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Joint 118th Annual Cordilleran/72nd Annual Rocky Mountain Section Meeting - 2022

Paper No. 15-3
Presentation Time: 8:45 AM

TAR AR: RESEARCHING HOW AUGMENTED REALITY ACTIVITIES CAN FACILITATE VISITOR LEARNING AT LA BREA TAR PITS

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Digital technologies have the potential to support informal STEM learning by fostering immersion, interactivity, and engagement with scientific material. AR in particular can overlay digital information on real-world objects and places, revealing and allowing interaction with things the public would normally not see. This is particularly valuable for historical sciences like geology, archaeology, and paleontology, where abstract concepts and unusual/restricted access settings (such as geological or fossil sites, and laboratories) spark curiosity, but also create challenges for fostering learning. However, AR as a tool is still in its nascent stages. Current applications are as likely to be "fun gimmicks" as they are to produce actual learning gains. At La Brea Tar Pits (California, USA) we are researching what makes paleontology learning AR good. We have conducted two AR learning experiences to test whether AR is better at reducing scientific misconceptions relative to traditional static museum signage and test the effectiveness of several modes of AR delivery (VR headset vs handheld, high vs low interactivity). The first experience taught participants about Pleistocene climate, flora, and fauna. We found that handheld high interactivity AR is preferred, and while no AR condition had greater learning outcomes than comparable signage, the AR experience generated greater curiosity. The second experience (currently underway) invites participants to explore how organisms become entrapped in the asphalt seeps in a life-size AR scene. Our newest learning tool will leverage our findings and AR assets from these experiences to create a collaborative problem solving experience that will use the LBTP setting to explore questions about ice age megafauna, climate change, and asphaltic fossil deposits. We will iteratively explore ways to take AR learning from "fun gimmick" to a useful tool that supports scientific questioning, evidence-based reasoning, and critical thinking by incorporating interactivity and user collaboration. This tool will be able to be used on- or offsite. In parallel we will develop and distribute the Socio-Physical Augmented Reality Contextual (SPARC) framework, a set of evidence-based guidelines and tools to design social AR exhibits optimized for on-site, remote, or dual-purpose use.

Session No. 15

D4. Recent Advances in Paleontology, Paleoecology, and Paleoclimatology
Wednesday, 16 March 2022: 8:00 AM-12:00 PM

WRI 148 (UNLV Wright Hall)

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