1. CRYSTALS AND GEMS IN PA

Lesson Overview

This lesson is intended to be an introduction to minerals, gems, and crystal structures. Students should have already been introduced to atoms and molecules as concepts, but do not need any additional or specific knowledge. Students will use art and various kinds of sensory activities to get acquainted with a few minerals.

Materials

- mini marshmallows
- toothpicks
- a selection of mineral samples
  - if possible, some samples should exist locally
- paper for each student
- colored pencils, crayons, or markers for each student

Objectives

- Students will observe different minerals
- Students will build familiarity with some minerals that are local to Western PA
- Students will understand that mineral characteristics are due to their crystal structure

Instructions

Offer an introduction and tell students that they will be investigating crystals and gems. Ask about what kinds of crystals and gems they are already familiar with.
Explain that minerals are natural elements and compounds. Show some of the minerals you have brought and explain that a gem is just a cut and polished version of a natural mineral.

Drawing Activity:
Give each student a mineral sample and ask them to draw their sample in as much detail as they can. Students can share samples if needed. After drawing, reveal the name of each mineral and some details about it.

Touching Activity:
Ask students to gather in a circle (seating or standing), close their eyes, and put their hands out. Offer each student a sample and give them 30 seconds to feel it. Recollect the samples and then ask students to guess which sample they held. Again, reveal the name of each sample.

Building Activity:
Divide students into groups of 2-4 and give each group a sample. Ask them to build a model of their sample with toothpicks and marshmallows. Give each group 5 minutes to build their model. After students have built their model, reveal their sample. You can also show students a photo of the sample's crystal structure.

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Instructions, continued

After all activities are completed, explain to students that the characteristics of all the minerals they observed are due to their crystal structure. You do not need to explain specific types of crystal structures but explain that there are some categories. Students likely observed interesting geometry and light reflection, so connect back to those observations.

How is student learning assessed?

Engage in a discussion with students where you ask them to again identify some minerals that occur in PA. Offer a few samples and see if they can guess whether or not they occur locally.