

Photo Description



These are fossils found in rocks. A fossil is something that was alive long, long ago that turned into stone. You can see shell shapes and a spiral shape in the rocks.

Scientific Phenomena

The anchoring phenomenon here is fossilization - the process by which ancient organisms become preserved in rock over millions of years. This occurs when organisms (like sea creatures) die and are quickly buried by sediment. Over vast periods of time, minerals replace the organic material, creating a rock-like copy of the original organism. The spiral fossil appears to be an ammonite, an extinct marine animal, while the larger ribbed fossil resembles ancient bivalves or brachiopods.

Core Science Concepts

1. Fossils as Evidence of Past Life: Fossils show us that different animals lived on Earth long ago, many that don't exist today.
2. Rock Formation: Sedimentary rocks can contain fossils because they form from layers of mud, sand, and other materials that buried ancient creatures.
3. Time and Change: The Earth and the life on it have changed over very long periods of time - much longer than humans have been alive.
4. Observation Skills: Scientists study fossils by looking carefully at their shapes, sizes, and features to learn about ancient life.

Pedagogical Tip:

Use real fossils or high-quality replicas for hands-on exploration. First graders learn best through touch and direct observation, so having physical specimens will make the concept more concrete and memorable.

UDL Suggestions:

Provide multiple ways for students to explore fossils: visual (pictures and real specimens), tactile (touching fossils), and kinesthetic (acting out how animals might have moved). Create fossil rubbings with paper and crayons for students who benefit from fine motor activities.

Zoom In / Zoom Out

1. Zoom In: At the microscopic level, minerals slowly replace the tiny parts of shells and bones, atom by atom, preserving the exact shape and sometimes even internal structures of ancient organisms.

2. Zoom Out: These fossils connect to ancient ocean ecosystems that covered much of what is now land. They help scientists understand how Earth's climate, geography, and life forms have changed over hundreds of millions of years.

Discussion Questions

1. What do you notice about the shapes in these rocks? (Bloom's: Remember | DOK: 1)
2. How do you think these animal shapes got inside the rocks? (Bloom's: Analyze | DOK: 2)
3. What can these fossils tell us about what Earth was like long ago? (Bloom's: Evaluate | DOK: 3)
4. If you found a fossil, what would you want to learn about it? (Bloom's: Create | DOK: 2)

Potential Student Misconceptions

1. Misconception: "Fossils are just old rocks that look like animals."

Clarification: Fossils were once real, living animals that became preserved in rock over millions of years.

2. Misconception: "Dinosaurs and all fossils lived at the same time."

Clarification: Different types of ancient animals lived at different times in Earth's history, just like different animals live in different places today.

3. Misconception: "Fossils are made when animals turn into stone quickly."

Clarification: Fossilization takes millions of years to happen, much longer than a human lifetime.

Cross-Curricular Ideas

1. Math - Sorting and Patterns: Collect pictures or replicas of different fossils and have students sort them by size, shape, or type. Create simple patterns with fossil images (spiral, shell, spiral, shell). Count how many fossils are in a collection.

2. ELA - Storytelling and Writing: Have students dictate or draw stories about "A Day in the Life of an Ancient Sea Animal" that became a fossil. Read fossil-themed picture books together and act out the story of how a fossil forms using their bodies.

3. Art - Fossil Rubbings and Clay Impressions: Students create fossil rubbings by placing paper over real fossils or replicas and rubbing with crayons. They can also press clay into fossil molds to create their own "fossils," connecting to how real fossils form through impressions in sediment.

4. Social Studies - Museum Visit and Community Exploration: Plan a virtual or in-person visit to a natural history museum to see fossil displays. Discuss how scientists and museum workers help us learn about the past and share that knowledge with our community.

STEM Career Connection

1. Paleontologist - A scientist who studies fossils and learns about animals that lived long, long ago. Paleontologists dig carefully in rocks to find fossils, clean them, and figure out what the ancient animals looked like and how they lived. They work in museums, universities, and dig sites around the world to unlock Earth's ancient secrets.

- Average Annual Salary: \$65,000 - \$90,000 USD

2. Geologist - A scientist who studies rocks and how they form over time. Geologists look at layers of rock to understand Earth's history and find fossils. They also search for useful materials like coal, oil, and minerals that help people.

- Average Annual Salary: \$70,000 - \$95,000 USD

3. Museum Educator or Curator - A person who works in museums and helps visitors (like you!) learn about fossils and ancient life. They display fossils in interesting ways, create activities for students, and tell the story of how these ancient creatures lived millions of years ago.

- Average Annual Salary: \$45,000 - \$70,000 USD

NGSS Connections

- Performance Expectation: 1-ESS1-1: Use observations of the sun, moon, and stars to describe patterns that can be predicted.
- Disciplinary Core Ideas: 1-ESS1.A - The sun and moon appear to move across the sky on a daily basis
- Crosscutting Concepts: Patterns - Patterns in the natural world can be observed and used to describe phenomena

Note: First grade NGSS standards don't directly address fossils, but this connects to observing and describing natural objects and phenomena.

Science Vocabulary

- * Fossil: The remains of something that lived long ago that turned into rock
- * Ancient: Very, very old - from long before people lived on Earth
- * Sediment: Tiny pieces of rock, sand, and mud that pile up in layers
- * Preserve: To keep something safe so it lasts a very long time
- * Extinct: When all animals of one type have died and none are left alive

External Resources

Children's Books:

- Fossils Tell of Long Ago by Aliki
- If You Find a Rock by Peggy Christian
- Digging Up Dinosaurs by Aliki