

Summer at the Library 2022
MAKE WAVES



Middle School and Up

Riverbed Excavation

Riverbeds are amazing structures that protect the areas near and far from waterways and often hide a secret treasure: fossils! Spend some time as an archaeologist uncovering fossils, and continue the fun with easy ways to explore the ways in which excavation impacts our ecosystems.

What will you learn?

- Excavation as a process and its uses
- Observation skills

Materials:

- Kinetic sand, or other soft material like sand
- Bowl, or other container
- Paintbrush, or other small brush
- Fossils: Dinosaurs, seashells, other small objects
- **Optional:** Paper towel or other material to cover your work space
- **Optional:** Paper for observations
- **Optional:** Pencil, or other writing utensil

Instructions:

- Spread out the material you're using to cover your work space. (Optional)
- Fill your bowl approximately halfway with sand.
- Bury your "fossils" in the sand, thoroughly mixing the fossils and sand and packing the mixture into your bowl.
- Use your paintbrush to gently brush away sand, revealing the fossils underneath.
- Continue to brush the sand away until the fossil can be removed without digging in the sand.



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- Record what you notice about your process and repeat!
- **Ready to level up?:**
 - Bury a single fossil instead of many to increase the difficulty of your excavation.
 - Have a friend bury one or more fossils for you!
 - Add water to your sand mixture to make excavation more of a challenge!
 - Skip the fossil: use your brush, or another small tool, to dig grooves in your sand to simulate a river. Fill your river with water and continue digging. What changes when you remove the sand?

Reflection Questions:

- What do you notice about the process to excavate your fossil?
- What other tools might an archaeologist use during this process?
- What type of observations did you make while excavating your fossils?
- If you leveled up:
 - How did adding water challenge or ease your excavation?
 - How did searching for a single fossil impact your process?
 - What changed when you flooded your stream? As you continued to dig?

Explanation:

Excavation is a process used by a variety of disciplines (archaeologists, construction professionals, etc) to remove or dig through something, often in the aid of looking at something else. In this activity, you excavated sand to look at fossils. You were able to remove sand from around your fossil in order to analyze not only the fossil itself but also the sand around it.

Archaeologists typically use excavation as a way to continue analysis: they use statistics to help them identify a specific area in which to excavate. They then delicately remove the dirt, or other medium, from that area in order to screen the material they remove and uncover. The data they record, and artifacts they find (like fossils!), allow them to reflect on what happened to that particular area in the past. You may have noticed that your fossil was firmly packed in the sand: that could indicate that it has been there for a long time, depending on the other indicators you observe!

Excavation is also used in construction and can be very detrimental to our waterways. In many instances, excavating a river bed will destabilize the bank of the waterway. This can lead to greater soil erosion, a change in the shape of the waterway, and ultimately impact the vegetation that grows there.



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Guide created by Alexandria Abenshon.