

Toward Lifelong and Life-Wide Learning through a Sustainable Open Universal Learning (SOUL) Framework: A Systematic Review

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Abstract

Extended Reality (XR) represents a suite of immersive technologies encompassing Mixed Reality (MR), Virtual Reality (VR), and Augmented Reality (AR) that is fundamentally reshaping the landscape of business, training, education, and entertainment. The growing use of these technologies presents a compelling opportunity to promote sustainable education aligned with global agendas, including the United Nations Sustainable Development Goals (SDGs) and Education for Sustainable Development (ESD). Despite their potential, no established framework currently integrates immersive technology with the principles of sustainable and outcome-based education. This paper addresses that gap by proposing the Sustainable Open Universal Learning (SOUL) framework. A systematic review of 125 peer-reviewed articles published between 2013 and 2023, retrieved from the Scopus database, was conducted and supplemented with content analysis guided by predefined inclusion and exclusion criteria. The findings reveal that immersive technologies offer significant advantages in learner engagement, motivation, safety, and experiential learning across multiple educational levels and disciplines. The SOUL framework was structured around three value domains, namely Value Creation, Value Proposition, and Value Delivery, and integrates XR-based gamification and outcome-based education to deliver an open, universal, and sustainable learning environment. The framework aligns with SDGs 3, 4, 8, 9, 11, and 16, and contributes both theoretically and practically to the global discourse on technology-enhanced sustainable education.

Keywords

Extended Reality, Immersive Technologies, Sustainable Education, Outcome-Based Education.