

## The Changing Earth ACTIVITY

### Learning Goal:

1. Students will be able to demonstrate how a river affects land formations.  
*CT science content standard = 4.2*  
*Expected performance = B 13*
2. Students will be able to demonstrate how glaciers affect land formations.  
*CT science content standard = 7.3*  
*Expected performance = C 19*

### Materials for Exploration:

2-liter bottles                      A funnel (or an index card)  
An assortment of sand, silt,      Water  
clay, and rocks

### Exploration:

1. Collect different samples of sand, silt, and little rocks (small enough to fit into the 2-liter bottles). Samples can be brought in by the teacher, or students can collect them at home or on school grounds (if appropriate).
2. Fill the 2-liter bottle about 1/3 with the sand, silt, clay, and rocks. Fill the rest of the bottle with water.
3. Students can tip, shake, or turn the bottle as they watch the material moving and settling.

### For elementary and secondary students:

1. Students should provide descriptions and/or drawings of what they "noticed." Students should also provide questions of what they "wondered." Students should have a page for the science journal that is split into two columns. The column on the left is labeled "I Noticed..." while the column on the right is labeled "I Wonder..."
2. Students choose statements from the "I Wonder..." column that they think they can investigate with materials that are provided for the investigation stage (see materials list below). Students narrow their choices to the one investigable question that is most interesting to them.

### Materials for Investigation for elementary students:

Water                                  Plastic cups with one different sized hole in each cup  
Water pitcher                      Assortment of rocks, sand, silt, and clay  
Books                                  Long, plastic tub with a hole at one end in the center  
Ruler                                    5 gallon bucket  
    Legos, or other toy building materials

### Investigation for elementary students:

1. Students put rocks, sand, silt, and/or clay in the long, plastic tubs along with toy building materials to simulate houses, buildings, etc. At the end of the long, plastic tubs should be a hole approximately  $\frac{1}{4}$ " in diameter. The size of the hole could be larger, if necessary. The width of the plastic tub should be 12" or less. The end of the plastic tub should be at the end of a table with a 5-gallon bucket on the floor at the same end of the table.
2. Students should put books underneath the end of the long, plastic tub without the hole.
3. Place a ruler width-wise on the plastic tub so that it sits on the rims only. Place a plastic cup so that it sits on both the ruler and rim of the plastic tub. The hole of the plastic cup should be in-between the ruler and rim of the plastic tub.
4. Add water to the water pitcher, and pour water from the water pitcher into the plastic cup. As water runs down the plastic tub, it should eventually pour out through the hole at the end of the plastic tub and collect into the 5-gallon bucket on the floor.
5. Students should observe and record the actions of the water and other materials in the plastic tub. Students can add more water, change to different plastic cups with different-sized holes in them, or change the setup of the materials in the plastic tub.

Materials for Investigation for secondary (middle-school) students:

Ice	Assortment of rocks, sand, silt, and clay
Books	Long, plastic tub

Investigation for elementary students:

1. Students put rocks, sand, silt, and/or clay in the long, plastic tubs along with toy building materials to simulate houses, buildings, etc. Students could put books underneath the end of the long, plastic tub to simulate inclined land, but it is not necessary.
2. Place a large chunk of ice at one end of the plastic tub and drag it to the other end of the plastic tub.
3. Students should observe and record the actions of the ice and other materials in the plastic tub. Students can add more ice and repeat dragging it to the other end of the plastic tub. However, the movements should be consistent with the first chunk of ice.
4. Wait 24 hours and observe/record what happens after the ice melts.

Communication of Results:

*Elementary Students (ages 6-12):*

Each group reports out their findings and draws attention to similarities and differences to other groups reports. Appropriate content and concepts from

textbooks will emerge via the students' reports. Students should also report out new questions that arose from their investigations.

*Further investigation:*

Students view pictures of places that are known for river activity, and by using the visual clues, infer how rivers affected the land formations.

*Secondary Students (ages 13-18):*

Each group reports out their findings and draws attention to similarities and differences to other groups reports. Appropriate content and concepts from textbooks will emerge via the students' reports. Students should also report out new questions that arose from their investigations.

*Further investigation:*

Students view pictures of places that are known for glacial activity and by using the visual clues, infer how glaciers affected the land formations.