

Fossilized Fudge Lake
4th Grade
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References:

<http://web.ukonline.co.uk/conker/fossils/casts.htm> (for additional activity)
Any Introductory Geology Book

Benchmarks & Objective:

LS #5: Observe and explore that fossils provide evidence about plants (and animals that lived long ago and the nature of the environment at that time.

Materials:

- Brownie mix (egg-free)
- White cake mix (egg free)
- Water and oil for mixes
- Bread tins (enough for every group of 4)
- Toothpicks (1 per student)
- Swedish Fish (equal number for each student)
- M & Ms
- Cups to measure with
- Real fossils of plants and animals (including extinct species) 1 or 2 per group

Target Concepts:

- Students will understand that the landscape change over time. Some environments with the right conditions preserve fossils. (We will explore a lake and the fish and clams in it that are preserved in the mud as the lake dries up. We will use brownie mix as our lake bottom.)
- We will also explore the concept of extinction and examine real fossils, including some extinct species (Trilobites) discussing where they might have lived in the past.
- We will examine petrified wood from Antarctica.

Initial Introduction:

Students will be asked to look at fossils in their groups and describe them as much as possible. After they are finish their descriptions we will ask where the students hypothesize these plants and animals might have lived. After we do this, we will pass around petrified wood from Antarctica and ask the students if they think that Antarctica was always covered by ice? What does the piece of wood suggest the weather used to be like in Antarctica? Did this weather change happen quickly?

Procedure:

After our introduction with real fossils we will create our own paleoenvironments. First, we will have the students mix the white cake mix and pour it into the bottom of their pans. We will tell the students that the cake mix represents desert sand and ask them what sorts of plants and animals live in the desert. We will have them make snake tracks in the sand using toothpicks. Then we will ask what if the climate changes and it rains for many years in a row. What will happen to the desert? We will get them to suggest that lakes might form. We will then have the students add mud for the lake bottom. What happened to their snake tracks? (some form casts) Over time fish and freshwater mussels fill the lake and lake bottom we will have them burrow the clams (M& Ms into the mud) and have them swim their fish in the lake. What happens to the fish and mussels when they die? (they can eat a few if they suggest that other fish eat them). The fish will sink to the bottom of the lake and some will be preserved and eventually fossilized in the mud.

After we create our layers we will take the brownies home to bake. The next day we will look at the layers. Do the layers look distinct? How can we tell that the environment has changed through time by looking at the side of our brownies? Do the lake and desert look different? What parts of the fish and animals that died in the past might be best preserved in real sand and mud?

Target Observations:

- Students should observe that changes in climate take place over long time periods
- Fossils are rare because their formation requires special conditions (Most fish will be eaten by other fish and not preserved in lake bottom mud)
- Students should be able to discuss extinction and why species might die and be replaced by new ones as time passes

Final Target Concept:

- Students will conclude that life and environmental conditions changes over time and that some of this information is recorded in rock layers
- Students will discuss how fossils form and extinction is recorded

Summary & Discussion:

Students will be able to raise any questions they have about fossils after they revisit their initial fossil specimens while enjoying their brownies.

Extensions (Optional):

- Have the students make fossil casts of moulds using liquid latex
- <http://web.ukonline.co.uk/conker/fossils/casts.htm>