# Sand Stratigraphy

**Time:** 30-45 minutes

**Materials needed:**

- Bottles with lids*
- Colored sand (optional - in ketchup/mustard type squeeze bottles)
- Funnels
- Small objects (such as beads) to use as “artifacts”

*You can use any clear bottle with a tight fitting lid. Keep in mind, the taller the bottle, the more layers can/need to be added, and the smaller the bottle mouth, the smaller the “artifacts”

**Introduction:**

Over time, soil and other materials build up on the earth’s surface and form layers. Archaeologists call these layers strata, and studying them is called stratigraphy. As new layers form, the older ones get buried underneath. As a result, the layer at the top is the youngest, and the layer at the bottom is the oldest. When archaeologists excavate a site, they are digging down through layers of history from young to old. This activity will help students see how an archaeology site might be formed and how the layers (and artifacts in them) sit on top of each other.

**Activity Steps:**

1. Each student will have their own bottle and should be sitting at a table with access to multiple colors of sand, and a tray/bowl of “artifacts” that will be used during the activity.
2. Explain to students the basic idea of stratigraphy - old is on the bottom, new is on the top.
3. Tell students that they will be building their own “archaeological site” within these bottles by listening to a story and using sand and “artifacts”. They will need to listen to the directions in the story to know when to add layers of sand or artifacts to their bottles. (Note: students can choose their own color of sand to add, or you can have set colors for each layer, depending on your preference).
4. Read the “Sand Stratigraphy Story”** and guide the students through the site creation process. Students can use funnels to make it easier to add sand to their bottles if the sand is not already in squeeze bottles.
5. When the story is finished, fill the bottle to the very top with sand (if it is not already full) and cap it with the lid. A full bottle will help keep the sand from shifting or mixing.

**An example “Sand Stratigraphy Story” is listed below, or make up your own story to help fit what the students are currently learning.

Have a class discussion about the activities. What did they observe when each layer of soil and/or artifacts were laid down? Where are the oldest artifacts from the story? Where are the youngest? In some cases, the temptation to shake the bottles is too much and everything ends

up mixed together - what natural phenomena would cause that to happen in the real world? (Natural disasters such as earthquake, flood; burrowing of animals; growth of tree roots)

**Sand Stratigraphy Story**

Once there was an island in the middle of a river in South Carolina *(put down first layer of sand)*. A family of Native Americans traveled down the river on their way to a big clan elk hunt. They stopped on the island to make camp for the night. During their stay there they left behind broken pottery, ashes from their fire, and stone from tool making. One of the children even leaves behind some of their toys. *(drop a few of the artifacts into the jar)*. Hundreds of years went by and a layer of dirt formed over the Native American campsite. *(put down another layer of sand)* Hundreds of more years went by and one day a huge flood came rushing down the river. The river water flooded over the island and left a layer of mud on the field *(put down another layer of sand)*. Soon after the flood, a group of explorers from England came down the river while exploring the New World. They decided to make camp on the island and stayed for a few days. While they were on the island, they decided to repair some of their equipment. During their work, they dropped all kinds of artifacts: nails, bullets, buttons, forks and knives, even a few cannon balls. *(add a few artifacts into the jar)*. More time went by and the explorers' campsite was covered by more dirt and leaves *(put down another layer of sand)*. In the 1950s a young boy made his way out to the island and decided it was the perfect place for a fort. He made a clubhouse out of dead trees and driftwood and played there with his friends. They visited their fort every weekend, bringing along snacks and some personal items. Sometimes they dropped things – a candy bar wrapper, a soda bottle, a favorite pocket knife, a fishing hook and line. *(add more artifacts to the jar)*. They played games where they pretended to be Native Americans, hunting through the brush with homemade bow and arrows. Other days they imagined they were adventurous explorers, sailing to foreign lands on their grand ships. The boys never realized some of the objects those people left behind were right beneath their feet. *(cap it off with a final layer of sand)*

**Background Information**

Sometimes the stratigraphic layers are visible through color change or soil texture. Other times we can determine different layers by the artifacts found in them.

Example of a completed sand stratigraphy “archaeology site”

**Further Information**

- Crow Canyon: Stratigraphic Dating - https://www.crowcanyon.org/index.php/stratigraphicdating
- UNC Archaeology Video on Stratigraphy - https://youtu.be/6w_TJS5j01M (very good basic information and good introduction for the activity)