

EDITORIAL: TECHNOLOGY AND EXTENDED REALITY IN ESP: FROM NOVELTY TO SITUATED PRACTICE

Guest editors

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1. BACKGROUND

The rapid advancement of digital technologies is profoundly transforming not only the ways we live and work, but also the processes through which learning takes place (McDiarmid & Zhao, 2022). In an increasingly interconnected and knowledge-driven world, the need to design innovative, engaging, and pedagogically effective approaches to support students' learning has become imperative (Pallavicini & Anesa, 2026). In this context, extended reality (XR) has rapidly moved from the margins of educational experimentation to the centre of many conversations about the future of language learning. In English language teaching more broadly, XR has been associated with immersion, presence, embodiment, and enhanced engagement, and a growing research base has explored its potential to reshape language learning environments (e.g., Parmaxi & Demetriou, 2020; Quintero et al., 2019).

XR, and in particular virtual reality (VR), provides immersive environments that replicate real-life contexts. For language learners, such environments enable authentic conversational practice, contextualized vocabulary use, and engagement with cultural and pragmatic elements that are otherwise difficult to access. Consequently, VR can support vocabulary development, refine pronunciation, and foster intercultural competence. Legault et al. (2019) demonstrated that VR-based language instruction can substantially boost learner motivation and engagement, particularly among younger learners who are drawn to interactive experiences. Additionally, VR has the potential to alleviate language learning anxiety, which represents a common challenge in second language acquisition, by offering low-pressure virtual spaces for practice.

Yet, despite this momentum, XR remains comparatively underexplored in

English for Specific Purposes (ESP), where the central concern is not language in general but language as it is used in professional communities, disciplinary practices, and situated communicative events. Also, it should be pointed out that XR technologies have often been applied without sufficient consideration of learners' pedagogical needs. This limitation stems from the tendency to assess XR tools primarily in terms of their technical features rather than their role within broader instructional frameworks. As a result, emphasis is frequently placed on novelty and technological sophistication instead of alignment with sound pedagogical practices (Saltan & Arslan, 2017).

This Special Issue is mainly motivated by the key consideration that XR often promises authenticity, but authenticity in ESP is never automatic. Authentic learning, as conceptualized by Herrington et al. (2014), refers to an instructional approach that embeds learning activities within real-world contexts (see also Carter et al., 2011). By doing so, it enables learners to engage with tasks that mirror the complexity and problem-solving demands they encounter in everyday life, thereby fostering more meaningful and transferable learning experiences. In this context, realistic visuals do not necessarily generate realistic communication. A virtual courtroom, a simulated clinic, a construction site scenario, or an immersive business meeting can reproduce the surface of professional life while still offering learners linguistically generic tasks, limited interactional complexity, or simplified genre demands. The challenge, then, is not merely to bring XR into ESP classrooms, but to ask what forms of disciplinary communication XR can support, under what pedagogical conditions, and with what kinds of learning evidence.

2. ORGANIZATION OF THIS SPECIAL ISSUE

The contributions collected here share the premise that XR should not be treated as a solution in search of a problem. Instead, XR is approached as an environment whose educational value emerges through design: through the alignment of XR experiences with needs analysis, syllabus design, genre awareness, corpus-informed language input, and credible approaches to evaluation. In this sense, XR becomes less a technological novelty and more a testing ground for core ESP questions: what counts as authenticity, how learners develop professional communicative competence, and how teachers can scaffold learning without stripping professional discourse of its complexity.

More specifically, the first paper of this Special Issue focuses on broad ecosystem narratives, particularly those connected to the metaverse. **Chaves-Yuste's** study starts with a reflection on how ESP in higher education can benefit from experiential learning in metaverse-ready environments. Subsequently, it examines how VR-based video production can impact speaking skills among commerce undergraduates. Thus, it positions immersive technologies within emerging models of meta-education and metaverse-compatible learning. Its

findings suggest that VR tools can support speaking performance and learner motivation while also revealing the practical frictions that accompany innovation, such as time demands and training requirements. The study concludes that XR may offer powerful learning affordances, but implementation must be grounded in realistic classroom conditions and in designs that align immersive engagement with specific ESP outcomes.

Teacher experience and identity emerge as key elements in the following contribution by **Moncada-Comas, Arnó-Macià, and Aguilar-Pérez**, which explores ESP teachers' perceptions of implementing VR through collaborative autoethnography. This work reminds us that XR is not only a learner-facing technology; rather, it contributes to reshaping classroom dynamics and teacher roles in a significant way. Teachers must manage the pedagogical activity while simultaneously mastering the technological system, and this dual responsibility can create vulnerability as well as motivation. By documenting these lived tensions, the study adds texture to acceptance-model approaches and makes visible what often remains implicit: that innovative technology use is also a story of teacher agency, risk, and professional growth.

The Special Issue also broadens XR beyond headset-based approaches through contributions that emphasize accessibility and low-threshold immersion. **Bellés-Calvera's** work on intercultural training through XR scenarios in Tourism ESP uses a digital escape room designed with *Genially* to simulate authentic intercultural dilemmas without the need for high-end hardware. This approach is pedagogically important and politically consequential. Indeed, if XR in ESP becomes synonymous with expensive devices and resource-rich institutions, it risks reproducing inequity in innovation. Low-threshold immersive tasks show that XR principles (e.g., narrative, branching scenarios, multimodal prompts, and contextualized decision-making) can be implemented in accessible formats that still support complex competencies such as intercultural communicative competence, pragmatic awareness, and adaptive professional interaction. Thus, this study offers a contribution to XR-enhanced ESP pedagogy by describing how XR can simulate complex intercultural environments and offers a useful replicable model in the field.

The next study, by **Topalov and Knežević**, focuses on informal digital learning of English (IDLE) practices and fundamentally reframes XR competence as something shaped not only in classrooms but also in learners' everyday digital ecologies. The authors identify distinct factors in students' perceived usefulness of digital practices; more specifically, their analysis suggests that learners' readiness for XR-mediated professional communication is connected to how they already engage with English across platforms, tutorials, media, and peer interactions. This raises a productive challenge for ESP pedagogy: rather than treating XR as a sealed intervention, how can educators strategically connect structured instruction with informal practices so that learners develop the multimodal and collaborative fluency increasingly required in XR environments?

Along similar lines, several contributions in this issue emphasize that XR's

pedagogical promise will remain fragile if it is driven solely by enthusiastic individuals rather than supported by systemic frameworks. **Alaoui Mhamdi's** study on XR adoption in Moroccan higher education addresses the determinants of ESP instructors' intention to adopt XR and develops the concept of pedagogical proofing as a staged process through which teachers develop design fluency, authority, and epistemic flexibility for sustained implementation. The study highlights a pattern that is likely to resonate far beyond the Moroccan context: perceived pedagogical value may be high while operational readiness remains uncertain, and behavioural intention can collapse when institutional support is inadequate. Importantly, this research foregrounds the affective and emotional dimensions of adoption, recognizing that innovation demands labour that is not evenly distributed. Such work invites ESP researchers and institutions alike to treat teacher training, infrastructure, and administrative backing as integral parts of XR-based interventions rather than peripheral concerns.

A related perspective is offered by **Seiz Ortiz**, who proposes a theoretical framework for the pedagogical use of XR in university-level ESP, developed through a combination of bibliometric mapping and teacher-informed needs analysis. This study suggests that XR research has generated many promising pilot studies, but its impact risks remaining fragmented without an appropriate definition of models that clarify which language learning components XR can enhance. Also, it is vital to consider how the single studies can be integrated into the broader teaching and learning process without running into oversimplifications. By grounding the framework in both research trends and practitioner perspectives, this contribution supports a transition from isolated XR experiments toward more transferable pedagogical principles.

The next contribution explores XR, more specifically, as a tool for discipline-specific lexical and conceptual learning. **Baselli's** study on immersive glossaries in VR situates XR in a domain where ESP has traditionally relied on explicit instruction: specialized terminology. In the context of fashion, the immersive glossary is designed to expose learners to terms through multimodal, spatialized encounters, and its effectiveness is examined through a pre- and post-test comparison between a VR condition and a more traditional glossary condition. This line of inquiry is valuable because it frames XR not simply as a speaking simulator, but as a means of conceptual anchoring in which terminology becomes associated with objects, contexts, and multimodal cues. It also contributes to a more mature evaluation culture in XR research, asking whether immersion adds measurable value compared to simpler and cheaper tools. If XR is to be sustainable in ESP, it must repeatedly justify itself through such comparative logic: not "is XR interesting?" but "what does XR improve, and at what cost?"

The final paper, by **Anesa, Falcone, Giofré, Marcutti, and Patat**, illustrates how XR can be integrated into ESP teaching and training in different fields remaining faithful to disciplinary language. This paper arises from the ESP-XR project and starts from the recognition that, although XR has been widely discussed in language

education, its application in tertiary-level ESP settings still requires careful methodological grounding. This research focuses on the opportunities and constraints of XR, and in particular augmented reality (AR), in medical, business, and legal contexts. What is distinctive in this contribution is the central role assigned to corpus-based learning and to ESP course and syllabus design principles. Rather than treating immersion as sufficient, the authors show how corpora can guide the creation of learning materials that reflect naturally occurring language, strengthening the learners' capacity to participate in authentic communicative scenarios. At the same time, their work foregrounds a dilemma that runs across XR pedagogy: how to adapt, scaffold, and even gamify experiences without compromising the authenticity of professional discourse. In doing so, this study connects XR research to long-standing ESP debates about materials design, the status of specialized genres, and the balance between pedagogical support and real-world complexity.

3. CONCLUSIONS

Taken together, the contributions in this Special Issue argue for a significant shift in how XR is conceptualized in ESP. The key question is no longer whether XR is impressive, engaging, or aesthetically attractive, but whether it supports situated professional communication in ways that are methodologically grounded and pedagogically sustainable. Authenticity must be designed rather than assumed, and design must be accountable to disciplinary genres, discourse patterns, and professional epistemologies. Engagement must be measured rather than celebrated, and it must be linked to outcomes that matter in ESP. Therefore, adoption should be understood as a socio-institutional process rather than an individual choice, shaped by support, infrastructure, training, and emotional labour. Also, inclusion must remain central: XR in ESP should not be imagined solely through expensive technologies but through the broader family of immersive tools and approaches that can be adapted across contexts.

With regard to future directions, although existing studies on XR have largely emphasized individual learning, the potential of these technologies to support collaborative and socially oriented learning remains substantial yet relatively underexplored. Social VR platforms, for example, can enable learners to engage with peers and instructors within shared virtual spaces, fostering collaborative practice and opportunities for peer feedback. In light of this, future research should investigate how such social XR environments can be effectively used to enhance communicative competence and intercultural awareness among language learners. In addition, cross-disciplinary uses of XR offer important possibilities for advancing new approaches to language education, as the inherently interdisciplinary nature of XR facilitates integration across subject areas.

Along these lines, this Special Issue contributes not a single model of XR-based ESP pedagogy, but a set of interlocking perspectives that can guide future research and practice. It shows that XR is most valuable when it becomes a space for disciplined rehearsal of professional communication, informed by corpora and genres, scaffolded thoughtfully, and evaluated with credible evidence. If ESP has always been defined by its commitment to specificity, authenticity, and professional relevance, then XR becomes a particularly revealing test of that commitment. It offers the possibility of staging professional life in ways that bring together language, action, and context, but it also demands that educators remain critical, methodologically rigorous, and pedagogically humble.

From this perspective, XR is more than just another technological addition to ESP. Rather, it creates a context in which some of the field's long-standing questions take on renewed urgency. What do we really mean by authentic communication when professional interaction is increasingly hybrid, mediated by platforms, and multimodal? How do learners develop competence not only in specialized vocabulary, but also in the genres, positions, and interactional practices of their disciplines? And how can teachers design immersive tasks that remain faithful to disciplinary practices while still being teachable, assessable, and inclusive? The contributions in this Special Issue do not attempt to resolve these questions once and for all. Instead, they engage with them in grounded and evidence-based ways. Taken together, they aim to support researchers, teachers, and institutions in moving beyond initial enthusiasm for XR and toward forms of pedagogy that are more closely aligned with the core aims of ESP, helping learners not just navigate simulated environments, but operate effectively in the professional contexts those environments are meant to reflect.

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