Development of Immersive Metaverses Applied to Astrobiology Teaching

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Immersive technologies have been evolving and influencing the means of human interaction. In this scenario, developing High Immersion Environments (HIE) can contribute to education, providing universal access and the development of Scientific Literacy, alongside skills and competencies required by the Brazilian K-12 curriculum. In addition, practices of this nature can promote digital literacy and critical thinking, alongside contributing to the development of autonomy and a fairer and more egalitarian society. Thus, the objective of this project is to develop an HIE and verify the potentialities and challenges of its use in Astrobiology teaching. For this, we divided the methodology into three phases: the Pedagogical Approach, in which we analyze official parameters related to Astrobiology described in Brazil's curriculum; the Environment's Planning, where we create a document dedicated to describing HIEs and use it to design our metaverse; and the Environment's Development, where we build and test it. Newer results include interviews with K-12 students and teachers to analyze their technological profiles, the design of an astrobiology-educational proposal within an interactive VR sequence, and multiple software developments to enliven the narrative universe. We were able to improve procedural terrain generation, design a new VR interaction system, make new meshes for the spaceship, tools, and human characters, create animations for the latter, and record voice lines, all using Unreal Engine, Blender, Substance Painter, MetaHuman Creator, Brekel Body, Autodesk MotionBuilder, and Audacity. So far, we're testing the HIE alongside students and teachers, and the results show that immersive development is feasible and can bring notable contributions to Science Education.

Awards Won:
Third Award of $1,000