**Introduction to Using the**

**Augmented Reality Sandbox (ARS) in the Classroom**

- How does the ARS technology work?
  - o The Kinect camera is the eye that brings in the information from the movement in the sandbox to the computer.
  - o The computer program translates that information and uses it to create an interactive image of a topographical map
  - o The projector takes the translated image and projects it onto the sandbox, transforming the scene into a watershed that we can learn from.
- How can students engage with the ARS?
  - o Move the sand - When we create slopes, valleys, canyons, etc, we can see how water flows and where it collects.
  - o Make it "rain" - When we put our hand over the landscape and create a cloud, we can see how rain flows over the surface or soaks down to become groundwater.
  - o Drain the water - All water is moving somewhere. Through infiltration, evaporation, and drainage (even the Great Lakes drain to the Atlantic Ocean), water is moving through and leaving our watersheds.
- How can you use the ARS in the classroom?
  - o What are you teaching now? - Imagine the topics you already cover. Now imagine how the ARS can give your students a hands-on experience with that topic.
  - o What would you like to teach? - Imagine the topics that might be a little abstract for your students. Now imagine how the ARS can make those concepts a little more concrete.
  - o How can the ARS help your students understand their own watershed? - Use a local map and ask your students to recreate their watershed on a small scale. Where is the school? Where is their home? Where does the water go? What goes with the water? Who is impacted by that and how?
  - o The possibilities are endless. How would you like to use the ARS?

**Suggested Topics**

What landforms encourage infiltration and discourage runoff?

What happens when sediment/erosion fills our lakes/rivers?

How can we reduce the impact/slow erosion?

What happens when there is flooding on different types of landforms?

What type of landforms reduce/encourage flooding?

What is stormwater pollution and how can we prevent it?

EATON
CONSERVATION
DISTRICT
eatoncd.org

miwaterstewardship.org

TRI-COUNTY
regional planning commission
mywatersheds.org

# Michigan Curriculum Standards for Middle School (Grades 6-8)

*Also consider working in history, geography and economics topics from Social Studies.

## *History of Earth*
**MS-ESS2-2** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

**MS-ESS2-3** Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

## *Earth's Systems*
**MS-ESS2-4** Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. **

**MS-ESS3-1** Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. **

## *Weather and Climate*
**MS-ESS2-5** Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.

**MS-ESS2-5 MI** Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions in Michigan due to the Great Lakes and regional geography.

**MS-ESS2-6** Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

## *Human Impacts*
**MS-ESS3-2** Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

**MS-ESS3-3** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. * **

**MS-ESS3-4** Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.