Building, Designing, and Implementing an Augmented Reality Sandbox Laboratory

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An innovative space was designed to address common limitations to undergraduate research, allowing maximum student engagement in interdisciplinary cognitive sciences research even if budget and space constraints exist.

An augmented reality sandbox (sARdbox) projects an image onto a 2- x 3-foot tub of sand. A Kinect® provides feedback to the system about the height of the sand that augments the visual display. Originally a way to represent topographical maps in a dynamic 3D system, it has many potential applications in sensation, perception, and spatial cognition. Students are designing studies to understand how the brain transitions from two-dimensional to three-dimensional cognitive parameters by encoding maps in a dimensional variant and recalling maps in the same or a different dimensional variant. The sARdbox allows students in cognition, research methods, and other laboratory courses in the University of North Georgia's Department of Psychological Science to engage with technology and learn/practice coding in addition to participation in traditional laboratory experiences.