

Limestone Caves

Grade Level: 3-4

Authors: N. Titchen, T. Swale, E. Reemsnyder

Content Standards

Science (NSTA):

- Content Standards A, D & F

English Language Arts (NCTE)

- Standards 7 & 12

Learner Background

- Students will have some background knowledge of erosion processes from past lessons.

Student Learning Objective(s)

- SWBAT identify and describe the Earth process of erosion.
- SWBAT transfer knowledge of erosion from class exercises to real world examples.
- SWBAT analyze the process of erosion to better understand the way in which the land is shaped by earth processes.

Assessment

- Informal – The teacher can use the informal discourse between students and teachers to assess the student’s ability to understand erosion and cave formation. The teacher should also monitor what kinds of connections students are making. The teacher should also monitor student work when involved in each activity.
- Formal – The teacher can use the handouts and the reflections from the KWL activity to assess what the students learned during the lesson. The teacher should also use the map to monitor students’ ability to read and plot points on a map. As an extension of this lesson the teacher could assign each student a certain cave to research and investigate.

Materials/Resources

- A medium sized cup for each students
- Model Magic
- Sugar cubes
- Water
- Handouts
- Atlases

Learning Activities

Initiation

(5 minutes) Students are instructed to write down what they already know or think they know about erosion and caves. The teacher refers to background knowledge gained through previous lessons on erosion to introduce this new activity with erosion. The teacher presents a few pictures of caves from around the world and asks students how the caves got to look like that. “How do those rock formations occur?” “Do they just grow like plants?” “What is happening here?” Students must write down what they want to know about caves and erosion.

Lesson Development

1. (15 minutes) The teacher passes out cups, sugar, and the Model Magic, while explaining that students will make their own landforms on top of the cups. The teacher must be very clear in instructing the students to place three or four sugar cubes in the bottom of the cup before creating their landform. Each student must also leave a hole in their landforms for the water to seep.
2. (10 minutes) The teacher asks students, “If the model magic is the landform on top of your cup, what is your cup representing?” The teacher elaborates that the sugar represents limestone that is found caves. The teacher explains the activity and students will take their landforms and drop some water onto them. Students must observe what is happening. After a quick observation time, the teacher instructs students to leave their caves for a few minutes to complete another activity.
3. (20 minutes) The teacher disperses two handouts and students get an atlas to complete their search for the largest caves in the world. The teacher makes certain that students are labeling where the caves are on their own maps. Meanwhile, teacher engages students individually to see what they think is going to happen in their caves and to evaluate what they are discovering about caves from their search.

Closure

(10 minutes) Students go back at their caves to make observations. Some of the sugar should be eaten away as a consequence of water dripping on it. A discussion ensues about the sugar representing the limestone in caves. Students now complete the second question on their handout about famous caves and discuss what they learned during the lesson, as well as what they think is happening in caves to create stalagmites and stalactites.