

Investigation One - Identifying and Comparing Fossils

Standard IV Students will understand how fossils are formed, where they may be found in Utah, and how they can be used to make inferences.
Objective 1 Describe Utah fossils and explain how they were formed.
Intended Learning Outcomes <ol style="list-style-type: none">1. Use science process and thinking skills2. Manifest scientific attitudes and interests3. Understand science concepts and principles4. Communicate effectively using science language and reasoning

**Standard
IV**

**Objective
1**

Background Information

Fossils are the remains or evidences of ancient plants and animals. Fossils provide a record of life that existed on Earth millions of years ago. We are fortunate that the remains or evidences from organisms still exist today. Most living things decay when they die. Decay is caused by bacteria in the environment. If an organism dies and is buried or covered quickly, the process of decay is slowed because of the lack of air. Thousands and even millions of years ago, sandstorms, mudslides, or volcanic ash could have buried many organisms. These organisms could have either gone through mineral replacement or slowly decomposed, leaving impressions or imprints in sediments. Other organisms could have been frozen in ice or snow or caught in sap or tar pits that preserved them for thousands or millions of years. Some organisms left trace marks such as tracks and trails in mud. If the mud hardened and was then covered by more mud, the activities of the organisms can be studied by scientists. Today, there are many fossils that remain undiscovered around the world, because only a small percentage of these fossils will ever be found.

The investigations of this standard have many hands-on activities. They will help students know what the different fossils are and help them understand how nature makes these fossils. They will show students where fossils are found and how they are discovered. The investigations will show how fossils provide clues to Earth's history and how they provide evidence to make inferences about past environments. Some activities also compare fossils to living organisms of today to see if the organisms still exist or are extinct.

In this investigation, students will be looking at different items to see if they can recognize fossils. This will be an introduction to the different fossils they will be studying. Students will make inferences as to how the fossils were created. It will also lead into a discussion of how fossils give clues about Earth's history and help us make inferences about Utah's past environments.

Pre-Assessment/Invitation to Learn

Materials

Have actual pictures, drawings or real fossils.

- *There are agencies in different areas that have fossils for checkout. In the Salt Lake area, you can obtain a kit from the Natural Resources Building, 1594 West, North Temple.

Have a discussion with the students to find out if they know of any plants and/or animals that existed many years ago that don't exist today. Have them name a few. They will name dinosaurs and possibly some plants. Ask them how we know these plants and animals existed. Students will come up with the idea that we have found fossils. Ask them what fossils have been found. Ask them what fossils are. Most of them will say fossils are animal parts made of stone. Tell students there are other fossils besides those that have been changed to stone. This is a good time to define fossils for students. Tell them that they will learn to identify fossils and will make inferences about past environments of Utah.

Instructional Procedure

1. Have all of the objects with numbers by them spread out on tables.
2. Tell the students they will walk around and look at the different objects for observational purposes only. As they are observing, have them write the number of the objects they see on their paper. They should have two columns titled "fossil" and "non-fossil".
3. When they are finished, discuss what the objects are. At the same time have students discuss whether the objects fit into the categories of "fossil" or "non-fossil." Remind students of the definition of a fossil. Have the teacher move the objects either in the "fossil" or in the "not a fossil" pile.
4. Have the students tell how they think fossils are made by nature. Are all fossils the same? Let them speculate about this.
5. Ask the students to compare the fossils with organisms of today. How are they the same in shape, size, structure, and patterns?
6. Have the students make inferences as to what the environments were like for these organisms to exist. If they are having trouble making inferences, tell them we have similar organisms today that they can relate to, and have them determine what their environments are like.
7. Tell the students that these types of fossils are found in Utah. So, what was Utah's environment like when these fossils existed?
8. Tell the students that for the next few days they are going to learn about the four types of fossils: impression, preserved, trace, and mineral replacement fossils.

Materials

- 3x8 tag which reads "Not a Fossil"
- 3x8 tag which reads "Fossil"
- Non-fossil examples:
 - Metamorphic rock
 - Sedimentary rock
 - Igneous Rock
 - Plastic bottle
 - Bone
 - Leaf
 - Crayon rubbing of a leaf
 - Shell
 - Piece of metal
 - Stuffed dinosaur
 - Coin
 - Piece of wood
 - Paper towel
- Fossil Examples:
 - Various fossils gathered from home, school, museums, etc.

Curriculum Extensions

Language Arts-

- Have the students write a description of one of the fossils they learned about in their journals. (Standard VIII, Objective 6)

Assessment Suggestions

- After the discussion of fossils and non-fossils, assess the students' ability to identify fossils and non-fossils items.
- Provide two new objects, one a fossil and one not a fossil, to see if they can correctly identify them as fossil and non-fossil.

Resources

- See the Resource List at the end of these Investigations.

Homework & Family Connections

- Have the students go to the library and check out books about fossils to read together as a family.
- Have students identify fossils they have at home.