

# Rock Detectives



Ages	Subject	Topics	Resources
7-11 years	Science Geopgraphy	Fossils Time	Soil samples, plastic cups, water, plastic spoons, rock samples, hand lenses

The Jurassic Coast showcases a near complete record of 185 million years of Earth's history over 95 miles of coastline. The rocks along the Jurassic Coast are all sedimentary rocks. These are rocks formed from the weathered and broken particles of other rocks. Across the coastline, there are sandstones, clays, shales, limestones and chalk all formed at different times and in different environments. Rocks usually form in horizontal layers, so the oldest rocks are at the bottom of the cliffs and the youngest at the top. Along the Jurassic Coast, the rocks have been tilted so that as you travel from the west to the east, the rocks get younger in age. This extraordinary story of shifting continents, changing climates and evolving plants and animals is revealed through the rock layers and the fossils that are hidden inside. In this activity, children will learn how to describe and compare rocks and soils. This is a key skill in searching for clues that tell us about the distant past. Using these skills, children must create their own geological stories and then make their own sedimentary rock cliff!

## Teachers' Materials

Children will need to go outdoors to collect soil and rock samples. An area of the school grounds should be sufficient for this. In order for the children to explore different rocks, we recommend borrowing some rock samples from a local stonemason, a museum or a local university Earth Science department. You could also order your own samples from GeoSupplies, TTS and UKGE. To make your own sedimentary rock cliffs, we recommend getting bags of different sized gravel, play sand, shells or even beads to represent the different rock and fossil layers. The children will also need magnifying glasses to examine their rocks and a small amount of water to make their "cliffs".

## Practicalities

Making the sedimentary "cliffs" can get a little messy. We suggest providing the different "rocks" and "fossils" in plastic microwave containers (available in pound shops) on each group table with plastic spoons so children can help themselves. Clear plastic cups are ideal so children can see their layers build up.

## Discussions

Rock layers vary immensely in terms of their thickness from very thin layers (called laminations) to thick layers (called beds). Thicker beds indicate that the environmental conditions were quite stable, so sediments had a chance to build up over time with little disturbance. What types of layers do the children think might geologists find in the future? A layer of mobile phones or perhaps plastic rubbish? What will this tell future generations about the way we lived?

## Extensions and Adaptations

The Earth's history is characterised by mass extinctions where environmental conditions changed so drastically it affected life on Earth. At the end of the Permian period (250 million years ago), it's staggering to think that 96% of life on Earth was wiped out. As an extension to the sedimentary cliff activity, children could write a story detailing what has happened in their rock layers. If they have included a mass extinction event, what impact does this have on their geological story?

## Links to Other Resources

Rock Detectives links well to the following resources:

- How do Fossils Form?
- Jurassic Coast Timeline
- Linking the Past to the Present
- What Makes the Best Building Stone?
- Make a Model of the Jurassic Coast