New Mexico Museum of Natural History & Science:

Science Education Resources

You probably know the New Mexico Natural History & Science Museum (NMMNHS) is a wonderful place to visit in person – which it is! But you don't have to walk in our front door to find amazing educational experiences and resources.

The Museum's website http://www.nmnaturalhistory.org/ offers a wealth of information for classroom, science, informal and homeschool educators, and their students and families. Go to the education menu, and click on **Science @ Home** http://www.nmnaturalhistory.org/education/science-home to find some amazing STEM resources.

For example, click on **Mineral Monday**, for resources and videos on identification of minerals, rocks, or fossils, and you can submit photographs of your specimen for identification by our experts. *You can even submit a photo of a place in New Mexico and ask for more information about its geology*.


BRIEF GUIDE TO ROCKS

What is a rock?
- A mixture of minerals.
- A naturally occurring solid.
- A "time machine" with a story to tell. All rocks tell a story; a rock represents a period of time (during which it was formed), an environment (in which it was formed) and a geologic process (how it was formed). By "reading the record of a rock" you can understand its history.

Sandia Granite

How are rocks classified?

Igneous: solidified from magma (molten, or liquid, rock within the Earth)

Note: Igneous rocks are further divided into Plutonic (the magma solidified beneath Earth's surface) and Volcanic (the magma erupted onto Earth's surface to become lava and the lava solidified at the surface).

Examples: Plutonic = granite, gabbro, granodiorite, monzonite
Volcanic = basalt, rhyolite, pumice, obsidian

Sedimentary: rocks produced by the movement and deposition of eroded minerals, sand, silt, pebbles, or cobbles or by the deposition of precipitates.

Note: Sedimentary rocks are divided into Clastic (a rock with layers of sediment of various grain sizes) or Chemical (a rock formed by precipitation of chemicals layer by layer out of water).

Examples: Clastic = sandstone, shale
Chemical = limestone, travertine

Metamorphic: a pre-existing rock (igneous or sedimentary or even metamorphic) that has been altered by changes in temperature, pressure, or stress into a different type of rock by mineralogical, chemical, and/or structural changes, while in the solid state.

Note: Metamorphic rocks are sometimes classified by geologists into levels of metamorphism (how much it has changed) from low to high intensity. Metamorphic rocks that have been under pressure show an alignment of minerals that is called **foliation**. If the rock has been under both high pressure and high temperature, new minerals can sometimes **crystallize**.

Examples (listed from low temperature to high temperature):
Slate = metamorphosed shale
Greenstone = metamorphosed basalt
Marble = metamorphosed limestone
Quartzite = metamorphosed sandstone
Schist = metamorphosed sedimentary rock
Gneiss = metamorphosed granite

How are different rocks named?

- Igneous rocks are described and named by the type and amount of minerals within them
- Clastic sedimentary rocks are described and named by the grain size of the material that makes them (sand, silt, clay, pebbles)
- Chemical sedimentary rocks are described and named by their chemical composition and how they are formed.
- Metamorphic rocks are described and named by their minerals and by the rock's texture.

Sandstone (Capitol Reef National Park)

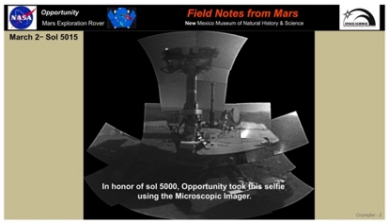
Our **Brief Guide** section has summaries of geological topics and the geology of our state, and more topics will be added soon.

Under **Virtual Field Trips**, explore part of Petroglyph National Monument. Or click on the Museum's **Sandia Mountain Natural History Center** under Science @ Home to explore ecosystems and some interesting "quick trips."

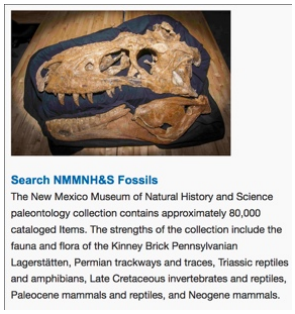
You can also go to the Museum's **YouTube channel** for videos related to space science, paleontology, museum exhibits, and a fun series of bilingual "That's Bizarre" videos about biology topics from the museum's Naturalist Center.

There are other sections in the museum website that will be of interest to fans of New Mexico volcanoes, tyrannosaurs, and the planet Mars.

Go to the exhibits menu and click on online exhibits, and you will find **The Volcanoes of New Mexico** http://nmnaturalhistory.org/online-exhibits-geoscience/volcanoes-new-mexico with photos and detailed descriptions of the 1000 volcanoes in our state; or explore the four areas in New Mexico where fossils of tyrannosaurs have been discovered http://nmnaturalhistory.org/online-exhibits/new-mexico-tyrannosaur-state



Go to the science menu and click on space science to find **Mars-Perseverance Mission** and **Rover Field Reports from Mars** for educational resources about Mars and the mission and for reports on the Perseverance rover's mission. This Museum is one of only two museums nationwide with a direct connection to the mission through a science curator http://nmnaturalhistory.org/space-science/rover-field-reports-mars



We are a research and collections museum and hold paleontological, mineralogical, and biological collections, curated by our collections staff, and used worldwide for research. Our science and collections staff have produced an amazing online resource. If you are interested in a specific biological species, fossil or rock/mineral go to the science menu and click on **search the collections** http://nmnaturalhistory.org/search-collections/search-collections

So far, we have listed resources for information…but we haven't forgotten about activities for students or families.

For fans of coloring, of all ages, we have over 70 one-of-kind, coloring pages, drawn by our museum graphic artists/designers and based on New Mexico natural history. Including New Mexico volcanoes, dinosaurs, and official state symbols. Go to Science @ Home and click on **Natural History Coloring Sheets.** For word searches and puzzles go to **Natural History Activity Sheets**.

Click on **StoryTime** to hear selected science stories on a range of topics and watch related activity demos, all designed specifically for preK-2 children and their families.

Even when the museum is closed, you can still explore our outdoor *Walk Through New Mexico* exhibit located along Mountain Road in front of the museum. Go to Science @ Home and download our **Scavenger Hunts** for use in this outdoor exhibit and learn about the linked geology and biology of our state.

AND if you are a classroom or homeschool educator who would like a museum educator to do a virtual presentation for your class or homeschool group…check out **Invite an Educator** in Science @ Home. http://nmnaturalhistory.org/resources-educators-and-teachers/invite-educator

Keep checking our website for future virtual tours of our permanent exhibits and more materials and activities for educators. Join us online or in person at the museum and enjoy the wonders of the natural history and science of New Mexico!

For questions or more information contact: *Deb Novak, Director of Education* ***deb.novak@state.nm.us*** ***or*** *Jayne Aubele, Adult Educator, New Mexico Museum of Natural History and Science*
jayne.aubele@state.nm.us