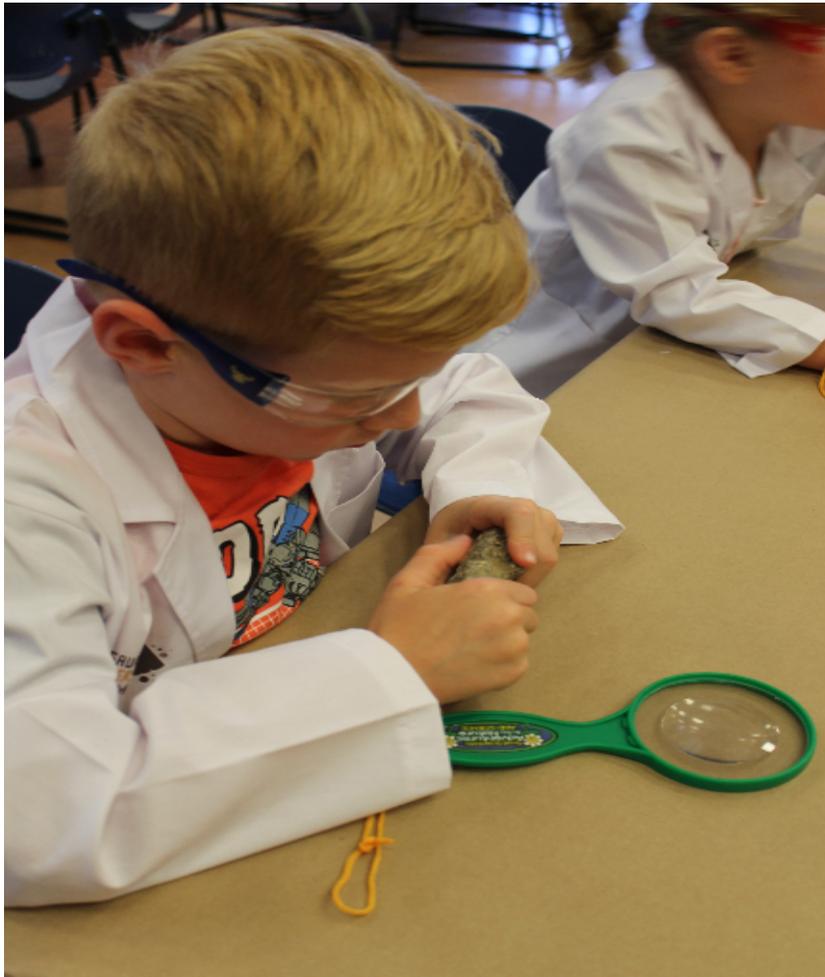


Evolution Revolution Pre and Post Visit Materials



Kenosha
Public Museum
5500 1st Avenue
Kenosha, WI



Kenosha Public Museum Evolution Revolution

Evolution Revolution is an hour long museum experience designed for 2nd to 4th grade. Through hands-on learning activities students will compare and contrast extinct and alive animals.

Program Goals:

- Students will learn what heredity is.
- Students will understand that evolution isn't perfect.
- Students will make observations of animals to compare the diversity of life in different habitats using real specimens.
- Students will work collaboratively to build critical thinking skills.
- Students will engage in workshop generated conversations with teachers, other classmates and the facilitator.

Learning Standards:

2nd grade

- DCI
 - LS2 Ecosystems: Interactions, Energy, and Dynamics
 - LS4 Biological Evolution: Unity and Diversity

3rd grade

- DCI
 - LS1 From Molecules to Organisms: Structures and Processes
 - LS2 Ecosystems: Interactions, Energy, and Dynamics
 - LS3 Heredity: Inheritance and Variation of Traits
 - LS4 Biological Evolution: Unity and Diversity

4th grade

- DCI
 - LS1 From Molecules to Organisms: Structures and Processes

S&E Practices:

- Analyze and Interpret Data
- Engaging in Argument from Evidence
- Obtaining, Evaluating and Communicating Information

CCC:

- Patterns
- Cause and Effect
- Structure and Function
- Stability and Change

Wisconsin 4th Grade:

- C.4.1 Use the vocabulary of the unifying themes to ask questions about objects, organisms, and events being studied
- C.4.5 Use data they have collected to develop explanations and answer questions generated by investigations
- C.4.7 Support their conclusions with logical arguments

This packet of information will help prep your students for this program and allow for a debrief back in the classroom. Please go over information with your students, prior to the visit.

Resources:

Brain POP Educators, Fossils

<https://educators.brainpop.com/bp-jr-topic/fossils/>

Oxford Museum of Natural History, How Fossils Form

<http://www.oum.ox.ac.uk/thezone/fossils/intro/form.htm>

Kids Dinosaur

<http://www.kidsdinos.com/what-are-fossils/>

Key Vocabulary

Adaptation: A characteristic that allows an animal to be better suited to its environment.

Evolution: All living things that exist today developed from earlier types.

Extinct: A species of animal or plant that has completely died out and is no longer in existence.

Fossil: Remains of plants or animals that lived long ago.

Fossil Record: Is a “timeline” for fossils for scientists. Scientists can help date the fossils by where they are placed in relationship to other fossils in the ground.

Paleontology: The study of fossils and animals and plants that lived long ago.

Pre Visit Activity

Make a Fossil

Objective: Students will learn how fossils are formed and will learn how to make an trace fossil.

Materials:

- Clay (air-dry clay works best)
- Shells, dinosaur toys, etc
- Photos of fossils

What you need to know:

Fossils are remains of animals or plants that lived long ago. If a prehistoric animal died, and fell into the mud, its body would be preserved in the mud. As the skins, muscles and bones started to break down, sometimes an impression of the plant or animals would be left into the mud, which would ultimately be turned into a fossil. This impression is from the animal in the mud, not any bones of the animals. These types of fossils, called trace fossils could be footprints, or skin, but not things like dinosaur spikes or teeth. Paleontologists are scientists that study fossils. These paleontologists are able to look at fossils and determine how animals and plants lived and survived millions of years ago.

Activity:

- 1.) Show students photos of fossils and ask what they see. Create a word wall of the terms they use to describe the fossils. If possible try to some them both trace and body fossils. Ask them if they see a difference between the two.
- 2.) Explain to the students that today they are creating trace fossils, which is an impression into something soft then hardens over time. Give each student a piece of air dry clay. Have them roll it into a ball until all the cracks are smoothed over. Then have the students firmly flatten the ball onto the table.
- 3.) Have students pick something they want to make a fossil out of. This could be a shell, or a dinosaur toy. Have students push the object into the clay, leaving the impression of it on the clay.
- 4.) Allow the students clay to dry overnight. The next day students can exchange with a friend to have them try to guess what trace fossils they have created.

Extensions:

- Have students create a scientific journal of their fossil, how and where it lived millions of years ago and how scientists found it.

Post Visit Lesson

Pre Visit Activity

Gummy Fish Fossils

Objectives: Students will see the process of fossilization.

Materials:

- Paper Towels
- White Bread
- Wheat Bread
- Rye Bread
- Magnifying Glass
- Heavy Book
- Gummy fish

Set Up:

- Leave bread and gummy candies out over night so they will harden a bit to help the fossilization process.
- Cut crust off all pieces of bread

What You Need to know:

Fossilization is a process that takes thousands of years. After an animal dies, fossilization can begin. There are several ways a fossil can form, however in this case we are looking at marine fossils. When a marine animal dies, and the conditions are right, it can be fossilized. Once the animal dies, it falls to the bottom of the water. If left untouched, it can be covered by sediments from the water. If the animal hasn't rotted, this sediment can stick to the animal, forming a hard covering and starting the process of fossilization.

Activity:

- 1.) Have students lay down the paper towel on their desk.
- 2.) Have students lay down a piece of white bread. This is the bottom of the ocean floor. Students can lay down one of two gummy fish.
- 3.) Have students lay down a piece of rye bread onto of the white bread and fish. This is to show the sediment that has built up. Place one of two more fish onto of the rye bread.
- 4.) Lastly, have students place another piece of white bread. Fold the paper towel, to the bread is all covered. Have the student place a heavy book on their bread fossil.
- 5.) Let the fossils sit for 2 days. After those two days, have student observe the fossils they have created.

What's Going on Here?

The process of fossilization takes much longer than 2 days, but this is a good visualization of it. The white bread on the bottom acts as the ocean floor, trapping the fish between the bottom and the sediment, or rye bread. By adding the book on top, you are creating the pressure needed to create a fossil. When the students pull apart their fossil, they can see the impression of the gummy fish in the bread. This would be a trace fossil, which is the impression of the animal in something soft, like mud or ocean floor.

Extensions:

- Have students create a scientific journal entry about their fossil and the process of fossilization.
- Have students test out different variables like how long they have the book on it, or the weight of the book to see how that changes the fossils.