies have found that students are more motivated when using virtual reality in specific settings. According to an article published by Irwanto et al. (2022), medical students showed increased motivation when learning through virtual reality, which proved more effective than video and text-based learning methods. Marks and Thomas (2022) found that older students planning to study medicine had a much stronger empathic response to a 360-degree video of an elderly patient than reading case study texts. The use of both augmented and virtual reality can significantly impact medical students' learning process, potentially changing their views and approaches to future challenges.

A study by Matovu et al. (2023) showed that virtual reality can effectively assess students' communication skills in specific educational contexts, sometimes even exceeding traditional teaching methods. A meta-analysis conducted by Mulders et al. (2020) also confirmed a significant improvement in learning. However, the authors emphasise the need for further research in virtual reality, noting that more studies are needed to clarify the exact impact of this technology on education.

Students with physical or social disabilities may face challenges adapting to the regular school environment (Seufert et al., 2022), but virtual reality can help them overcome these difficulties. For example, a study by Mystakidis and Lympouridis (2023) describes how video production students created a virtual tour of their college. The main goal was to allow new students to visit their future school in a comfortable home environment with minimal stress.

It should be noted that introducing virtual reality in the educational process is an expensive undertaking. Considering the initial costs of purchasing equipment and the ongoing costs of training teaching staff is necessary. Therefore, educational institutions with limited budgets cannot make VR their priority (Obeid & Demirkan, 2023). Due to these financial constraints, virtual reality technology must continue to improve to become more accessible to schools and other educational institutions. However, it is worth noting that these systems' prices are decreasing over time and becoming more affordable.



Therefore, understanding how VR can help achieve the educational goals of a lesson is essential for successful implementation (Rojas-Sánchez et al., 2023). VR should be part of a broader plan that includes many ways to encourage students to learn and experiment. Educators and policymakers should be aware that there is a risk of excluding non-VR users when using VR in the classroom. For various reasons (motion sickness, visual or hearing impairments), some students may find it difficult or even impossible to participate in VR-based classroom activities. Ensuring equitable access to this technology is essential to ensure that all students have a positive experience in the classroom and fulfil their learning potential.

Conclusions and Implications

In conclusion, virtual reality (VR) has the potential to revolutionise teaching and learning. The technology opens new, immersive learning opportunities that facilitate collaboration and increase student engagement and motivation. Teachers from various disciplines can successfully use VR, covering subjects from STEM to languages, history and social studies. From visiting cultural sites worldwide to learning languages with native speakers and conducting experiments in a safe environment, these ideas make learning more exciting and engaging for students.

While the advantages and opportunities of using virtual reality in the educational process are apparent, the disadvantages of this technology cannot be ignored. The cost of implementing and maintaining virtual reality systems in schools is a concern, especially given most educational institutions' limited budgets and infrastructure. It is also essential to investigate how VR affects learning outcomes, although some studies have already shown encouraging results. The availability of VR technology is increasing due to lower prices. As teachers understand this technology better, new opportunities for its use open up. Thus, it is safe to say that the presence of virtual reality in education will continue to grow in the coming years, providing students with new and engaging learning methods. The study conducted among teachers who implement virtual reality in the English language teaching process aimed to identify the challenges and ways to integrate these technologies into lessons.

We have found that teachers who were initially very interested and motivated began to experience some anxiety after receiving training in the use of virtual tools. They are forced to master this material independently, which is considered highly time-consuming but necessary not to feel helpless in front of their students. In addition to the desire not to lose credibility, teachers emphasise the negative consequences of insufficient preparation on their part. It has been found that students with initially low motivation lose even more interest in learning when they notice that the teacher is not confident in their knowledge. In addition, insufficient preparation causes the teacher to feel insecure and anxious, distracting them from their primary task of teaching English. Using virtual reality (VR) in the classroom opens new opportunities to increase students' motivation and interest. However, several limitations and challenges can affect the effectiveness of this technology in education. The study's main limitation was the small sample of teachers in the case study. This may not reflect the broader picture, which could lead to inaccurate conclusions. Further research with more participants is worthwhile to obtain more reliable results.



Suggestions for Future Research

The prospects for future research into using virtual reality (VR) in the educational process are multifaceted and promising. Studies that evaluate how virtual reality can affect learning outcomes in various subject areas are promising. This may include comparing traditional teaching methods with interactive VR environments—an analysis of how VR affects students' motivation and interest levels. You can conduct surveys, study students' behaviour and observe changes in their attitude to learning. Virtual reality (VR) opens up new horizons for learning, offering unique opportunities to increase student engagement and improve learning efficiency. Prospects for future research in this area can also be seen through the lens of interactive learning. VR allows interactive learning environments where students can actively engage with the material. Research could focus on the effectiveness of different content formats (e.g., simulations, virtual tours) and their impact on the depth of understanding of the learning material. As the work results have shown, virtual reality significantly increases student motivation due to gaming elements and the ability to feel immersed in studying the topic. Future research may include evaluating motivational strategies on a larger sample of participants.

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Conflict of Interest

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