

## Third Graders become “Junior Geologists”

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What is the difference between igneous, metamorphic, and sedimentary rocks? How do they form and how can we tell the difference from one rock to another? Students from Paulding Elementary had these questions and so much more answered for them during a program where they explored the rock cycle and investigated properties associated with various rocks and the processes behind how they formed. Rocks have unique characteristics that allow them to be sorted as well as classified and they form in different ways. Students were able to gain a basic understanding of how rocks are identified based on properties such as texture and hardness, but also based on the minerals found within them.

First, let's get an understanding on the study of rocks and who it is that studies rocks. A Geologist is the term used to describe the scientist who studies rocks. According to Geology.com, Geology is all about studying the earth, the materials that make up its surface, and the forces that are continually working on these materials to change them in some way. Geologists are looking to gain a life history of the earth as it is recorded in rocks to gain an understanding of how the earth has changed over time in addition to understanding why things such as landslides, earthquakes, and floods occur.

Now, let's talk about what makes up rocks: minerals. Minerals are substances that are made up of only one chemical, which give them one unique color all throughout them, and form the building blocks of rocks. Minerals are usually very appealing to the eye as they are quite smooth and have a lot of luster (shine) to them. During rock formation, several different processes are taking place which bring together a variety of minerals together to form rocks which explains why rocks have a variety of colors found within them. The minerals contained within rocks help to distinguish one type of rock from another.

Just like the water cycle describes the various changes water undergoes as it travels throughout the environment, there is also a cycle to describe the ways rocks change known as the rock cycle. Within the rock cycle, there are three main types of rock that are focused upon which are metamorphic, igneous, and sedimentary rock. Each group contains rocks which differ between one another when judging their size, shape, and mineral arrangement.

Igneous rocks originate from magma that crystalizes as it cools. Magma is simply a hot liquid of melted minerals. Some examples of igneous rocks are granite which is commonly used in countertops and basalt. With rocks, it is important to understand the fact that weathering is always working to break them into smaller pieces via actions such as wind and water. Rock is continually broken down until the rock is broken down into the smallest unit possible, soil.

Sedimentary rocks are formed as sediment and other organic materials such as sand and decaying plants/animals are transferred to a new location. This sediment is deposited in distinct layers, pressed down together as more material is gathered. Eventually the deposited sediment is hardened into the sedimentary rocks that are formed. Common examples of sedimentary rock include rock salt, chalk, shale, and flint. Sedimentary rocks truly tell a story as they preserve plants and animals that once lived on earth in the rock which help geologist paint a picture of earth's history in addition to understanding why certain processes take place on earth.

Metamorphic rocks were the third type of rock discussed. Heat and pressure can then be applied to either igneous or sedimentary rock which will cause the rocks to metamorphize or change form into metamorphic rocks. Heat is provided by volcanoes under the surface while rock layers pressing upon one another are supplying the pressure. Examples of metamorphic rocks include limestone, sandstone, and marble.

Rocks are identified by looking at the size of rock particles, weight, texture, and color. These identification skills were put to the test by students as they became "Junior Geologists" and took part in an activity called Rock Candy where they matched up samples of various candy bars such as snickers, jolly ranchers, Twix, peppermint patties with the written description or observation. In this activity, students learned that geologists closely examine their rock samples and write detailed notes which help them to identify the type of rock being looked at.

Would you like this program or a similar one for your group? Contact Patrick Troyer at [patrick.troyer@pauldingswcd.org](mailto:patrick.troyer@pauldingswcd.org) or 419-399-4771.