

Photo Description



This picture shows old rocks with special shapes and patterns pressed into them. Some rocks have shell shapes and wavy lines that look like they came from sea animals that lived long, long ago. These special rocks are called fossils.

Scientific Phenomena

The anchoring phenomenon is fossil formation and preservation. These fossils formed millions of years ago when sea creatures died and were quickly buried by sand and mud. Over very long periods of time, the soft parts of the animals decayed away, but the hard shells left their shapes pressed into the rock like a permanent stamp. The layers of sediment gradually turned into rock, preserving these ancient life forms as fossils that we can observe today.

Core Science Concepts

1. Fossils are evidence of past life - The shapes we see in rocks show us that different animals lived on Earth long ago
2. Rock layers tell stories about time - Fossils help scientists understand what happened in the past by looking at different rock layers
3. Earth changes over very long time periods - Areas that are now land were once covered by ancient oceans where these sea creatures lived
4. Preservation requires special conditions - Only some dead plants and animals become fossils when they are buried quickly and completely

Pedagogical Tip:

Use real fossil specimens or high-quality replicas for hands-on exploration. Students learn best when they can touch and examine fossils directly, making observations about texture, shape, and size.

UDL Suggestions:

Provide multiple ways for students to document their fossil observations: drawing, verbal descriptions, physical gestures, or digital photos. This supports different learning preferences and abilities.

Zoom In / Zoom Out

1. Zoom In: At the microscopic level, minerals slowly replaced the original shell material molecule by molecule, creating an exact stone copy of the original creature's hard parts through a process called permineralization.
2. Zoom Out: These marine fossils are part of Earth's larger story of changing climates, moving continents, and evolving life forms. They connect to global fossil records that help scientists understand how life on Earth has changed over millions of years.

Discussion Questions

1. What do you think these sea creatures looked like when they were alive millions of years ago? (Bloom's: Create | DOK: 3)
2. How are these fossil shells the same or different from shells you might find at the beach today? (Bloom's: Analyze | DOK: 2)
3. What does finding sea creature fossils on land tell us about how Earth has changed? (Bloom's: Evaluate | DOK: 3)
4. Why do you think only some dead animals become fossils while others do not? (Bloom's: Apply | DOK: 2)

Potential Student Misconceptions

1. Misconception: Fossils are the actual bones or shells of dead animals
Clarification: Fossils are usually rock copies or impressions of ancient life, not the original animal parts
2. Misconception: All dead animals and plants become fossils
Clarification: Fossils are rare and only form under special conditions when organisms are buried quickly
3. Misconception: Fossils formed recently, like last year
Clarification: Most fossils are millions of years old and took very long time periods to form

Cross-Curricular Ideas

1. Math + Fossils: Create a "Fossil Counting & Sorting" activity where students count the fossils in the photo, sort them by size (small, medium, large), and create simple bar graphs showing how many fossils fall into each category. This builds counting, comparison, and data representation skills.
2. ELA + Fossils: Have students write or dictate "Fossil Stories" - imaginative narratives about what a sea creature's life might have been like millions of years ago. Students can draw their creature and write 2-3 sentences describing where it lived, what it ate, and how it moved through the ancient ocean.
3. Social Studies + Fossils: Explore "Places Around the World with Fossils" by looking at a map and discussing where paleontologists find different types of fossils. Students can learn that fossils are found on every continent, connecting to geography and helping them understand that Earth's environments have changed in many locations over time.
4. Art + Fossils: Create "Fossil Rubbings and Impressions" by having students make their own fossil imprints using salt dough, clay, or sand. They can press small shells, leaves, or objects into the material to create impressions, then paint them to look like real fossils. This hands-on experience helps students understand the fossil formation process through creative play.

STEM Career Connection

1. Paleontologist - A paleontologist is a scientist who studies fossils and learns about animals and plants that lived long ago. They dig carefully in the ground to find fossils, examine them with special tools, and figure out stories about ancient life on Earth. These scientists help us understand how life has changed over millions of years. Average Annual Salary: \$68,500

2. Geologist - A geologist studies rocks and Earth to understand how our planet formed and changed over time. They look at rock layers, identify different types of rocks and minerals, and use fossils as clues to read Earth's history. Geologists help us find resources like oil and minerals, and they study natural events like earthquakes and volcanoes. Average Annual Salary: \$94,000

3. Museum Educator or Fossil Preparator - A fossil preparator carefully cleans, repairs, and prepares fossils so they can be displayed in museums for people to learn from. They use gentle tools to remove rocks from around fossils and help bring ancient specimens to life for visitors. These workers combine science knowledge with careful attention to detail and a love of sharing discoveries with others. Average Annual Salary: \$38,000

NGSS Connections

- Performance Expectation: 2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly
- Disciplinary Core Ideas: 2-ESS1.C - Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe
- Crosscutting Concepts: Patterns - Patterns in the natural world can be observed and used as evidence

Science Vocabulary

- * Fossil: The remains or traces of ancient plants and animals preserved in rock
- * Ancient: Something that lived or happened a very long time ago
- * Preserved: Kept safe and unchanged over a long period of time
- * Sediment: Tiny pieces of rock, sand, and mud that settle in layers
- * Evidence: Proof or clues that help us understand what happened
- * Marine: Living in or coming from the ocean

External Resources

Children's Books:

- Fossils Tell of Long Ago by Alike
- If You Find a Rock by Peggy Christian
- National Geographic Readers: Fossils by Kathleen Weidner Zoehfeld