

Geo Gelato

OBJECTIVE

Students will learn how animals and plants are buried in different types of rocks to eventually become fossils.

PURPOSE OF ACTIVITY

Read or Listen, Identify Details, Apply Skills

21st CENTURY SKILLS

Critical Thinking, Collaboration

COGNITIVE LEVEL

Strategic Thinking, Extended Thinking, Skills and Concepts

CLASS TIME

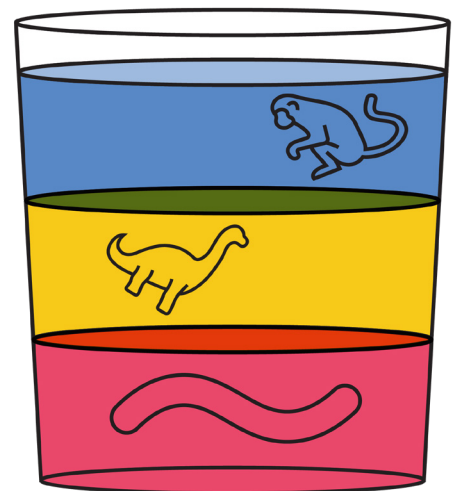
1 hour

MATERIALS

- 9 oz. clear plastic cups
- Red gelatin
- Yellow gelatin
- Blue gelatin
- Gummy worms
- Gummy dinosaurs
- Gummy mammals
- Student Worksheet

Procedure

1. Before the class: Mix the **red** gelatin according to the rapid gelling instructions on the box. Make sure the solution is cooled to near room temperature. Pour it into several plastic cups, filling 1/4 to 1/3 full. Drop one gummy worm in each cup and refrigerate until the gelatin is set. Prepare the **yellow** gelatin, again using the rapid gelling method. When it is near room temperature, take a dinosaur and lay it on top of the red layer. Pour yellow gelatin on top, filling 1/4 to 2/3 full. Refrigerate until set. Prepare **blue** gelatin and cool to room temperature. Drop the mammal on top of the yellow layer and add the blue gelatin to the top of the cups. Chill until set.
2. Ask students if they know what a fossil is.



3. Ask students where fossils come from. Once you have established that fossils are found in rocks, tell them they are going to learn about how fossils get into rocks.
4. Discuss fossilization at an appropriate level for your class. Be sure to point out that it is not actually bone that is found in the fossil, but the bone has been replaced by minerals.

“Fossils are the mineralized remains of plants and animals. Fossilization occurs when rapid burial in sediments preserves the body from decomposition; this is followed by the replacement of the original animal’s or plant’s cells with minerals over time. It is very rare to find the actual bone of a dinosaur because the mineral replacement process has had such a long time to work.”

5. Bring out one of the cups of gelatin. Explain to the students that this is a model of sedimentary rocks that contain fossils. Discuss the Law of Superposition by asking them which layer they think is the oldest and how they know this.

“Each color of gelatin represents a different age and type of sedimentary rock. Stratigraphy is the scientific name for the layering of rock; layers of rock are named based on their physical characteristics. Sediments are deposited over time with the newest sediments located “stratigraphically” above the older sediments. This is known as the Law of Superposition. The type of sediment can change, for instance, from sandstone to limestone depending on the source rock for the deposited grains. The layering process illustrated with this activity would take place over millions of years.”

6. Explain to the students that it is their job to figure out the name of each layer and the name of the fossils in each layer. Tell them that the class will go over how to determine the era and period name for the fossil after it has been determined what fossils they are.
7. Pass out the student worksheet and read it over. Ask if there are any questions about the activity. Remind students not to eat the gelatin!
8. Have the students break into groups and get their supplies.
9. Walk around the class and make sure students are on task. Once most are done identifying the rock layers, gather everyone’s attention.
10. Ask the students to name one of the fossils, using the chart in the student worksheet to determine the time-range in which the fossil existed. Then look up the time-range on the geologic time scale to determine the era and period for each fossil.
11. Have the students do this for the rest of the fossils.
12. Wrap up the activity. Review what they have learned if time allows.

CRITICAL THINKING QUESTIONS

Why might some layers in the cup be thicker than others?

This could represent the length of time that the geologic period lasted. If the layer is thinner, the period lasted less time – if it is thicker, it lasted longer.

Do you think the bottom layer of the cup represents a time that is older or younger than the ones on top?

The bottom layer represents the oldest layer. The other layers came after and buried the oldest layer deep underground.

Adapted from: <https://igws.indiana.edu/outreach/lessonplans/gelatin>

STUDENT WORKSHEET

Geo Gelato

Name _____

Each color layer of the gelatin represents a layer of rock. To determine which rock formation each layer represents, read its description in the left column, and draw a line to the matching description in the right column. Not all rock formations will be represented in the gelatin.

GELATIN LAYERS

Red Layer

Fine-grained sandstone containing ripple marks, with a uniform tan color; may contain fossils.

Yellow Layer

Very fine-grained mudstone, dark-gray to black in color; may contain fossils.

Blue

Massive limestone; contains many primitive fossils.

ROCK FORMATIONS

Sowder Formation:

Massive, medium-grained, gray limestone. Contains many primitive fossils.

Steinmetz Formation:

Fine-grained sandstone containing ripple marks, uniform tan color. May contain fossils.

Rapp Formation:

Shale, light-gray in color. Contains fossils.

Shaffer Formation:

Massive, fine-grained dolomite. Contains some fossils.

Baker Formation:

Course-grained sandstone, rust in color. Contains no fossils.

Hill Formation:

Very fine-grained mudstone, dark-gray to black in color. May contain fossils.

1. For each layer, identify the fossil found in this layer and record the fossil's age-range. Use the table below.

In the **red layer**, a _____ Formation, I found a _____ fossil with an age-range of _____.

In the **yellow layer**, a _____ Formation, I found a _____ fossil with an age-range of _____.

In the **blue layer**, a _____ Formation, I found a _____ fossil with an age-range of _____.

	What you found:	Fossil it represents:	Age Range:
ANIMALS	Monkey	ground sloth	2 million to 8,000 years ago
	Zebra	early horse	52 to 45 million years ago
	Tiger	saber-toothed cat	1 million to 10,000 years ago
	Elephant	mammoth	4.8 million to 3,500 years ago
	Crocodile	crocodile	200 million years ago to present
DINOSAURS	Tyrannosaurus Rex	Tyrannosaurus Rex	65 million years ago
	Apatosaurus	Apatosaurus	140 million years ago
	Pterodactyl	Pterodactyl	228 to 65 million years ago
	Triceratops	Triceratops	70 to 65 million years ago
	Stegosaurus	Stegosaurus	155 to 145 million years ago
OTHER	Gummy Worms	prehistoric worm	600 to 570 million years ago

2. Based on the fossils found in each layer, what are the ages of the red, yellow and blue layers?

The **red layer** is _____.

The **yellow layer** is _____.

The **blue layer** is _____.