

Rocks, rocks, and more rocks (2nd Grade)

Time: 1 & 1/2 sessions.

Standards:

- 3.a Students know how to compare the physical properties of different kinds of rocks and know that rock is composed of different combinations of minerals.
- 3.b Students know smaller rocks come from the breakage and weathering of larger rocks.
- 3.e Students know rock, water, plants, and soil provide many resources, including food, fuel, and building materials, that humans use.

Topical Objectives:

- SWBAT understand that rocks are composed of different combinations of minerals.
- SWBAT explain how weathering of large rocks produces smaller rocks.
- SWBAT describe rock resources that form to building material.

Safety Rules:

Use safety goggles while mixing concrete.

Materials:

- Access to freezer
- Cement mix
- Water
- Sand
- Gravel
- Tray to hold cups
- Magnifying glass

One for each student

- Dixie cups (or small containers)
- Plastic spoons
- Safety goggles
- Paper towels (wet and dry for clean up)

Preparation:

1. Set up trays to hold cups while mixing cement.
2. Containers with water for easy pouring.
3. Paper towels for clean up.
4. Written Cement directions; 1 spoon of cement, 2 spoons of sand, 2 spoons of water and 1 spoon of gravel.

Science Notebook Ideas:

Students can document process of building material and describe their findings about rock weathering.

Procedure:

1. This needs to be teacher or adult supervised.
2. Students work in small groups of 5-6. This is not a whole class activity.
3. Students mix the cement in the cups with the plastic spoons.
4. Once mixing is done the students invert the spoons and insert handle into the cement mixture.
5. Set aside cups to cure.
6. On the 3rd day it will be a whole class activity. Students pull out spoon handle and pour in just enough water to fill the concrete "crack". Cups do not need to be completely covered in water.
7. Teacher place cups filled with concrete and water into freezer overnight.
8. The following morning the cups must be taken out and set aside for ice in cup to melt. Make daily observations of the effect the freeze/thaw cycle on the concrete.
9. The objective is for the concrete to crack with the freezing of the water. Repeat step 7 and 8 until the objective is completed.

Extensions:

- Talk about chemical reactions when students notice the concrete mixture heating up.
- Introduction into rock quarrying.
- The effect of acid on concrete and carbonate rocks.
- The effect that weathering has on cities and local communities.

Synthesis:

- Students will learn that weather has an important role in their daily lives and it dictates things that they do and where people live.
- Teacher must be knowledgeable about weathering and rock cycle
- <http://www.enchantedlearning.com/geology/rocks/pages/Sedimentaryrock.shtml>
- http://www.mineraltown.com/infocoleccionar/imatges/rock_cycle.jpg
- <http://gpc.edu/~pgore/Earth&Space/GPS/rockcycle.gif>
- <http://images.google.com/imgres?imgurl=http://gpc.edu/~pgore/Earth%26Space/GPS/rockcycle.gif&imgrefurl=http://gpc.edu/~pgore/Earth%26Space/GPS/RockCycle.html&h=387&w=460&sz=7&tbnid=amPILdwwtqXL2M:&tbnh=108&tbnw=128&prev=/images%3Fq%3Drock%2Bcycle%26um%3D1&start=2&sa=X&oi=images&ct=image&cd=2>
- <http://en.wikipedia.org/wiki/Concrete>