



What is a Fossil?

Adapted from *What is a Fossil* MOR Dinosaur Trunk Activity

Grade Level: Grades K-8

Preparation Time: 10-15 minutes

Activity Duration: 30 minutes-2 hours

Concepts Addressed

- A fossil is evidence of past life.

Objectives

The student will:

- Observe specimens that may or may not be fossils.
- Try to determine if any observed feature of their specimen provides evidence of past life.
- Decide whether each specimen is a fossil and, if so, what kind of evidence of past life it provides.

Materials Included

- Specimens
 1. Petrified wood
 2. Dinosaur bone (vertebrae)
 3. Dendrite
 4. Burrow endocast
 5. Dinosaur claw (replica)
 6. Dinosaur tooth (replica)
 7. Rock--Talc
 8. Plant impression
 9. Rock--Basalt
 10. Dinosaur soft tissue (laminated photo)
 11. Rock--Concretion
 12. Dinosaur skull (replica)
 13. Rock—Egg shaped rock
 14. Dinosaur claw (replica)
 15. Rock--Concretion
 16. Rock—Smooth pebbles
 17. Shell endocast
 18. Dinosaur track fossil (replica)

19. Dinosaur egg shell

- Magnifying glasses

Background

Fossils provide evidence of past life. They show contain the ancient remains of plants and animals or traces of them. It can be difficult to determine whether a specimen is a fossil (evidence of past life) or not a fossil (a rock or something that appears to indicate past life but actually does not). In this activity students and teachers carefully examine several specimens that may, or may not be fossils. The key is to decide whether or not each specimen provides evidence of past life.

Procedure

Prior to Activity

- Read the background section for this activity.
- Read through *What is a Fossil?* Notes to become familiar with the activity material.

During Activity

- Explain to students that a fossil, by definition, provides evidence of past life. During this activity students will be looking at a variety of samples and trying to determine if each shows evidence of past life, and should therefore be classified as a fossil.
- Set out the specimens with appropriate matching cards around a table or around the room.
- Have students take out a sheet of paper and pencil and number their sheet from 1-19.
- Explain that students will be observing a series of rock and fossil specimens. They need to decide if each is a rock or a fossil and why they think so—what evidence, if any, of past life does each specimen show?
- Divide the students up among the 19 specimens. Allow 1-2 minutes per station and tell students when to move on to the next. Or, allow students to take their time and make this into a longer activity.
- After students have had a chance to observe every specimen, have them return to their seats.
- As a class, go through the specimens together and discuss observations and conclusions about whether it is a rock or a fossil and why. Use *What is a Fossil?* Notes to aid you in this discussion.

What is a Fossil? Notes

Number	Speciman	Fossil or Not a Fossil	Type of Fossil	Explanation--Fossil or Not a Fossil	Explanation--Type of Fossil
1	Petrified Wood	Fossil	Body Fossil/Trace Fossil	Petrified wood is a fossil. It shows evidence of past life in the texture of the wood grain.	Because petrification means that all of the organism's material is replaced by minerals, this fossil would be classified as a trace fossil--minerals that retain the grain texture of the living organism. However, if any of the original material from the organism is retained, it would be classified as a body fossil.
2	Dinosaur Bone	Fossil	Body Fossil	This dinosaur bone, which is a vertebrae from a relatively small duck-billed dinosaur, is a fossil. It shows evidence of past life by its shape and texture.	This is a body fossil because it is retains actual remains of the animal.
3	Dendrite	Not a Fossil		A dendrite is not a fossil. It does not show evidence of past life. It is a rock with mineral crystals forming a branching pattern on it.	
4	Burrow endocast	Fossil	Trace Fossil	This burrow endocast is a fossil. It shows evidence of past life because it is formed inside an animal produced burrow. An endocast is formed when something created by life (like a burrow) is filled in with sediment. The sediment retains the shape of the burrow.	This is a trace fossil because it implies that the organism was there.
5	Dinosaur Claw (replica)	Fossil	Body Fossil	A dinosaur claw is a fossil. This one is a replica of a real claw that came from a Velociraptor. It shows evidence of past life because it is a body part left behind when an animal died.	This is a body fossil because it is retains actual remains of the animal.
6	Dinosaur Tooth (replica)	Fossil	Body Fossil	A dinosaur tooth is a fossil. This one is a replica of a real fossil tooth that came from an Allosaurus. It shows evidence of past life because it is a body part left behind when an animal died or lost it.	This is a body fossil because it is retains actual remains of the animal.
7	Rock	Not a Fossil		This is not a fossil. It is a mineral called Talc. It does not show evidence of life.	
8	Plant Impression	Fossil	Trace Fossil	This is a fossil. It is an imprint of a plant that was left behind when the plant material rotted away. It shows evidence of life because we can clearly tell that a plant (living organism) left it's mark here.	This is a trace fossil because it implies that the organism was there.

9	Rock	Not a Fossil		This rock is not a fossil. It is a type of rock called basalt. The holes in the rock are formed by air bubbles during a volcanic eruption. It does not show evidence of life.	
10	Dinosaur soft tissue (photo)	Fossil	Body Fossil	This is a photo of dinosaur soft tissue which is a fossil. This soft tissue is from a fossilized T. rex bone. It shows evidence of life because it is actual tissue from the body of an animal that has been preserved. It is an exciting and new fossil find that is not yet completely understood by scientists.	This is a body fossil because it is retains actual remains of the animal.
11	Rock	Not a Fossil		This rock is not a fossil. It is a rock called a concretion. Concretions often form shapes that remind us of living organisms, but they are formed in ways that do not involve life. It does not show evidence of life.	
12	Dinosaur Skull (replica)	Fossil	Body Fossil	This real baby <i>Maiasaura</i> skull from which this replica is made is a fossil. It shows evidence of life because the bones are the remains of a once living dinosaur.	This is a body fossil because it is retains actual remains of the animal.
13	Rock	Not a Fossil		This rock is not a fossil. Although it is egg shaped, it is just a rock. Sometimes processes in nature that do not involve life shape rocks in ways that resemble fossil forms. This rock was likely rounded in a river. It does not show evidence of life.	
14	Dinosaur Claw (replica)	Fossil	Body Fossil	The real <i>Allosaurus</i> front limb claw fossil from which this replica was made is a fossil. It shows evidence of life because it is a preserved body part from a once living animal.	This is a body fossil because it is retains actual remains of the animal.
15	Rock	Not a Fossil		This rock is not a fossil. It is a rock called a concretion. Concretions often form shapes that remind us of living organisms, but they are formed in ways that do not involve life. It does not show evidence of life.	

16	Rock	Not a Fossil		These rocks are not fossils. They are smooth pebbles, likely rounded and polished in a stream. They do not show evidence of life. Some people mistake rocks like these for gastroliths--rocks that some scientists believe dinosaurs ingested to help break down their food. It is very difficult to know if a rounded, polished rock is a gastrolith. The only way to really even come close is to find the rounded, polished rocks inside of a dinosaur skeleton fossil. In that context, you may be able to argue that they show evidence of life and could be called fossils.	
17	Shell endocast	Fossil	Trace Fossil	This shell is a fossil. It shows evidence of life because the shell that belonged to the organism inside had to exist to produce this. An endocast is formed when something created by life (like a shell) is filled in with sediment. The sediment retains the shape of the shell, but not the shell itself.	This is a trace fossil because it implies that the organism was there.
18	Dinosaur Tracks (replica)	Fossil	Trace Fossil	The real tracks from which this replica was made are fossils. These tracks show evidence of life because they show that a living organism walked across this rock before it was hard. These tracks are from a theropod dinosaur.	This is a trace fossil because it implies that the organism was there.
19	Dinosaur Egg Shell	Fossil	Body Fossil	These pieces of dinosaur egg shell are fossils. They show evidence of past life because they are pieces of the eggs from which once living dinosaurs hatched. These fossilized egg shells are likely from the eggs of <i>Maiasaura</i> or <i>Troodon</i> .	This is a body fossil because it is retains actual remains of the animal.