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## FROM TRADITIONAL TO INNOVATIVE TEACHING: ESP TEACHER PERCEPTIONS OF IMPLEMENTING VIRTUAL REALITY

### Abstract

Immersive environments, like virtual reality (VR), can support language and presentation skills development, and, in English for specific purposes (ESP) contexts, VR can be useful for practising academic and professional genres in realistic environments. While VR can pose significant challenges for ESP teachers and reveal their vulnerabilities as they use unfamiliar tools (Diert-Boté & Moncada-Comas, 2026), it can also enhance teacher motivation, likely resulting from increased student motivation and engagement (Nicolaidou et al., 2023). This paper uses collaborative autoethnography (CAE) (Chang, 2013) to explore how three ESP teachers – the authors – reflect on their motivation and approaches to innovative ESP teaching after incorporating VR into their courses. Using a content-thematic approach (Saldaña, 2016), we analyse four journals in which the teachers documented their experiences using VR, including challenges, emotions, and the perceived usefulness of VR. Findings reveal that, when using VR, teachers face the dual challenge of managing the teaching activity and mastering the new technology, while also exhibiting higher motivation towards the success of VR tasks. Overall, the study offers insights into how VR adoption shapes teacher motivation and pedagogical practices, thus highlighting both opportunities and challenges of immersive technology for innovative ESP teaching.

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### Key words

English for specific purposes, technical communication, professional communication, virtual reality, technology-mediated teaching and learning, wearable technology.

## 1. INTRODUCTION

Though the field of virtual reality (VR) as a learning environment is in its infancy (Stracke et al., 2025), it is attracting attention among researchers. Immersive environments based on wearable technologies like virtual and augmented reality place students in authentic and context-rich scenarios. These environments are thought to be innovative when they show the potential to support, facilitate and stimulate students' development, thus enhancing the efficacy of the learning process (Spector, 2016). Most research on VR conducted across primary and secondary educational levels suggests that it is useful for learning (tom Dieck & Jung, 2019) as it offers the possibility to visualise and simulate events that would otherwise be inaccessible or impossible to experience within the everyday reality of the classroom. Within higher education, many studies have focused primarily on health education (e.g., nursing, physiotherapy, medicine) and business programmes taught in students' native language and on the impact on students, yet little is known about the use of VR for English for specific purposes (ESP). Research on the different types of impact of VR for language learning is so far yielding somewhat contradictory results and recent broader reviews (beyond language education) state that existing studies on VR tend to lack evidence-based results (Stracke et al., 2025). Nevertheless, despite challenges in technical configuration and pedagogical grounding (Karacan & Akoğlu, 2021), several studies argue that VR holds considerable potential for language learning, promoting genuine communication (Parmaxi & Demetriou, 2020) and supporting communicative purposes in ESP contexts (Parmaxi, 2023) as it can provide opportunities for communication, interaction and collaboration with others that would be unreachable in traditional classrooms. However, digitalization can be challenging for teachers in that it jeopardizes perceived safe, traditional practices (Diert-Boté & Moncada-Comas, 2026; Karacan & Akoğlu, 2021) and requires changes in methodology and teaching strategies (Foreman-Brown et al., 2023) that ESP teachers need to adopt if they want to incorporate VR activities. For example, ESP teachers, influenced by digital transformation, need to adopt a more encouraging role (Hafner & Miller, 2019; Moncada-Comas & Diert-Boté, 2022). Additionally, in response to students' real-life professional needs, ESP teachers in technical settings may find technology-mediated activities, like VR, especially suitable for engaging engineering students.

In particular, the study reported in this paper arose from the authors' twofold experience both as practising teachers of ESP for engineering and as participants in two previous teaching innovation projects that involved the design and implementation of specific VR (scripted) scenarios adapted to target situations in professional engineering communication. As part of a larger study that analyses the reactions of students and teachers, this paper addresses a significant gap in the literature by focusing specifically on teachers' perspective. There has been little research on how ESP teachers' perceptions of VR shape their motivation and teaching approaches (Radianti et al., 2020; Stracke et al., 2025), which calls for

further exploration of how the lived teaching experience of ESP lecturers is transformed as a result of the integration of VR. Findings from this study are expected to provide insights that can inform the effective integration of immersive technologies in ESP contexts and support teachers in adopting innovative pedagogical practices.

## 2. THEORETICAL BACKGROUND

### 2.1. Digitalization processes and virtual reality

The transformation of engineering education, and higher education more broadly, requires new approaches such as extended reality (XR) scenarios, including augmented reality (AR) and virtual reality (VR), which promote student engagement and agency (Godwin-Jones, 2023). Highly relevant to ESP, such environments can facilitate students' experience in target situations. Within this framework, the development of disciplinary literacies has gained relevance, understood as "the use of reading, reasoning, investigating, speaking, and writing required to learn and form complex content knowledge appropriate to a particular discipline" (McConachie & Petrosky, 2010, p. 16). In fact, in engineering education, technical communication in English has been identified as a key competence for professional development in globalized environments (Arnó-Macià et al., 2020).

Research on VR, understood as a computer-generated, immersive, multimedia space in which students can interact, participating in a simulated real-world experience, has highlighted the language-learning potential of immersive environments (Arnó-Macià, 2025; Chapelle & Sauro, 2017; Qian, 2018; Shih & Yang, 2008; Tham et al., 2018), particularly in fostering student motivation, engagement, collaboration, and learner-centered interaction (Parmaxi & Demetriou, 2020). The impacts of VR on students are multipronged, starting from increased motivation, attention, engagement and enjoyment in different fields of knowledge. Other benefits of VR have been identified for disciplinary content learning. Ślósarz et al.'s (2022) study, carried out with physiotherapy students, shows an increase in students' intensity of positive emotions and in self-esteem. For example, it was found that VR can make the content easier to memorise and, due to the connection between emotions and motivation, it renders the learning experience more diversified, strengthening engagement and interest. Interestingly, VR can reportedly improve task completion time and success rates (Parmaxi & Demetriou, 2020).

More specifically, studies on language learning point to improved language performance in all skills and vocabulary acquisition (Chen, 2016), as well as certain development of speaking skills (Gruber & Kaplan-Rakowski, 2020), as a result of the scaffolding created by VR, the reinforcement of interaction among students, and the opportunities it provides for authentic language tasks in a realistic way, thus

promoting genuine communication. While the development of communication skills is by far the most common benefit, other transversal competences are also mentioned in the literature, like metacognition, personal and social responsibility, cultural awareness, creativity, critical thinking, problem-solving, global/local citizenship, engagement, and motivation (Lin & Wang, 2021; Melchor-Couto & Herrera, 2022; Parmaxi & Demetriou, 2020; Suh & Prophet, 2018; Xu, 2025), while also enhancing cognitive and affective skills (Jensen & Konradsen, 2018). VR is also claimed to be useful for students' writing skills. For instance, Tham et al.'s study (2018) suggested that VR can help students in their writing processes and that out of the nine dimensions that VR immersivity provides (*viz.*, strategic, technical, temporal, spatial, bodily, sensory, cognitive, creative and social), the strategic type, for example, offers new methodologies to prepare students to become communicators capable of composing in multiple media, thus guiding students on how to immerse the audience into the communicative agenda purposefully and strategically.

Research on teachers using immersive technologies is scarce when compared with research on students. Immersive technologies require not only a thorough analysis of the appropriate pedagogical deployment and learning theories to be implemented, but also specific training for foreign language teachers about technical issues, material development and social and psychological problems encountered by some learners (Aydın, 2022). It was also found that sociocultural (9%), situated (9%), experiential (5%) and constructivist (5%) learning theories were the most commonly adopted, while about 46% of studies did not specify the theory the study was grounded in, concluding that:

Research in the field of AR needs to strive towards the design of communicative tasks that will engage learners in contextualized real life-like situations. More research in the field will be needed in order to further highlight and align the affordances of AR with instructional decisions and provide sound implications linked with both theory and pedagogy (Parmaxi & Demetriou, 2020, p. 867).

The literature has only started to identify challenges and benefits for teachers using VR. For example, teachers using VR or other innovative tools are likely going to leave the comfort zone that traditional coursebooks offer, through clear and transparent structure that allows teachers to quickly gain an overview of the organization, content and intended learning outcomes (Karacan & Akoğlu, 2021). Additionally, teachers will have new duties required by VR, like equipment (number of goggles to be used by students), storage and transportation (keeping them in a safe place and transporting them to the classroom), maintenance (charging the goggles in advance), or internet access (Karacan & Akoğlu, 2021). Ethical risks have also been pointed out that may concern teachers willing to incorporate VR, with the most important concern being the blurred distinction between the real and the illusory (Spiegel, 2018). However, teachers' perceptions of the pedagogical affordances of VR may be influenced both by students' positive responses to VR –

and to the course more broadly – and by evidence that VR enhances content retention and understanding, knowledge acquisition, creativity, intrinsic motivation, and self-efficacy among university students (Lin & Wang, 2021; Nicolaidou et al., 2023). As immersive technologies increasingly become part of everyday life, it is necessary to integrate technological competence into teacher training. Lee and Wu (2024) show how VR can be introduced in a pre-service teacher training programme promoting an experiential approach through a combination of hands-on activities and reflection, so that each teacher finds their own style. However, as Lee and Wu (2024) suggest, this type of training is more difficult to implement among in-service teachers. Also related to language teachers' motivation and perception of self-efficacy, Kaplan-Rakowski et al. (2023) point out the importance of two key factors, teachers' own experience in the use of VR and the possibility of having IT support, in determining teachers' adoption of VR.

## 2.2. Motivation and purpose of the study

This study is framed in the context of two ESP projects. The first, an Erasmus+ KA2 Strategic Partnership project, involved teams from five European universities in the development of a set of VR scenarios for engineering students, and the second (funded by the university with which the authors are affiliated) involved the implementation of those VR scenarios in ESP classes, to analyse the reactions of students and teachers. The first project, I-BEE-VR (Immersive Business and Engineering English in Virtual Reality: A Tool for the Sustainable Mobility of the Skilled Workforce in the EU) (2018-2021), aimed to (a) address real-life needs regarding the use of English in the international workplace; (b) train engineers for mobility; and (c) design realistic, engineering-based VR scenarios, based on task-based language teaching (TBLT) (Lai & Li, 2011), to help students communicate effectively and efficiently in international professional contexts. To identify the communicative demands faced by engineering professionals in international contexts, teaching materials were developed from a comprehensive needs analysis that combined several methodological approaches. Findings from this project (Aguilar et al., 2022) informed the design of realistic VR communication scenarios reflecting the actual needs of engineers working in international environments, including job interviews, meetings, elevator pitches and other types of presentations.

The next stage involved the actual implementation of the VR materials designed, with a new project: VR-Apro-Comm (Virtual Reality Applications for the Development of Professional Communication Skills) (2023-2024), which sought to explore the optimal conditions for fostering technical communication skills in English through blended learning, combining face-to-face instruction with virtual environments. This second project, which constituted the basis of this study, aimed to examine how VR can be effectively integrated into ESP courses to enhance

students' motivation and learning of academic and professional competences. While VR-Apro-Comm gathered data from both ESP students and teachers, this study focuses specifically on teachers, for three main reasons. First, there is a disparity in the body of previous research devoted to students' reactions compared to that devoted to teachers. Second, there is a need for research on the implementation of VR by ESP teachers and materials developers, especially with regard to the affordances of VR for scaffolding professional and academic communication to their students. Third, the main motivation underpinning this study is the need to understand how ESP teachers experience the use of VR to increase their students' agency in their learning process, without losing the motivation, enjoyment and engagement of the VR experience.

Overall, this study can offer insights into how VR can be integrated into ESP courses at university level. In particular, the study does so by examining how three lecturers (the authors themselves), who have been involved in designing and implementing specific VR scenarios, reflect on their motivation to integrate VR into their ESP courses, and what their reactions and perceptions are after this implementation. Specifically, the study addresses the following research questions:

RQ1. What are the experiences of ESP lecturers when integrating VR into their teaching practices?

RQ2. To what extent do ESP lecturers perceive VR as useful, and for what reasons?

### 3. METHODOLOGY

#### 3.1. Context: Courses and participants

The teaching of technical and scientific communication in English at University Politècnica de Catalunya (UPC) is delivered through ESP courses offered by the Technical Communication Section. In recent years, these courses have reached an increasing number of students, reflecting both the growing demand driven by the internationalization of universities and industry, and the widening use of English in academic and professional contexts (Universitat Politècnica de Catalunya, 2023). The main objectives of these courses are: (1) to develop students' linguistic, intercultural, and global competences (Aguilar et al., 2022; Arnó-Macià & Aguilar, 2018); (2) to enhance engineering students' communicative abilities; and (3) to promote their digital technical communication practices. Overall, these courses aim to improve students' technical communication competence in English, a skill that is essential for professional practice in the engineering field. The courses offered by the Technical Communication Section are characterized by a tradition of continuous pedagogical improvement and innovation, often based on the integration of

technology (Arnó Macià et al., 2006). Building on this experience and leveraging the potential of immersive technologies, the current focus is on studying the implementation of VR in teaching through research on how it can be integrated at varying levels of intensity.

In order to examine the impact of VR on the lived experiences of ESP teachers, the study focuses on four university courses that incorporate VR to varying degrees during the academic year 2023-2024. Two of these are optional 3-credit ESP courses focusing on professional communication for engineers (Professional Communication for Engineers through Virtual Reality [VR1] and Professional Communication for Engineers through Virtual Reality II [VR2]) which are specifically designed to integrate immersive VR activities as core components of course delivery. The two courses involve a total of 30 teaching hours each and are organised according to a task-based approach. VR1 is structured into three modules, while VR2 consists of two modules. Each module focuses on realistic professional communicative situations. In VR1, these include applying for a new job, launching a new product and complying with safety and quality standards. In VR2, the emphasis is on participating in an intercultural meeting and delivering an elevator pitch. All learning activities revolve around each scenario and prepare students for the final real-life task (done with VR). In total, the courses feature two VR sessions (4 hours) in VR1 and one VR session (2 hours) in VR2. In contrast, in the other two ESP courses VR was included as additional activities in already existing courses, which in practice means that those sessions provided extra communication practice (meetings, job interviews, etc.) that complemented existing syllabi. One is a compulsory 3-credit course (Project 1, P1), which teaches professional communication for engineering projects, and the other is a 6-credit optional course (Academic and Professional Communication, APC), focusing on academic and professional speaking skills. The length of these two courses is 30 and 60 teaching hours respectively. Together, the courses analysed in this article provide a diverse range of instructional settings through which to investigate the pedagogical value and optimal integration of VR in ESP.

Turning now to the participants, the study focuses on the three ESP instructors (summarized in Table 1). Balbina taught the VR1 and VR2 courses and brings seven years of experience as an ESP teacher, including two years teaching VR1 and one year teaching VR2. Marta was responsible for P1 and has participated in the design of the VR course, with 30 years of experience as an ESP teacher and one year teaching P1. Finally, Elisabet was in charge of APC, she also contributed to the design of the VR course and has more than 25 years of experience as an ESP teacher, including 15 years teaching APC. It is also important to note their experience with VR: while Balbina and Marta are more experienced users, Elisabet was teaching with VR for the first time in her classes.

	BALBINA	ELISABET	MARTA
<b>ESP experience</b>	7 years	25 years	30 years
<b>VR experience</b>	Experienced user	First-time user	Experienced user
<b>Years teaching the course</b>	2 years (VR1) & 1 year (VR2)	15 years	1 year
<b>Courses</b>	VR1 & VR2	APC	P1
<b>ECTS</b>	3 ECTS	6 ECTS	3 ECTS
<b>Course type</b>	Optional	Optional	Compulsory
<b>Number of students</b>	26 & 9	20	15
<b>Role of VR in the course</b>	Fully integrated	Partially integrated	Partially integrated

**Table 1.** Summary of participants' profiles and courses

### 3.2. Data collection instruments

This article employs a collaborative-autoethnography (CAE) approach in which the three researchers share their experience to offer different perspectives on the same phenomena analyzed: the use of VR in their respective ESP courses. Therefore, the authors are themselves the participants of this study, with their stories being central to the research narrative as they self-reflect (Chang, 2013) on their teaching practices, VR implementation and effectiveness, student engagement, challenges encountered, and their own emotions. Similar to other qualitative approaches, reflexivity becomes a key concept in CAE, which, for its collaborative and dialogic nature, involves a high level of self-reflexivity (Miyahara & Fukao, 2022), including certain limitations in relation to personal stance and inherent subjectivity.

The data set for this study consists of teachers' reflective journals documenting classroom interactions and observations (e.g., Diert-Boté & Moncada-Comas, 2025). These self-reflective accounts provide qualitative descriptions that offer insights into teaching practices and instructional experiences. The prompt questions were open-ended and common to all teachers (see the Appendix for the teacher diary used in the study), so that there could be room for each teacher to adapt their journal to their own experience and teaching situation. According to the main focus of the study, questions elicited teachers' reflection on the development of the VR session, and especially how the VR contents and activities related to overall course objectives, how the VR session developed, the perceived student engagement with and reaction to VR activities as well as teacher preparation and management of the VR session. Each journal was designed to offer a comprehensive profile of each

teacher's approach to VR, which is why it covered all the elements involved in planning and teaching a VR session. In addition to the qualitative data, a five-point Likert scale was used to assess the perceived usefulness of the VR activities. This only quantitative item was added at the very end of the journal, asking teachers to make an overarching assessment of the usefulness of the activity, after having reflected in depth about the activities, pros and cons considered. These journal entries present the participants' perspectives and personal stories, adopting a teacher-centred approach, which foregrounds the teachers' lived experiences (Mercer et al., 2016).

For the present study, a total of four diaries written during the 2023-2024 academic year were selected from the larger pool as they represent distinct levels of VR experience and different patterns of VR integration. The selection of these narratives was based on the following rationale. First, our objective was to reflect the insider perspective of the authors, involved in developing and implementing the innovative materials, thus adopting the dual role of "the researchers and the researched" (Banegas & Gerlach, 2021, p. 3). Second, because in the authors' context, VR was implemented in two courses with different uses of VR (systematic integration vs. additional VR activities) as well as different levels of experience of hands-on use. As a result, it was expected that diaries could reveal different teacher profiles and how they shape ESP teachers' approaches to VR implementation. Elisabet, a first-time VR user who incorporated VR only sporadically, contributed one diary (November 2023, 1,286 words) capturing her initial encounter with VR. Balbina, an experienced and frequent VR user, contributed two diaries (2,448 words for VR1 in March 2024 and 1,909 words for VR2 in May 2024) that documented two contrasting VR teaching experiences. Marta, also experienced with VR but using it sporadically, contributed one diary (2,105 words in June 2024) reflecting on the third time she implemented VR in her course.

	BALBINA	ELISABET	MARTA
<b>Number of diaries</b>	2 diaries	1 diary	1 diary
<b>Dates</b>	Mar 2024 (VR1) and May 2024 (VR2)	Nov 2023	Jun 2024
<b>Word count</b>	2,448 words (VR1) 1,909 words (VR2)	1,286 words	2,105 words
<b>Focus of the diary</b>	Documents two contrasting VR teaching experiences.	Captures her initial encounter with VR and first implementation.	Reflects on her third time implementing VR in her course.

**Table 2.** Summary of teaching diaries information

Altogether, the selected diaries amount to 7,748 words and were written independently and immediately after the participants taught their ESP courses using VR activities (see Table 2 for a summary).

### 3.3. Data analysis

A qualitative grounded theory approach was adopted to explore how these three ESP teachers – the authors – reflect on their motivation and approaches to innovative ESP teaching, as a result of incorporating VR. This methodology enabled the generation of insights directly from participants' perceptions and experiences, without imposing early assumptions (Corbin & Strauss, 2015). For the qualitative analysis, the iterative four-stage procedure proposed by Vaismoradi et al. (2016) was employed. The diary data were examined inductively, using a content-thematic approach (Saldaña, 2016), identifying and clustering excerpts according to the themes raised by teachers to reflect on their practices and perceptions. As the diaries were structured around a series of guiding questions, the analysis began by dividing these questions among the three researchers to ensure systematic coverage of all entries. Specifically, Elisabet analysed questions 1 to 4, Marta analysed questions 5 to 8, and Balbina analysed questions 9 to 11 across all four diaries. Each researcher independently conducted an initial round of coding for her set of questions, identifying meaningful units of data (excerpts) and generating preliminary codes. We then compiled all individual coding outputs into a shared document. In a subsequent collaborative phase, we reviewed the full set of codes to check for overlaps, resolve inconsistencies, and refine labels where necessary. This step allowed us to ensure coherence and reliability in the coding process, which is especially important given our dual role as researchers and researched (Banegas & Gerlach, 2021). Following this consolidation, we organised the refined codes into broader themes that captured recurrent patterns across the diaries. These themes constitute the basis of the findings reported in the next section.

## 4. RESULTS

The general themes that emerged from the process of data analysis, some of them resulting from the guiding questions given in the diaries, included the following:

- *Integration of VR into ESP courses*, which refers to the different pathways that lecturers took as they approached VR in their respective courses.
- *Planning VR sessions*, which encompasses both the preparation of pedagogical materials alongside the technological arrangements as well as the teacher's additional role as a technology manager who supports, anticipates, and addresses potential problems.

- *The role of technology*, which captures the explicit focus on technology during the classes, resulting in technology being foregrounded in the ESP classroom.
- *Effects of VR on ESP teaching and learning*, which encompasses the affordances of VR, the possible areas of improvements and its value as a pedagogic tool for practice.

These main themes are further developed below in relation to the two research questions for this study: ESP lecturers' experience when integrating VR and perceived usefulness of VR.

#### 4.1. Integration of VR into ESP courses

The first main theme that appeared in the journals is the integration of VR into the ESP courses. The journals revealed an explicit effort by the teachers to align VR activities and course objectives in different ways. In general, VR was used to provide communicative practice linked to the topic covered in the course, with different sequencing, so that teachers either planned it at the end of the module, as a wrap-up activity, or at the beginning of a module as a warm-up activity. In the courses in which VR is systematically integrated, the activity is presented as the final task-based rehearsal, as preparation for a posterior task that would be assessed (Chen, 2024; Lai & Li, 2011).

The following two excerpts (1 and 2) illustrate the explicit connection of VR with course contents. In the first excerpt, the teacher connects the VR session with meetings and job interviews, thus framing VR as a “realistic practice” that serves as a transition between two topics (wrapping up meetings and as an introduction to job interviews):

- (1) “The course had already dealt with meetings and we were about to work on job interviews, so students could see the session as realistic practice integrated into the course” (E\_APC).

The second excerpt is similar in purpose, but this actual VR session was planned according to technological constraints. As the students had already completed a VR activity and all the equipment was set up, the teacher decided to introduce the next course unit through the VR activities:

- (2) “Students finished job interviews in half an hour. So I told them that in order to make the most of the situation (they all had their goggles on and working), we could try to do some warm-up of the following module (team meetings and feasibility report), even though we hadn't done anything in class before” (M\_P1).

Therefore, whether the VR is planned as an integrated activity in connection with the module or as incorporated as extra practice, it should make the most of the

technology already in use in the classroom – i.e., compared to what happened in the past with computer labs, which were planned as separate sessions. Once VR has been set up in the classroom, it allows the flexibility of repeating the activities or doing new ones as the need arises.

## **4.2. Planning VR sessions**

Delving deeper into the integration of VR, another salient theme in the journals was the planning of the VR sessions, including not only the pedagogic dimension, but also the technical one, which renders classes far more complex and demanding than traditional classroom sessions. This means allowing more time for dealing with technicalities, such as ensuring that the technology was functional, charged, transported, and ready for classroom use. Excerpt 3 below gives a detailed account of the different tasks involved in the management of technology:

- (3) “As it’s impossible to carry 13 goggles, I actually told 4 students to pop up to my office before class so they could help carry them to the class, thank god! You really need to plan ahead when you have goggles to actually feel comfortable and secure with what you are doing” (B\_VR1).

In addition to teachers’ logistical responsibilities, another hurdle that comes with the integration of VR planning is students’ need for preparation (excerpt 4). When VR sessions are designed as realistic communication scenarios, such as simulating a pitch in front of an audience, students have to come prepared to make effective use of the immersive environment:

- (4) “After presenting the topic, I asked (and begged!) students to come with a clear idea of what their elevator pitch would be about so that during the VR activity (today’s session) they could put on the goggles and start practicing. This was good because all of them came more or less prepared” (B\_VR2).

As can be seen in the excerpts above, when planning VR sessions, teachers take on an additional role as technology managers and support providers, a responsibility that extends beyond their usual pedagogical duties. Introducing VR, therefore, requires extra planning not only by the teacher, but also by the students, who need preparation to make the most of the VR experience, particularly because it involves the physical detachment from the classroom setting to become involved in a different scenario.

## **4.3. The role of technology**

Closely related to the additional planning and preparation involved in VR is the theme of the forefronting of technology. VR becomes a different scenario that is not

naturally blended into the classroom. As opposed to other technologies that are inconspicuous in current language classrooms (e.g., laptops, tablets or smartphones), VR is still highly visible and requires specific preparation and management, which is probably why technology itself sometimes becomes the focus of attention. Using Bax's (2003) term, this technology is not yet "normalised", in a way that would be comparable to computer labs in the past, which were separated from the regular classroom.

The salience of technology appears in the teachers' journals, and beyond its affordances for ESP learning, technology also becomes a reason for concern, especially related to the teachers' extra role of assisting students simultaneously with a technology that is new for most of the students and requires certain familiarisation (excerpts 5 and 6). This additional task can lead to frustration or stress for the teacher when technical difficulties arise:

- (5) "It was disappointing for me to know that after all I couldn't help [the student]. I was busy trying to help the rest of the students" (M\_P1).
- (6) "Technical issues are really stressful and if several students have a problem you cannot multiply yourself" (B\_VR1).

These excerpts highlight how the salience of technology can shift the teacher's focus away from pedagogical objectives toward managing equipment. Additionally, as VR is still a relatively uncommon technology and requires specific equipment, it poses certain challenges for both teachers and students. However, with younger students that may be more familiar with immersive technologies, the learning curve can be less steep than that for teachers, which may take teachers out of their comfort zone, as they are no longer in control:

- (7) "The two teachers in class monitored the groups, with my colleague being more adept at the use and configuration of the VR. Technical issues can hinder the activity, so I felt very confident with my colleague's presence in the classroom. I preferred to deal with teaching aspects. It was good that students quickly learned how to deal with VR" (E\_APC).

Excerpt 7 above emphasizes how the introduction of VR encourages a redistribution of roles in the classroom: engineering students seem more technologically autonomous, while teachers may depend more on collaboration with colleagues who possess stronger technical skills. Bringing VR technology into the ESP classroom comes with the need for teachers and students to adapt. In addition, as VR in this context was connected with research and teaching innovation, the teachers could engage in collaboration and learning from each other (Cutrim Schmid & Hegelheimer, 2014), thus paving their own paths in professional development.

#### 4.4. Effects of VR on ESP teaching and learning

In relation to the second research question, on perceived usefulness, a central theme that emerged was teachers' perceptions of the effects of VR on teaching and learning. VR was perceived positively as a scenario for low-stakes realistic practice. As the goggles provide a different reality from that of the classroom, students can practise their speaking in a realistic setting, but without the pressure of feeling observed by the teacher or their peers. Students can engage authentically with the tasks without the "saliency and high 'public visibility'" that sometimes accompanies classroom performance (Diert-Boté, 2023; Mercer, 2011, p. 162). This is reflected below (excerpt 8), in which VR is viewed as a way of providing a "relaxed and comfortable" atmosphere for speaking practice.

- (8) "I want them to feel relaxed and comfortable, like really you are in your VR goggles and you don't need to worry about the teacher paying attention to what you say" (B\_VR1).

Apart from connecting VR to emotion and a gaming (fun) component, teachers also connect it to a communicative approach to language learning. In VR sessions, students are encouraged to engage in extensive speaking practice, often prioritising fluency over accuracy, as there is less focus on language correctness. One teacher reflected the following in her journal (excerpt 9):

- (9) "It's like VR enhances and facilitates the communicative approach to learning, students are overwhelmed by the excitement and cannot aim at accuracy, yet they speak and speak, which is very good as well" (M\_P1).

As the focus shifts from being correct to actually communicating, teachers perceive this as a significant benefit as it aligns with the goals of ESP teaching: helping students develop the practical communicative skills they will need in professional, real-world situations, while simultaneously maintaining engagement through the novelty and excitement of the VR environment.

The perceived overall effect of VR on learning was mainly positive. Both teachers and students had a perception of learning achievement, which produced a virtuous circle: the higher the perceived student satisfaction, the more rewarding the experience was for the teacher. The use of VR had a positive impact on teacher emotions ("happy and satisfied") and led to a rewarding feeling, as VR increased students' motivation towards course contents and materials:

- (10) "I had the feeling that this was sort of reassuring for them, it helped them make the most and take maximum advantage from the goggles" (M\_P1).
- (11) "I'm actually happy and satisfied because students were going through the PPT used in class and asking questions about particular techniques" (B\_VR1).

These reflections highlight the mutually reinforcing relationship between student engagement and teacher satisfaction. On the one hand, one teacher comments that VR was “sort of reassuring for students” (excerpt 10), thus reducing their anxiety and allowing them to practice the language more confidently. On the other hand, the VR activity not only encouraged engagement with the immersive scenario, but also curiosity and interaction with course materials (“students were going through the PPT used in class” [excerpt 11]), thus reflecting deeper cognitive involvement.

At some points throughout the journals, however, mixed feelings emerged as some of the activities did not work out as expected. This resonates with the point made above about the balance between free speaking practice and attention to language. So, in excerpt 12 below, the teacher expresses the positive feeling of students’ engaging in free speaking practice (one of the main effects of VR pointed out in the journals), mixed with a feeling of frustration that they did not prepare enough for the presentation they had to deliver.

(12) “So, were they engaged with preparing the oral presentation? Yes. But, were they engaged with rehearsing the oral presentation? No. That’s why I have like two feelings, I’m satisfied that it was an opportunity for them to actually use English (...). But...I also wanted them to rehearse and actually speak and perform some parts of their oral presentation. So I’m a bit sad that this didn’t work out” (B\_VR1).

In sum, the overall effects of VR perceived by the teachers were a combination of engagement, enjoyment, and a sense of detachment from the classroom which encouraged students to speak freely in a low-stakes environment that simulated authentic professional communication. This situation promoted students’ participation and speaking practice, increasing their interest in course contents. On the other hand, this involved less control by the teacher and less attention to a focus on language or even the students’ feeling that they did not need to prepare for the activity.

#### 4.5. Perceived usefulness of VR

Also in connection with teachers’ perception of the usefulness of VR, the last question in the journal was intended to provide an overarching response in the form of a score (5-point Likert scale), which complemented the previous reflection on usefulness, and yielded a generally positive result. The two teachers that carried out VR activities in sporadic sessions of their ESP courses (Marta and Elisabet) rated the VR activity as very useful (with a score of 4), while the teacher that engaged in a more intensive integration of VR, Balbina, gave two completely different ratings in her two journals, one with a score of 2 (somewhat useful) and one with a score of 5 (extremely useful). A closer look at the context of implementation and the qualitative comments yields further insights into perceived usefulness. On the one

hand, for the teachers that implemented VR sporadically in already existing ESP courses, such activities were seen as a transformation of communication practice activities, fostering greater participation of students in speaking practice, which resulted in a relaxed and rewarding experience for teacher and students alike. Another transformation noted in the journal is that of enhanced free participation by the students, who do not feel pressure for linguistic accuracy (excerpt 13):

- (13) “because they speak and speak (even if with mistakes) and as a teacher it’s good to feel the good vibes in class” (M\_P1).

The disparity of ratings in the two journals by the teacher that intensively implemented VR can be explained by several main factors. Focusing first on the positive experience, she foregrounds (1) the quality of a well-designed pedagogical task within the VR setting that supports effective student engagement, (2) the students’ preparation for the class, which ensures that VR time focuses on communicative practice, and (3) the small number of students, which supports closer guidance and easier classroom management (excerpt 14). Thus, the high score was accompanied by a qualitative comment that pointed to these three factors that contributed to the perceived success and usefulness of the VR session and boosted teacher motivation and satisfaction:

- (14) “I think that this is one of the best VR experiences that I had. I think the task is quite well prepared in the VR scenario and also students came prepared to practice, which is actually key for the VR to work correctly. So yes, it was useful, it was motivating for both me and the students (I think), and that makes me happy. Again, I think I have to repeat that one of the main reasons for the success this time is the number of students” (B\_VR2).

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On the other hand, the low score given by the same teacher in her second journal can be explained by the students’ lack of preparation for the activity, an oral presentation that should have been practised before class, as seen in excerpt 15 below:

- (15) “taking into account how the class has developed I think it’s a 2 (I don’t want to so pessimistic and give it a 1), but I think the problem is that students were not into rehearsing at all and that’s what VR is for in this activity, rehearsing and practicing oral and presentation skills. I thought it would have been between a 4 or a 5, but after my experience I have to sadly say 2” (B\_VR1).

From this excerpt, it seems that the lack of preparation on the students’ part directly undermined the pedagogical purpose of the session. In performance-based activities such as presentations, VR relies on students entering the virtual environment ready to practise rather than to draft or improvise. It is also important to highlight that the teacher reports a mismatch between her expectation and the lived experience (“I thought it would have been between a 4 or a 5, but [...] I have to sadly say 2”).

Nevertheless, VR is generally perceived by teachers as useful and a pedagogically valuable tool, a finding that is consistent with the overall views presented in the journals. The teachers' reflections suggest that the conditions for effective VR implementation go beyond technology, with apparent factors for success being a small number of students in class, the integration of the VR scenario in class activities, and students' previous preparation for participating in it.

## 5. DISCUSSION AND CONCLUSIONS

This exploratory study inquired into the perspectives and practices of ESP teachers that engaged in innovation by integrating VR activities into their classrooms. Motivated by a teaching innovation project that involved the development of specific scenarios simulating target professional situations, the authors of this paper undertook an exploratory analysis of initial VR implementation. Through ESP teachers' reflective journals, this study aimed to answer two research questions related to ESP teachers' experience and perceived usefulness of using VR.

Regarding the first question, teachers' experience in integrating VR into their ESP courses, findings point to the salience of technology, as VR becomes the focus of attention in the classroom at different stages: planning of the activity and classroom management, which requires teachers to take on extra roles, such as those of technology manager and technical support. The increased complexity of the teachers' role gives rise to multiple, and mixed, feelings about the integration of VR. This finding is in line with previous research reporting on the transformation of teaching strategies (Foreman-Brown et al., 2023). For teachers that may be less used to emerging technologies than their younger students, the integration of VR may take them out of their comfort zone. This is seen in the journals as they report on the learning curve posed on the teachers, as they have to become familiar with a new technology. These findings resonate with Karacan and Akoğlu's (2021) reported challenges on traditional teaching practices and they also point to the need to support ESP teachers that are using VR by means of institutional and IT support or through specific teacher training (Kaplan-Rakowski et al., 2023; Lee & Wu, 2024). These teachers were self-selected and could overcome the difficulties and challenges they faced, yet institutional support would be needed to reward teachers willing to use such innovative methods that consolidate the long term use of VR, precluding stress and eventually burnout among teachers.

Another remarkable insight offered by the journals is that VR affords opportunities for real practice, in scenarios that embody the communicative situations covered in the ESP course. VR thus provides a relaxed space for students to participate and engage, which in turn contributes to reinforcing motivation and self-confidence, leading to rewarding experiences for teachers. This finding contributes to the literature on VR and immersive environments as promoters of engagement, motivation and affective skills (e.g., Gruber & Kaplan-Rakowski, 2020;

Jensen & Konradsen 2018; Lin & Wang, 2021; Melchor-Couto & Herrera, 2022), corroborating the suitability of task-based teaching for VR (Chen, 2024).

In response to the second research question, on VR perceived usefulness by ESP lecturers, the overall ratings were very high and informative if we consider that these ratings resulted from deep reflection and an effort to summarise their experience in a number. The teachers who sporadically used it in class gave it a high rating (4, very useful), reporting reasons linked to VR providing students with scenarios for real practice “outside” class, i.e., under less control by the teacher and with lower stakes than if they were in a real scenario. This situation leads to increased participation (with less attention to accuracy or formal aspects of language). Students’ task engagement ties in with previous studies and so does the boost of positive emotions related to positive experience (Ślósarz et al., 2022).

The huge gap in ratings for the intensive VR course (extremely useful in one session and somewhat useful in the other) points to the importance of conditions of implementation and learning outcomes in the analysis of VR applications. This exploratory study suggests conditions that could explain successful VR implementation, such as having two teachers in class instead of one, a small number of students, specifically-designed VR scenarios, and students’ preparation before participating in the VR scenario. For VR to become a transformational tool for immersing students in realistic communication practices, it is important to keep a balance between enjoyment and language learning. Therefore, ESP teachers should encourage free speaking in an enjoyable environment, prioritising fluency over accuracy, while setting and structuring clear tasks so that students can prepare for effective professional communication in VR in the same way as they would prepare for real-life scenarios (e.g., oral presentations, meetings, job interviews). Additionally, while some VR oral activities used in the study are suitable in an English for general academic purposes (EGAP) approach (e.g., job interviews or informal/formal meetings), others like technical presentations, elevator pitches, or meetings on technical topics can be adapted to an English for specific academic purposes (ESAP) approach. In this way, VR can be said to feature a certain degree of transversality, as it can accommodate varying levels of disciplinary specificity. This flexibility speaks directly to long-standing debates in ESP concerning the extent to which instruction should prioritise narrow disciplinary specificity versus transferable academic and professional competences (e.g., Hyland, 2017). Therefore, VR-based tasks allow teachers to tailor tasks to different levels of disciplinary focus, depending on the task design and the intended learning outcomes.

Importantly, VR can enhance the potential of ESP courses to engage students in tasks that closely mirror real professional or disciplinary practice. By providing VR-based authentic scenarios, ESP courses can foster the application of contents beyond the classroom thus contributing to a higher relevance of ESP to students’ target professional practices. This innovative approach may enhance the attractiveness of ESP courses, showing that the scope of ESP extends beyond English

language skills to cover disciplinary communication skills. This distinction contributes to highlighting the importance of ESP provision, which becomes crucial in contexts in which English-medium instruction (EMI) tends to dominate, as university policies are often developed under the assumption that students will learn English through mere exposure to subject matter content imparted in this language (Aguilar-Pérez et al., 2025).

Finally, as part of the conditions for implementation, attention should be paid not only to the extra role that the ESP teacher takes as technology manager and support, but also to the provision of teacher support if institutions intend to implement VR activities on a larger scale. Facilitating training and teacher collaboration (Cutrim Schmid & Hegelheimer, 2014) can enable the progressive implementation of VR from sporadic sessions to greater integration in ESP courses, both for increasing its transformative effects on students' communication skills and for contributing to normalising this technology in the classroom (Bax, 2003). When VR in ESP is aimed at providing students with real-life scenarios, it seems appropriate to adopt a task-based approach. Therefore, teachers need to face the two-pronged challenge of planning very well how VR is integrated and used in class while consistently maintaining a high motivation – although some sessions are more self-fulfilling than others – given that VR renders classes more demanding. This learning journey lets ESP teachers grow professionally speaking, who find themselves in a virtuous circle that starts from innovative teaching, to research that feeds to innovative teaching, which needs to be supported by institutions if innovation is aimed to be sustainable over time.

This study is a pioneering contribution to ESP literature as an exploration of the lived experience of ESP teachers in the integration of VR for students' development of professional communication skills. Despite the small number of teachers and the subjectivity limitations of CAE, this study shows how ESP teachers' lived experiences that span from materials and course design to implementation of a new technology like VR can reveal different teacher profiles, which not only becomes a powerful tool for professional development, but can also bring implications for other ESP contexts. Further studies are needed to delve deeper into pedagogic decisions to be adopted in the integration of VR, identifying the affordances of VR applications in ESP learning, such as interaction, adaptation of the level of difficulty according to students' proficiency, and especially AI-enhancement. It is through similar collaborative sharing of teachers' experiences with VR that ESP teacher professional development can be stepped up and good practices in the use of VR be accrued within the ESP profession.

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## Appendix

### Teaching diary

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1. What were the primary learning objectives for today's lesson? How were they linked with the overall course objectives?
2. How was the use of virtual reality integrated into the lesson plan?
3. How did you combine VR and other activities? How did you introduce and manage VR?
4. Share your observations regarding how students interacted with the virtual reality environment. Did they seem engaged and motivated by the VR activities?
5. Were there any technical challenges or limitations encountered while using virtual reality, and how did you address them?
6. Did students use/apply the material (vocabulary, grammar, formality, etc.) presented in class when doing the VR activities?
7. Did you observe instances where students used English effectively within the virtual reality scenarios? Do you think this is useful for their language learning?
8. Do you see that students are more confident in their use of English? Do you see students more engaged and participative in the activities?
9. Discuss any teaching strategies or approaches you employed to support students within the VR context.
10. How did you feel while preparing for the day of the Virtual Reality activity? How did you feel while implementing the activity in class?
11. Rate from 1 - 5 the usefulness of the virtual reality activity
  - 1 - not at all useful
  - 2 - somewhat useful
  - 3 - fairly useful
  - 4 - very useful
  - 5 - extremely useful