

Bay Area Scientists in Schools Presentation Plan

Lesson Name: Fun with Fossils

Presenter: Mariska Batavia

Grade Level: 2nd

Standards Connection: Geologic processes create fossils. Fossils teach us about what life was like a long time ago.

Abstract: What are fossils, and how are they made? Who studies fossils, and what can we learn from them? We will explore the geologic process of fossil formation, and will make some fossils of our own. Next, we will talk about paleontologists – scientists who study fossils. Finally, we will become paleontologists ourselves as we look at some real fossils and try to uncover clues about the past.

Vocabulary/Definitions:

Fossil – something left behind by an animal or plant that lived a long time ago

Paleontologist – a scientist who studies fossil animals/plants that lived a long time ago

Excavation – the place where paleontologists dig for fossils

Extinct – when a type of animal or plant that was alive once is no longer on earth

Materials:

Crayola Model Magic Fusion

Shells, leaves, pinecones

Fossils (horse molars, petrified wood, tree fern, shark teeth, shells, fish, *T. rex* claw, saber tooth cat skull.)

A piece of wood to compare to the fossilized wood

Photos from excavation

Pictures of *T. rex* and saber tooth cat

Classroom set-up:

Students should be gathered in a circle, if possible. Later in the lesson they will go back to their desks for an activity, and we will regroup again at the end.

Classroom Visit

Personal Introduction:

2 minutes

My name is Mariska, and I'm a graduate student at Berkeley. I study fossils, and am here to talk about fossils with you today.

Topic Introduction: *What is a fossil?*

5 minutes

How many people have heard of a fossil? Who can name an example of a fossil? [If no answer, ask: How many people have been to a museum and seen a dinosaur bone?] Dinosaur bones are examples of **fossils**.



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Let's brainstorm about fossils. Who can tell me what a fossil is? [Write ideas on the board. A fossil is something that is left behind by an animal or a plant that lived a long time ago.]

Learning Experiences:

Where do fossils come from?

15 minutes

First, let's talk about how fossils are made. Fossils form in two ways. Here's how the first way works: an animal or plant has to live in a place where the ground is soft and muddy – usually close to water. When the animal or plant dies, sometimes it gets buried really quickly by dirt and sand. Then, over millions of years, the animal or plant turns into rock. One example of a fossil like this is this horse tooth. [Hold up for students to see, and then pass around.] Another example is this piece of petrified wood. I also have a real piece of wood, just so you can see how this one has turned into rock. Notice how much heavier the fossilized wood is. [Pass around.]

Now, let's talk about the other way a fossil is made. Again, usually this happens somewhere pretty wet. When an animal or plant leaves an imprint, sometimes the shape is preserved. Sometimes this type of fossil could be a footprint, or it could be an imprint of a part of an animal or plant. This tree fern is an example of this second kind of fossil. [Pass around.] We're going to make some imprint fossils of our own.

Activity:

15 minutes

[Students should be in groups of 4-6, preferably at their desks. A tub of Model Magic will be passed out to each group; students should divide the Model Magic so that each person has some. Paper bags with leaves and shells will be passed out too.]

I'd like everyone to practice making some fossils with the objects in the bags. [Demonstrate. While students are working, walk around to each group. If time allows, let students walk around before clean up to see each others' fossils.]

[Students should clean up and regroup in a circle.]

Applications and Wrap-up:

Who studies fossils, and what can we learn from them?

15 minutes

Did you know that there are some scientists called **paleontologists** who study fossils? The job of a paleontologist is mostly to dig in the dirt! The place where paleontologists go to dig is called an **excavation**. When a paleontologist is on an excavation and finds a fossil, they very carefully remove it from the dirt, and take it to a museum or lab to study it. I have some pictures of an excavation that I went on, so you can see what it's like to be a paleontologist. [Pass around pictures.] How many of you think you would like to be a paleontologist on an excavation?

Now, we're going to pretend that we're all paleontologists, and that we're on an excavation on top of a mountain. Let's see what fossils we find, and think about what we can learn from them. [Pull shark teeth, fish, and shells out of a paper bag.] Here are some fossils that we just found. [Pass around so students can look at them.] If these were living animals, where would we find them today? [In the ocean, or at the beach.] But wait a second! We're on top of a mountain here! There's no oceans on top of the mountain! What does this mean about the environment millions



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of years ago? [This is a hard question – it means that this mountain used to be covered by the ocean.]

Now, let's pretend we're on a different excavation, maybe on the playground outside your school. We're digging, and we find this *T. rex* claw. [Pull out of paper bag and pass around.] A *T. rex* was a kind of dinosaur. [Hold up picture.] Well, that's weird, because have you ever seen a dinosaur at your school? [No.] Do we have any dinosaurs still alive today? [No.] This fossil is telling us that this dinosaur, *T. rex* used to be alive, but since we know we don't have any left, we know *T. rex* is **extinct**. When an animal or plant is extinct, it means it doesn't exist any more. Here's another example. This is the skull of a saber tooth cat. [Pull out of paper bag and pass around. Hold up a picture of a saber tooth cat.] We don't have saber tooth cats anymore, so this is another extinct animal. So, fossils can tell us about animals that are extinct. That's pretty cool!

Close:

5 minutes

Let's review what we learned today. Fossils are the remains of animals and plants that lived a long time ago. Fossils are made in two ways: either an animal or plant is buried and turns into rock, or the imprint of an animal or plant can be preserved. Paleontologists go on excavations to find fossils, and then they study them to learn about what life on earth was like a long time ago. Does anyone have a question about fossils, or about being a paleontologist?

TOTAL ~60 minutes

Follow-up Activities

Students are encouraged to email any questions they have, or letters about what they learned. Also, the teacher will be left with a list of websites that have more information on fossils and paleontology.

<http://www.paleoportal.org/>

<http://www.ucmp.berkeley.edu/education/explorations/tours/fossil/index.html>

<http://www.ucmp.berkeley.edu/education/explorations/tours/intro/index.html>

Reading Connections:

- Eyewitness: Fossil by Paul Taylor <http://www.amazon.com/Eyewitness-Fossil-Paul-Taylor/dp/0789458403>
- Prehistoric Life: The Definitive Visual History of Life on Earth by DK Publishing <http://us.dk.com/nf/Book/BookDisplay/0,,9780756655730,00.html>
- Fossils (Golden Field Guide Series) by Frank H. T. Rhodes, Paul R. Shaffer, and Herbert S. Zim http://www.amazon.com/Fossils-Golden-Field-Guide-Series/dp/1582381429/ref=pd_sim_b_9
- Smithsonian Handbooks: Fossils by David Ward http://www.amazon.com/Smithsonian-Handbooks-Fossils-David-Ward/dp/0789489848/ref=pd_sim_b_1



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<http://www.ucmp.berkeley.edu/education/explorations/tours/intro/index.html>



http://www.calacademy.org/exhibits/dinos/field_guide.php



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