# Augmented Reality Sand Table

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This project was initially intended to be a topographic map that allowed teachers and students to physically manipulate terrain to get a real-time visual response. However, the final product has the potential to be used across many additional areas of knowledge such as terrain maps, environmental topics, impact physics, astrology, game design, and terrain recreation. The table was built out of wood and filled with 200 pounds of white moldable sand to a depth of 4 inches. The depth of the sand is sensed by a Kinect located directly above the table. This information is then sent through various computer programs and projected back down onto the sand surface in near real-time in the form of a topographic map. Any time the sand surface is manipulated, the projected map is updated in real-time. The project was designed to respond to a variety of changes to the sand including hills, valleys, and water areas. The table was evaluated based on its effectiveness in both sensing and displaying changes to the sand surface and its response time. For it to be effective, the response time must be short. This system can both accurately respond to all targeted changes in the sand, and project the changes within a second or less. Since the project has uses in more than one subject area, it can be used as an educational tool for a wide audience. In addition, young hospitalized children may be able to use the sand table to help encourage their recovery. I am also working to create a version of the sand table for a zoo in order to teach children about deforestation and its impact on wildlife.

**Awards Won:**