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by Charles Burrows

**LAB: USING CORRELATION TECHNIQUES**

**TO DETERMINE THE RELATIVE AGES OF INDEX FOSSILS**

**LEARNING TARGET: I can draw conclusions about the relative ages of index fossils by correlating distant rock layers.**

**BACKGROUND:** By studying fossils and applying the principle that old layers of rock are below young layers, 19th-century scientists determined the relative ages of sedimentary rock in different areas around the world. No single area on Earth contained a record of all geologic time. So, scientists combined their observations to create a standard arrangement of rock layers.

**Correlation** is the matching of rock layers from one area to another. A geologist might wish to know if a layer of limestone in Zion National Park, Utah, is the same limestone layer as one in Grand Canyon National Park, Arizona. Geologists use several methods to match, or correlate, rock layers. Although widely separated, the same rock layers can be found at both parks.

One of the best methods of correlating rock layers over long distances is the use of index fossils. **Index fossils** are the remains of organisms that lived and died within a particular time segment of Earth’s history. After death, their bodies were deposited in sediments. Most of the organisms then became extinct. Therefore, each layer contains index fossils unlike those in the layer above or below it. Geologists can use these distinctive fossils to correlate layers of rock from different areas.

**PROCEDURE:** Cut out the *twenty* index fossil cards. Walk around the classroom, visiting each of the six different rock outcrops. As a group, figure out the relative ages of all twenty of the index fossils. Arrange them on a desk, in order, from oldest to youngest.

**SUMMARY QUESTIONS: (Answer these on separate paper or on the back.)**

**1.** How is “relative” age different from “absolute” age?

**2.** How did you use the Law of Superposition in this activity?

**3.** What does it mean if an index fossil is located in a single rock layer at two distant locations?

**4.** Why are unconformities problematic?

**5.** List the numbers of the fossils in order from oldest to youngest.

**6.** Which fossil is not a good index fossil? Why?

**7.** What do you and don’t you know about fossil #17?

**8.** What inferences can we make about the fossils besides their relative ages?