WASHINGTON PAVILION

Action Arts and Science Program

Lesson: Modeling body and trace fossils...what do they tell us?

Key Learning Objectives

Young paleontologists will:

- Understand that fossils are formed when the object is quickly covered with sediment, and over millions of years, the remains and sediment turns to rock
- Investigate differences between body fossils and trace fossils by making a fossil that contains both types (body=skeleton; trace=foot print)
- Analyze and interpret data from fossils to provide evidence of the organisms and environments in which they lived long ago

21st Century Skills, College & Career Connections

- Consider how learning about the past will help us with the future

Safety First

- Encourage scientists not to place materials in their mouths or on their bodies.

Supplies:

- White Model Magic about 1/2 pack per scientist
- Ball of plasticine modeling clay (a few per site...you'll return this at the end of the unit)
- Plastic dino skeletons and small plastic dinosaurs
- Liquid Water color: Red, blue, yellow
- Washable markers

Key Terms/Techniques:

- Fossil: the remains or impression of a prehistoric organism preserved in petrified form or as a mold or cast in rock
- Sediment: soil that settles to the bottom of a liquid (like mud at the bottom of a puddle)
- Body fossil: a fossil of an organisms actual body part
- Trace fossil: a fossil of something an organism left behind...foot print, coprolite (poop)

Grade level:

- K-3

Content Standards:

- 3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and environments in which they lived long ago

References:

Fossil technique developed by C. Fellbaum October 2017, lesson adapted from:

- What are trace fossils? Virtual Museum Canada http://www.virtualmuseum.ca/sgc-cms/expositions-exhibitions/fossiles-fossils/english/sections/whatare.html
- Bryce Canyon National Park Activity 4: Molds & Casts https://www.nps.gov/brca/learn/education/paleoact4.htm

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Getting started:

- Lead discussion (more background on last page):
  - What is a fossil? the remains or impression of a petrified (turned to rock) prehistoric organism that was preserved when it was quickly covered with sediment
  - What is sediment:? soil that settles to the bottom of a liquid (like mud at the bottom of a puddle). For fossils, sediment protects the organism or trace from being destroyed while it turns to rock
  - What is a body fossil: a fossil of an organisms actual body part that give scientists an idea of how strong the animal was, what may have been feeding on it, what it ate, the speed of the organism, etc.
  - Trace fossil: a fossil of something an organism left behind...foot print, coprolite (poop) that tells us how an organism walked (foot print fossils), where it lived, how it raised its young (nest fossils), etc.
- Lead project:
  - Roll 1 stick of plasticine modeling clay into a ball (about the size of a golf ball) and squish it into a pancake with your hand...should be about 1/4 inch thick
  - Squish the plastic dinosaurs into the clay (body parts and feet)
  - Divide a pack of white Model Magic in two and roll them into balls
  - Push a Model Magic ball onto the clay impression. Label the back of the Model Magic with scientist's name. Peel off to reveal the Model Magic fossil. Repeat with the second ball of Model Magic.
  - Paint the fossil parts brown by mixing red, yellow and blue liquid watercolor or with brown washable markers
  - Re-use the modeling clay impression until it starts to deform...then just roll it into a ball and make a new impression.

Background:

How Does Something Become a Fossil?

Live. Die. Get buried.

Well... it's not quite that simple. Most plants and animals will not become fossils. They decay very quickly or get eaten by other critters. If a plant, an animal, or a trace is going to become a fossil, it has to be buried rapidly by sediment (like mud). This happens in places like rivers, lakes, and oceans. Over time, many layers of sediment build up and eventually turn to rock. After more time passes, the layers of rock are brought to the surface of the Earth by forces like earthquakes. The overlying layers of rock are eroded Live. Die. Get buried.

Trace fossils represent the activities of ancient animals.
There are two main types of fossils: body fossils and trace fossils.

Body fossils include any part of the actual animal or plant. Body fossils usually come from hard parts such as bones, teeth, shells, and leaves are considered body fossils. These fossils give scientists an idea of how strong the animal was, what may have been feeding on it, what it ate, the speed of the organism, etc.

Trace fossils are something an organism left behind that give us hints of life from the past. Trace fossils include things like foot prints, burrows, and fossilized poop.

Modern traces are all around us. Dogs leave paw prints in the mud, you leave shoe prints in the snow, and the dirty dishes you leave in the sink tell me that your belly is full.

Trace fossils provide palaeontologists with evidence of the activities of ancient animals - something body fossils simply can't do. Trace fossils are formed in place and can therefore tell us about the ancient environment in which the animal lived.

One single animal can make thousands and thousands of traces in its lifetime, but it will only leave behind one body when it dies. Because of this, trace fossils are much more common than body fossils.

Trace fossils are moments of time that have been captured forever in the rock record. They are a celebration of life.