WILOS360 - IMMERSIVE REALITY IN EDUCATION

An introduction to immersive learning as a pedagogical approach

focusing on experiential and student-centred learning

Introduction: Immersive Learning as a Pedagogical Approach

Immersive learning, often mistakenly conflated solely with technological applications like [virtual reality] (VR) and augmented reality (AR) (Mystakidis & Lympouridis, 2023; Dengel, 2024; Dotsenko & Van, 2023), is fundamentally a pedagogical approach centered on creating profound experiential and student-centered learning opportunities (Motley et al., 2024; Kasumu et al., 2022; S. & P., 2023). While technology can certainly enhance immersion, the core of this approach lies in its capacity to engage learners deeply on emotional and cognitive levels, fostering critical reflection and intercultural understanding through carefully designed experiences (Qingchen, 2024; Li & Kulich, 2025).

Immersion Beyond Technology: Experiential and Active Learning

A significant aspect of immersive learning is its inherent nature to transcend mere technological implementation (Motley et al., 2024). While immersive technologies such as VR, AR, and mixed reality (MR) are powerful tools that can create simulated environments, the concept of immersion itself is broader, referring to a sense of presence within a learning scenario, whether physical or digital (Mystakidis & Lympouridis, 2023; Dengel, 2022; Dotsenko & Van, 2023). This perspective posits that true immersive learning prioritizes active phenomenological experiences over passive absorption of information (Mystakidis & Lympouridis, 2023; Dengel, 2022). For instance, traditional methods like field trips or service-learning, foreign-language instruction, and internships also constitute

immersive learning practices when they facilitate a deep engagement with the subject matter and context (Motley et al., 2024; Yao, 2024). The effectiveness of these experiences stems from their ability to place learners directly into authentic or simulated scenarios, demanding active participation and problem-solving, aligning with experiential learning principles (Andriole, 2023). The foundational principles of "learning-by-doing" emphasize an active cycle of experience, reflection, conceptualization, and experimentation, underscoring that effective learning is not a passive process (Xiong & Peng, 2024; Sánchez-López et al., 2024). For example, in industrial design education, immersive instruction can enrich and make learning experiences more practical, addressing the challenges of superficiality and overemphasis on theory (Li et al., 2024). Even in contexts like small colleges, a varied set of student needs often necessitates approaches that go beyond traditional classroom settings to provide deeper, more integrated learning experiences (Blake & Wynn, 2019).

Emotional and Cognitive Engagement in Immersive Learning

Furthermore, immersive learning significantly focuses on engaging students emotionally and cognitively through experiences (Sungheetha et al., 2023; Qingchen, 2024; Soelistya et al., 2023). By simulating real-world environments or situations, immersive learning can heighten learners' situational engagement, directly influencing their emotional responses and learning behaviors (Qingchen, 2024). Emotional engagement, which can be measured through metrics like touch-screen-based emotion analysis, is crucial for enhancing the effectiveness of virtual learning environments (Sungheetha et al., 2023). This emotional connection helps in creating memorable learning experiences that are more likely to lead to deeper understanding and retention (Riccardo et al., 2024). Cognitive engagement is similarly fostered as learners are required to actively construct and adapt their cognitive models within the immersive environment (Dengel, 2022). Studies show that collaborative generative learning activities within immersive VR can increase learning outcomes, indicating that the active mental processing prompted by such environments is beneficial (Petersen et al., 2023). For example, a study involving immersive virtual reality (IVR) in an analytical biotechnology course demonstrated its effectiveness in promoting student learning and academic engagement (Sánchez-López et al., 2024). The process of "explore first" in virtual and immersive learning environments (VILEs) promotes critical thinking and

problem-solving skills by actively involving learners in hands-on activities that foster deeper understanding (Cruz et al., 2024). The cognitive-affective theory of learning with media (CATLM) highlights the interplay between cognitive engagement and learners' willingness to use a system, underscoring the importance of emotional and cognitive design in immersive experiences (Xiong & Peng, 2024).

Reflection and Intercultural Understanding Through Immersive Learning

Finally, immersive learning serves as a powerful pedagogical tool to support discussion, reflection, and intercultural understanding (Silseth et al., 2024; Unknown, 2024; Li & Kulich, 2025). Immersive experiences often necessitate collaborative meaning-making, where students can discuss and reflect on their shared experiences within the simulated environment (Silseth et al., 2024). For instance, a learning design involving cinematic VR films allowed students to encounter personal stories of exclusion and discrimination, followed by reflective discussions, demonstrating how immersive environments can foster collaborative learning and critical reflection (Silseth et al., 2024).

This visual depicts students engaged in a collaborative learning activity within an immersive VR setting, which illustrates how shared experiences in virtual environments can be leveraged for discussion and meaning-making, particularly concerning sensitive social topics (Silseth et al., 2024).

Such reflective practices are critical for processing complex experiences and internalizing lessons learned, aligning with pedagogical principles that advocate for structured debriefs and guided practice to solidify learning . In the context of intercultural understanding, immersive learning, especially through virtual learning environments (VLEs), offers unique opportunities to develop intercultural competence (Budiharso et al., 2024). Spherical video-based virtual reality (SVVR) can create immersive VLEs enhanced with interactive strategies, enabling active learner engagement and facilitating the development of intercultural skills that are often difficult to achieve in traditional settings due to lack of authentic exposure (Unknown, 2024). Immersive language courses, for example, have shown to be effective not only in improving second language ability but also in fostering cultural adaptation and sensitivity by engaging learners directly in linguistic and cultural

contexts (Yao, 2024). Educational frameworks that combine didactic instruction with experiential learning, such as through intercultural communication courses, have also been shown to be effective in developing intercultural competence (Li & Kulich, 2025). The ability of immersive learning to create "artificial experiences perceived as non-mediated" allows for rich opportunities for perspective-taking and empathy development, essential components of intercultural understanding (Dengel, 2022). The design of immersive learning systems, which includes pedagogical modeling and multidisciplinary input, is crucial for systematically exploring solutions that support these learning outcomes (Sanusi et al., 2024).

Summary

In summary, immersive learning is a comprehensive pedagogical approach that extends beyond technological tools to encompass any experience that deeply engages students emotionally and cognitively. It is a powerful method for cultivating critical thinking, fostering reflective practice, and building intercultural understanding by placing learners in contexts that demand active participation and personal reflection (Motley et al., 2024; Silseth et al., 2024; Qingchen, 2024; Li & Kulich, 2025).

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