

4 - Digital Resources for Science Teaching and Learning | Empirical

SP - (15649) - ENABLING CONCEPTUAL UNDERSTANDING IN PHYSICS VIA IMMERSIVE VIRTUAL REALITY

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Short Abstract

The integration of immersive Virtual Reality (VR) in authentic science classrooms can result in a totally new learning experience for the students. However, the effect of the integration of immersive VR on conceptual learning gains and the learning experience itself, considering students' pre-existing science- and digital technologies-related attitudinal profiles, has not been explored to date. In this study we have enacted a 90-minute intervention with high-school students (n=107), learning about the Special Theory of Relativity in their Physics course through an immersive VR simulation. We aimed to examine students' conceptual learning gains and differences in their perceptions of the learning experience, considering their attitudinal profiles. Clustering analysis has revealed two attitudinal profiles: the low attitudes profile (n=48) included students with low science- and digital technologies-related attitudes, and the opposite for the high attitudes profile (n=59). Results from a 2x2 RM ANOVA revealed a statistically significant interaction between learning and attitudinal profiles. In addition, a one-way MANOVA test showed statistically significant differences between the two profiles in relation to students' perceptions of the learning experience, with high-attitudes students outperforming their counterparts. Findings and implications of students' individual differences in learning and attitudes linked to the integration of immersive VR in the science classrooms will be discussed.