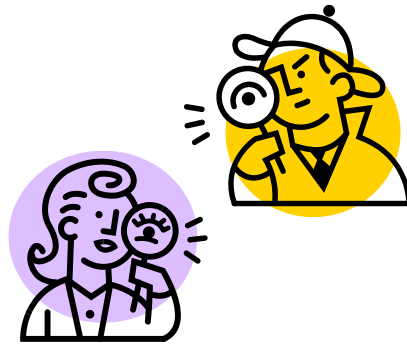


## Lesson 9 – Speleothem Sleuths

### Lesson Overview:

There are many types of speleothems found in caves besides stalactites and stalagmites. In this lesson students will individually research a specific type of speleothem and then creatively share their knowledge with their classmates.



### Objectives:

Students will be able to:

1. Independently research a type of speleothem using the Internet.
2. Construct a visual aid/poster to communicate information about a type of speleothem.
3. Orally present information about a type of speleothem to their classmates.

### Standards Addressed:

National Science Education Standards: 5<sup>th</sup>-8<sup>th</sup> grade

- Content Standard D: Earth and Space Science

International Society for Technology in Education Standards for Students:

- Creativity and Innovation
- Research and Information Fluency
- Technology Operations and Concepts

**Duration of Lesson/Time Requirement:** 40 minutes; Additional class time required for student presentations and creation of the “Classroom Cave”

### Materials Required:

Pictures of decorated cave passages

Pictures of speleothems other than stalactites and stalagmites

*Speleothem Sleuths Student Worksheet* (1 per student)

Art supplies for posters (cardstock/poster board, crayons, markers, colored pencils, etc.)

Materials to create a “Classroom Cave” (if desirable)

### Classroom Technology:

Computer with Internet connection and projection capabilities and/or SMART Board

Several classroom computers with Internet connection for student use

The Virtual Cave: <http://www.goodearthgraphics.com/virtcave/virtmap.html>

### Set-Up:

Assign each student a speleothem to research. This list can be displayed at the appropriate time during the lesson.

Gather art supplies for students to create their visual aids/posters and/or give students notice ahead of time to bring their own materials to class on the day of the lesson.

If desired, convert an area of the classroom into the “Classroom Cave”. Get creative and allow the students to assist. Decorate the area with cave related materials and student work from previous lessons. Display the completed speleothem visual aids/posters in this area at the conclusion of the lesson.

### **Procedure:**

#### **Introduction**

Write/project the word “speleothem” for the students to view. Review with the students what a speleothem is. (cave features that form by the deposition of minerals) Ask the students to name two types of common speleothems. (stalactites and stalagmites) Do they remember how to tell stalactites and stalagmites apart? (stalactites have a “c” for ceiling and hang tight to the ceiling; stalagmites have a “g” for ground and grow up from the ground and might reach the ceiling someday). Review the basic process of speleothem formation with the students. Project pictures of decorated cave passages for the students to view or pass pictures around the classroom for them to look at. What types of speleothems do the students see in the pictures? Do they see stalactites and stalagmites? Are there other types of speleothems present?

Project/show the students pictures of decorated cave passages that contain speleothems other than stalactites and stalagmites. Tell the students that there are many different types of speleothems. Explain to the students that they are each going to do some research and become an expert about a certain type of speleothem. Tell the students that once they learn more about their speleothem they will create a visual display about it and then give a short presentation to their classmates.

#### **Activity #1**

Display “The Virtual Cave” map for the students to view:

<http://www.goodearthgraphics.com/virtcave/virtmap.html>.

Explain to the students that they are each going to be assigned a speleothem to research while they explore the Virtual Cave. Demonstrate to the students how to scroll over, select, and get more information about the speleothems in the Virtual Cave. Tell the students that they will each have to find out and record on their *Speleothem Sleuths Student Worksheet* the following information about their assigned speleothem:

1. Name of speleothem.
2. Process in which this speleothem forms.
3. Specific caves where this speleothem is found (if applicable).
4. Any additional information about the speleothem that they would like their classmates to know.

Explain to the students that some of the descriptions are very scientific. Stress the importance of answering the questions in their own words.

Assign each student a speleothem. A list of the speleothems found in the Virtual Cave is included at the end of this lesson. The information provided for some of the speleothems is lengthy while others have minimal information. Assigning a student more than one speleothem is acceptable.

Pass out copies of the *Speleothem Sleuths Student Worksheet* for each student to record their information on. Allow the students ample time to conduct their research and record the required information. Tell the students that once they have become an expert about their speleothem they may continue to “explore” the Virtual Cave as time allows.

### **Activity #2**

Once all of the students have completed their research, explain to them that they will now develop a creative way to share their expertise about their speleothem with their classmates.

Tell the students that they are to create a poster about their assigned speleothem. Each poster must include the information they were required to find out about their speleothem as well as a picture of what it looks like. Explain to the students that they will be sharing their poster and what they learned with the rest of the class.

Give each student a sheet of paper/card stock/posterboard and a variety of art supplies (crayons, markers, colored pencils, etc.). Allow the students to work on their posters for the remainder of the class period. If the students do not complete their posters during class time, the poster can be assigned as homework or additional class time can be given to allow for completion.

### **Wrap-Up/Conclusion**

Once the students have completed their posters designate class time to allow each student to briefly present what they learned about their assigned speleothem. Each presentation should only be a couple of minutes in length. Presentations can take place a couple at a time as time allows during other lessons or all at once.

If possible, designate an area of the classroom as the “Classroom Cave”. Decorate the area to look like a cave and display the students’ speleothem posters within it.