# Fossil in Sedimentary Rock

Earth & Space Science | Lesson Guide

Kindergarten

## Photo Description

This rock has a white shell shape pressed into it. The shell looks like a fan with lines going out from the bottom. The rock is sitting on other rocks by the water.

## Scientific Phenomena

This image shows a fossil - the preserved remains of an ancient sea creature called a scallop shell. The anchoring phenomenon is fossilization, which occurs when organisms are buried quickly in sediment and their hard parts are preserved over millions of years. The original shell dissolved away, but its shape was left as an impression in the rock, creating what scientists call a "mold fossil." This process demonstrates how Earth's materials change over very long periods of time.

## Core Science Concepts

1. Fossils are evidence of past life - This shell print shows us that a sea animal lived long ago, even though we can't see the animal anymore.

2. Rocks can form from layers - Sedimentary rocks like this one form when mud, sand, and other materials pile up and get pressed together over time.

3. Earth changes over time - The presence of a sea shell in rock tells us this area was once covered by water, even if it's on land now.

4. Preservation of shapes - Hard parts of animals and plants can leave their shapes in rock when they get buried quickly.

**Pedagogical Tip:**

Use real fossils or fossil replicas during your lesson so students can touch and examine them closely. This hands-on experience helps kindergarteners make concrete connections to abstract concepts about deep time.

**UDL Suggestions:**

Provide multiple ways for students to explore fossils - visual (pictures and real specimens), tactile (touching fossils), and kinesthetic (making fossil impressions in clay). This supports different learning preferences and abilities.

## Zoom In / Zoom Out

1. Zoom In: Inside the rock, tiny particles of sand and mud were squeezed together so tightly they became hard stone. The shell's surface had tiny bumps and ridges that got copied perfectly into the rock.

2. Zoom Out: This fossil is part of Earth's story book. Scientists find fossils like this all over the world to learn about ancient oceans, climate, and how life on Earth has changed over millions of years.

## Discussion Questions

1. What do you think this animal needed to live when it was alive? (Bloom's: Apply | DOK: 2)

2. How is this fossil the same or different from shells you might find at the beach today? (Bloom's: Analyze | DOK: 2)

3. What does this fossil tell us about what this place was like long ago? (Bloom's: Evaluate | DOK: 3)

4. If you found this fossil, what questions would you want to ask about it? (Bloom's: Create | DOK: 3)

## Potential Student Misconceptions

1. Misconception: "The shell is still alive inside the rock."
   Clarification: The animal that made this shell died long ago. Only the shape of its shell was saved in the rock.

2. Misconception: "Someone put the shell in the rock."
   Clarification: The shell got buried naturally in mud at the bottom of an ancient ocean, and over time the mud turned into rock.

3. Misconception: "All rocks have fossils in them."
   Clarification: Only some rocks have fossils. Fossils are found mainly in rocks that formed from layers of mud and sand.

## NGSS Connections

- Performance Expectation: K-ESS3-1: Living things need water, air, and resources from the land, and they live in places that have the things they need.
- Disciplinary Core Ideas: K-ESS3.A - Living things need water, air, and resources from the land
- Crosscutting Concepts: Patterns - Patterns in the natural world can be observed and used as evidence

## Science Vocabulary

* Fossil: The remains or traces of plants and animals that lived long ago, preserved in rock.
* Ancient: Something that is very, very old from long ago.
* Preserved: Kept safe and protected so it doesn't disappear.
* Impression: A mark or shape that gets pressed into something soft.
* Sediment: Tiny pieces of rock, sand, and mud that settle in layers.

## External Resources

Children's Books:
- Fossils Tell of Long Ago by Aliki
- If You Find a Rock by Phyllis Flowerdew
- Digging Up Dinosaurs by Aliki

YouTube Videos:
- "What is a Fossil? | Educational Video for Kids" - Simple explanation of how fossils form with colorful animations perfect for young learners: https://www.youtube.com/watch?v=Y7o9vP8RBXQ

- "Fossils for Kids | Learn about the different types of fossils" - Kid-friendly overview of different fossil types with real examples: https://www.youtube.com/watch?v=h_uwCOHHdVg