Experiencing Soil Science from your office through virtual experiences

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Currently, numerous tools based on the new information and communication technologies offer a wide range of possibilities for the implementation of interactive methodologies in Education and Science. In particular, virtual reality and immersive worlds - artificially generated computer environments where users interact through a figurative individual that represents them in that environment (their "avatar") - have been identified as the technology that will change the way we live, particularly in educational terms, product development and entertainment areas (Schmorrow, 2009). Gisbert-Cervera et al. (2011) consider that the 3D worlds in education, among others, provide a unique training and exchange of knowledge environment which allows a goal reflection to support activities and achieve learning outcomes.

In Soil Sciences, the experimental component is essential to acquire the necessary knowledge to understand the biogeochemical processes taking place and their interactions with time, climate, topography and living organisms present. In this work, an immersive virtual environment which reproduces a series of pits have been developed to evaluate and differentiate soil characteristics such as texture, structure, consistency, color and other physical-chemical and biological properties for educational purposes. Bibliographical material such as pictures, books, papers and were collected in order to classify the information needed and to build the soil profiles into the virtual environment.

The programming language for the virtual recreation was Unreal Engine4 (UE4; https://www.unrealengine.com/unreal-engine-4). This program was chosen because it provides two toolsets for programmers and it can also be used in tandem to accelerate development workflows. In addition, Unreal Engine4 technology powers hundreds of games as well as real-time 3D films, training simulations, visualizations and it creates very realistic graphics.

For the evaluation of its impact and its usefulness in teaching, a series of surveys will be presented to undergraduate students and teachers.

REFERENCES:
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