What is a Fossil?

Everything we know about dinosaurs comes from the study of the fossilized remains of the animals and the environment (plants and other animals) in which they lived. Just what is a fossil and how does a dinosaur bone turn into one? *Fossil* is from the Latin word meaning “to dig”, and it was originally applied to any artifact or bone that was dug out of the ground. Gradually, the word came to mean the preserved remains of a plant or animal. Fossils are created over a long period of time. They are most commonly found in limestone, sandstone and shale.

An organism can also be fossilized by carbonization: the original tissues turn to carbon but retain the form of the creature or plant; tree trunks turned to coal have carbonized.

Fossils can be classified into four types, according to the way they were fossilized. **True fossils**, truly rare, preserve the actual animal or animal parts. More common, **cast fossils** turn to rock when minerals replace the organic remains – the original material is often lost, but a near exact replica remains. Sometimes the original material dissolves in ground water, leaving only an impression or **mould** of the original life-form. **Trace fossils** are not remains of the creatures themselves, but the marks, structures or signs left behind while the creature lived (e.g., nests, footprints). An insect or plant preserved in amber or another form of hardened tree sap is not a fossil.

Fossils of any type are rare. Most have hard parts that hold their shape long enough for the fossilization process to take its course – a very long time. For a plant or animal to become a fossil, it must be lucky enough to have been covered by sediment, usually under water, and escape decay, destruction by a scavenging animal and erosion.

But this is only half the story, because millions of years later another set of events must come to pass. The surrounding layers of rock must slowly erode away until, with some luck, someone comes along and recognizes the remains of a living creature. Then a fossil has to be dug out of the ground very carefully and documented properly (location, date, etc.). As you can imagine, the chances of all these things occurring are very small.

EXTENSION ACTIVITY

LEVEL: All grades

OBJECTIVE: In this exercise students will better understand how mould and cast fossils occur.

EXERCISE: Students can make their own cast fossils using plaster of Paris and objects such as shells, bone or even their own hand or footprint.

MATERIALS: Modelling clay, plaster of Paris, water, a bowl or bucket to mix plaster of Paris in, shells, plastic or soft rubber toy animals (such as crabs, or even toy dinosaurs), and vegetable oil (optional).

PROCEDURE:

1. Use a piece of modelling clay approximately the size of the object you wish to fossilize.
2. Flatten the clay out and press your object into it using firm, even pressure. You might want to apply a small amount of vegetable oil to the impression surface so that it does not stick to the object.
3. Remove the object, leaving an impression. This is the mould.
4. Prepare some plaster of Paris according to the package directions so that it is thick and smooth.
5. Spoon plaster into each impression thoroughly filling it in.
6. Let the plaster dry completely (about 30 to 60 minutes), then peel away the clay to reveal your cast fossil.