National Park Service

U.S. Department of the Interior

Russell Cave National Monument

Bridgeport, Alabama

A Self-Guided Education Program for Russell Cave National Monument

C.A.V.E.S.

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Essential Question:

What causes change?

Welcome

C.A.V.E.S. is designed for teachers, scout leaders, and others who are bringing groups of children to Russell Cave National Monument. The program has three components:

- Hands-on activities to be used before visiting Russell Cave.
- A five parted activity package for use at Russell Cave.
- Post-assessments to be completed at your home-site.

The purpose of C.A.V.E.S. is to help children learn about the geology and ecology of Russell Cave National Monument. Children will experience limestone rock erosion, native plant and animal life, and ancient artifacts. This program is ideal for groups of fifty or fewer. Fourth grade curriculum standards are met during this activity; however, workstations are appropriate for children ages 7 to 12.

What To Know

Groups planning to visit Russell Cave will need to know the following general information:

- Russell Cave is managed by the National Park Service (NPS).
- All plants and animals on NPS property are protected by law. This means that visitors to Russell Cave are encouraged to observe, study, and appreciate, but picking, collecting, or otherwise disturbing live plants and animals are forbidden.
- Entering the cave and area around the cave is not allowed. Please stay on the boardwalk or paved area at all times.

Alabama Course of Study Standards

Social Studies 4.2.) Describe cultures, governments, and economies of prehistoric and historic Native Americans in Alabama.

SS 4.5.) Describe the interdependence of plants and animals

SC 4.7.) Describe geological features of Earth, including bodies of water, beaches, ocean ridges, continental shelves, plateaus, faults, canyons, sand dunes, and ice caps.

Counseling and Guidance K - 12.81.) Understand change is a part of growth

Students will be able to...

- Identify the geological components of Russell Cave.
- Describe the physical changes to the cave since prehistoric times.
- Demonstrate an understanding of the archeological excavations that took place at Russell Cave.
- Identify Russell Cave native vascular plant according to their features.
- Describe the interdependence of Russell Cave's native plants and animals.
- Apply knowledge of native animals to identify skins and skulls of Russell Cave native animals.

Students will understand that.....

Identifying, appreciating, and preserving Earth's natural and historical treasures is vital for future generations.

What To Expect

C.A.V.E.S. is a self-guided tour for upper elementary school groups or scout groups. Each group will be divided into five subgroups and rotate through five workstations. It is highly recommended that there be at least one adult for every five children. Each group will visit the following stations: Caves, Archeology, Vascular Plants, Ecosystem, and Skins & Skulls. Each subgroup leader will be issued a tablet with downloaded podcasts, a two-way radio, and activity sheets for each child to use throughout the workstation rotations.

What To Bring

Sunscreen	<u>Optional:</u>
Insect repellent	Binoculars
First aid kit	Magnifying lenses
Tennis shoes	Camera
Writing utensils for each child	Snacks, drinks, or lunches

Essential Question:

What causes change?

Before You Go

Initiate the concept of *Change* to the group. Have students brainstorm and discuss *Change* using a KWL chart. If available, it is also recommended that group leaders use available resources to teach students the history of Russell Cave prior to this visit. The following hands-on activities are included in this booklet:

- Limestone Jar Experiment
- Celery Experiment (vascular plants)

The Activities

Five activities make up the field trip program. Each workstation will be initiated using a podcast. To promote learning and discipline, we recommend dividing a group into five sub groups as follows:

- C- Carnivorous Cave Dwellers
- A- Awesome Archeologists
- V- Victorious Vasculars
- E- Extraordinary Ecologist
- S- Sensational Survivors

Each subgroup will be issued a tablet and a two-way radio to use during each workstation. The five subgroups can complete the activities consecutively, in a round robin format. Each begins with one workstation and progresses to the next in the sequence until all six stations are complete. The length of time devoted to each workstation is determined by the teacher. We recommend that a minimum of 15 minutes (more if available) be allowed for each workstation, with a two minute change over time between stations. The overall group leader will notify each subgroup leader when two minutes remain in the workstation, as well as when the workstation ends.

Each station will take place at a designated location. We recommend having one or more adult volunteers positioned at each station and moving the groups between them. For the subgroup leader in charge, two-way radios will be used to transition between workstations.

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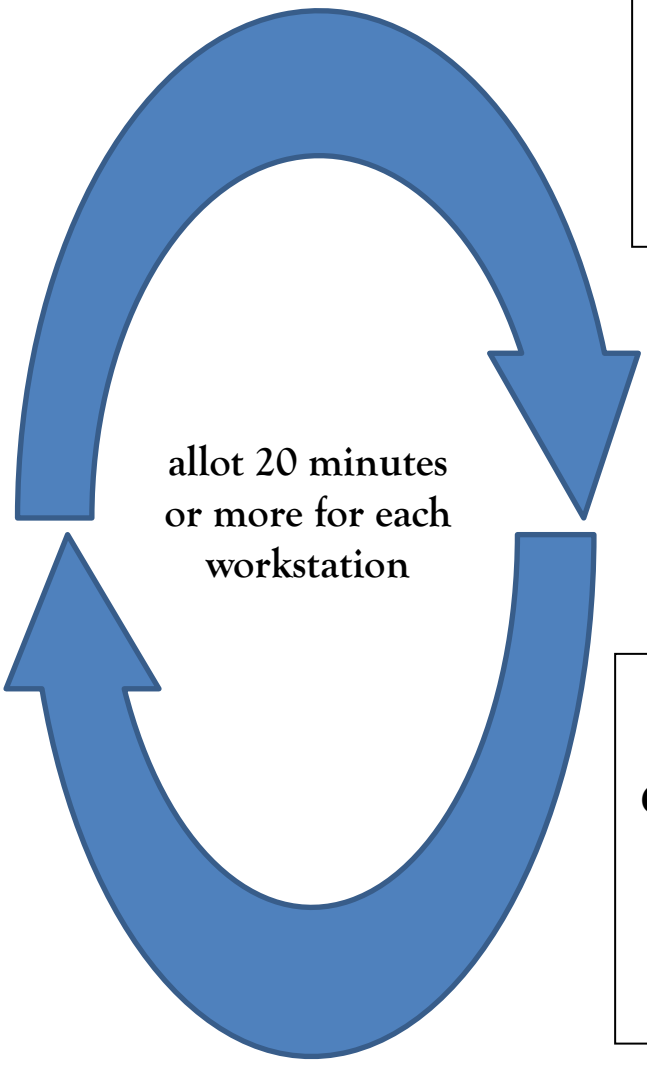
Subgroup Rotation

CAVE GEOLOGY
Group:
"Carnivorous Cave Dwellers"
Location:
cave shelter

SKINS & SKULLS
Group: "Sensational Survivors"
Location:
under pavilion

ARCHEOLOGY
Group:
"Awesome Archeologist"
Location:
visitor center



ECOLOGY
Group:
"Extraordinary Ecologists"
Location:
boardwalk

VASCULAR PLANTS
Group: "Victorious Vasculars"
Location:
sink hole

Summary of Work Stations

CAVE GEOLOGY (cave shelter)

Inside the cave shelter, students gather around their subgroup leader to listen to the introduction podcast. Encourage children to observe and discuss the geological characteristics around the cave and inside the cave shelter. Allow time for exploration and discussion after the podcast.

ARCHAEOLOGY (Visitor Center)

Before entering the museum, play the podcast to introduce the setup of the museum. (Students will view the exhibits beginning with "The Archaeologist's Dream" and continue clockwise to the outer exhibits. Encourage students to also view the timeline in the center of the museum.) Allow children time to explore and learn about the history of Russell Cave. When the subgroup has viewed the museum's exhibits, students may complete the activity sheet regarding the information in the museum.

VASCULAR PLANTS (around the sink hole)

Upon entering the area around the sinkhole, remind students that all plants and animals on NPS property are protected by law. This means that visitors are encouraged to observe, study, and appreciate Russell Cave wildlife, but picking, collecting, or otherwise disturbing live plants and animals is forbidden. Have students stand near the sink hole while playing the introduction podcast. Allow children time to study and discuss the plants in the area. Using the activity sheet, students may work with peers to locate and identify plant life around the sinkhole. After all plants have been located, play the second podcast to learn how prehistoric people used these plants.

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Summary of Workstations, cont'd

Essential Question:

What causes change?

ECOSYSTEM (boardwalk between sink hole and visitor center)

After leaving the sink hole area, the group leader should encourage students to look for animals or insects to discuss. Play the introduction podcast a few minutes onto the boardwalk. Have students look at the web on the ecosystem activity sheet to visualize Russell Cave's ecosystem. Encourage children to locate, study, and discuss animals and insects around the boardwalk. When children have located an animal or insect, discuss where the creatures get their nutrition. Then, encourage children to discuss how plants and other animals are part of a food chain. Upon exiting the boardwalk, encourage students to complete the ecosystem web template below the example web. Use the list of Russell Cave native plants and animals to complete the web.

SKINS AND SKULLS (pavilion)

The Skins and Skulls materials will be set up before students arrive at this workstation. Have students listen to the podcast prior to handling the exhibit materials. During this station, encourage children to identify and discuss animals around Russell Cave. We recommend that children choose a partner to rotate around to each skin and skull. Allow students time to discuss and handle items in an orderly fashion. If time permits, partners may discuss the how ancient people may have used the animal they identified. Make sure each skin and skull is put back in its original position before rotating to the next skin or skull.

Back at Your Site

Upon returning to your home-site, allot time for students to create small groups to review what they learned about the geology and ecology of Russell Cave. Provide students with materials to create a "layered book" labeled C.A.V.E.S (directions on p.16). On each layer, students will record information they acquired at each station. If time allows, allow students to share their "layered book." Self and group reflections are included on page 17.

Conclude C.A.V.E.S by discussing how changes that have occurred naturally at Russell Cave are comparable to incontrollable life changes. Just like changes in nature, life changes that occur may be out of our control. Learning about change can help young children understand and cope with changes they may encounter throughout life..

A Few Reminders

C.A.V.E.S. is a self-guided tour. However, if you are in need of any information about Russell Cave or need help making plans for group's visit, our park rangers will be glad to assist you.

Prior to bringing your group to our park, please call (256) 495-2672 or stop by our park to schedule your trip.

Creating a learning environment for children and adults is one of our top priorities. We would love for you to helps us encourage children to identify, appreciate, and preserve Earth's natural and historical treasures for future generations.

Students will understand that.....

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Try these experiments out before you visit Russell Cave!

Making a "Solution" Cave

suggested grade levels: 4-8

Overview:

Solution caves are formed by slightly acidic ground water circulating through fractures in limestone. Even slightly acidic water is capable of dissolving great quantities of this soluble rock. As time passes, the openings become larger and larg until they may be large enough for a man to pass through. This simple experiment will let students observe a process that normally takes many, many, years in real life. It is a fun activity for students and it encourages them to work together.

Materials:

Scissors

Clear plastic bottle, such as a small bottled-water container or a 1-2 liter soda bottle

Piece of aluminum foil

Large nail

Glass bottle or jar with an opening larger than that of the plastic bottle

5 cups (725 g) of sand

Rubber band

1 cup (200 g) of granulated sugar or sugar cubes

1 cup (236.6 ml) of warm water

Spoon or trowel

Activity: (Can be done as a demo if supplies are limited)

1. Cut off the bottom half of the plastic bottle. Remove the cap.

2. Fit the piece of aluminum foil over the mouth of the plastic bottle and Hold it in place tightly with a rubber band. Use the nail to punch a few small holes in the foil.

3. Place the plastic bottle upside down inside the opening of the larger glass bottle so it can act as a funnel.

4. Put a 2-inch (5 cm) layer of damp sand in the plastic bottle. Press it down so there are no air spaces.

5. Put a 1-inch (2.5 cm) layer of sugar or sugar cubes on top of the sand. Be sure it is pressed against the side of the bottle and filled in solidly. The sugar represents limestone under the ground.

6. Put another 2- or 3-inch (5 or 8 cm) layer of sand on top of the sugar. Press out all spaces. You should be able to clearly see three layers.

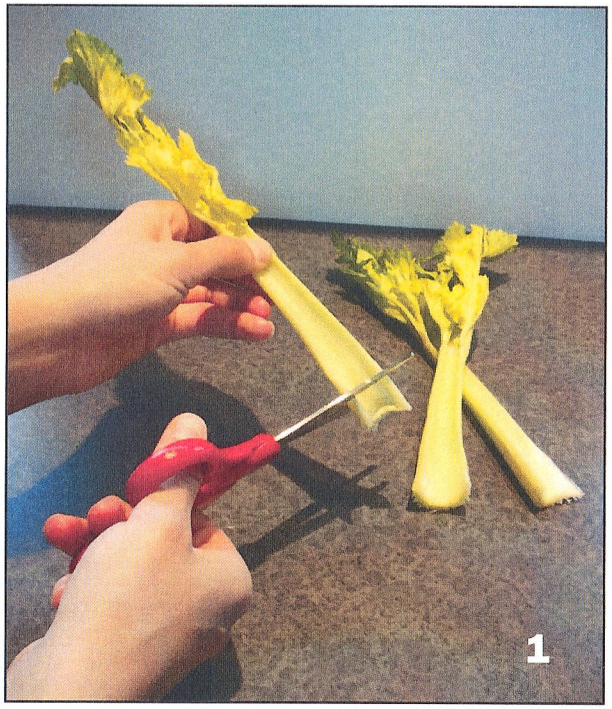
7. Pour 1/2 cup (118.3 ml) of warm water on top of the top layer of sand. Wait until it drains down, and then pour the other 1/2 cup (118.3 ml) of water. Watch what happens to the sugar (the limestone) after two or three hours. What ha caused the caves that you see? What does this show you about how caves might form underground?

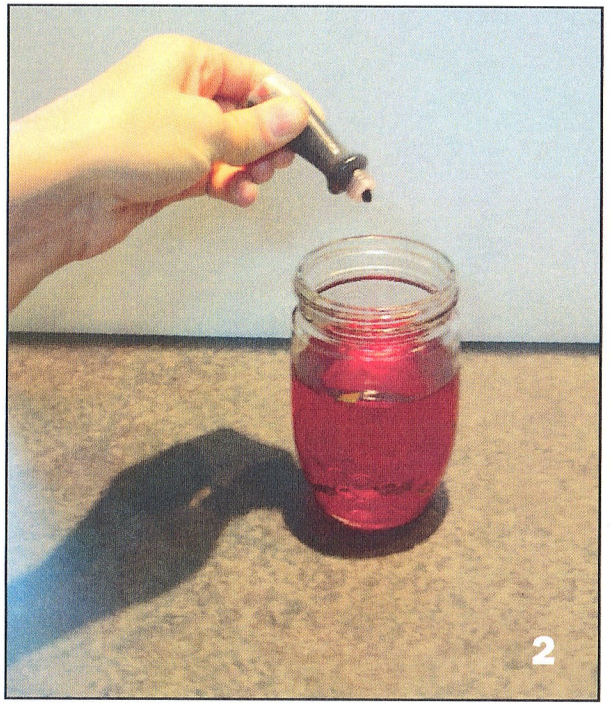
TRY THIS!

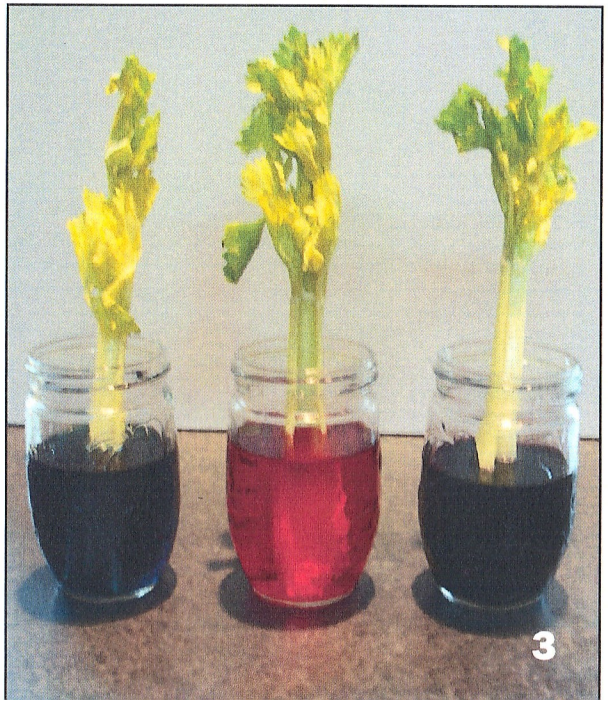
Celery Experiment

You will need: *Celery stalks with leaves, clear glass jars, food coloring, water*

Find celery stalks with many leaves. If you buy celery from the store you can usually find more leaves in the middle of the head (or ask for pre-cut celery). Cut 1/4 inch off the bottom of each stalk. Fill jars with water and 10-15 drops of food coloring. Try blue, red, purple, and even green. Add the celery and stir gently. Make frequent observations throughout two days. Notice how the jars have less water. Watch how plants absorb water up through the stalks and into the leaves. Cut the stalk and see colored water inside.







Workstation Activity Sheets

We will have these activity sheets printed for each child in your group when you arrive at Russell Cave.

ARCHAEOLOGY

Russell Cave Museum

As you walk around the museum, write the answers to these questions when you find them.

1. How many acres of land did the National Geographic Society purchase from Oscar Ridley?

   ___ ___ ___ acres

2. Which president made Russell Cave a National Monument?

   ___ ___ ___ ___ ___. ___ ___ ___ ___ ___ ___ ___

3. What kinds of food did Native Americans gather?

   _____ _____ _____

4. In the early Woodland Period, Native Americans began to weave baskets and make pottery. What do you think they carried in baskets and pots during this time?

5. How did Native Americans boil their water?

6. Over how many years were Native Americans using Russell Cave?

   From ___ ___, ___ ___ ___ BC to AD ___, ___ ___ ___

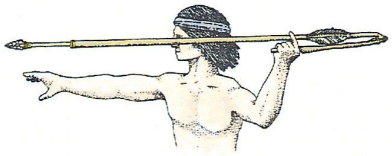
7. Native Americans used many parts of the animals they hunted. They wasted little or nothing. Next to each animal part below, write an example of the way it was used.

   Animal hide:

   Animal bones:

   Fish bones:

   Animal Skin:



8. Pick an artifact in the museum. Explain in the space below how you could use that in your life & what modern tool could replace that.

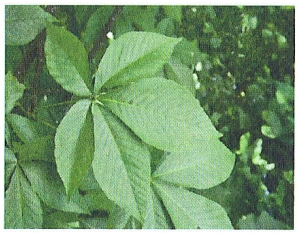
Vascular Plants Scavenger Hunt

Examine the vascular plants around you. Find each of these plants my matching the leaves or bark with the pictures below.

Poison Ivy

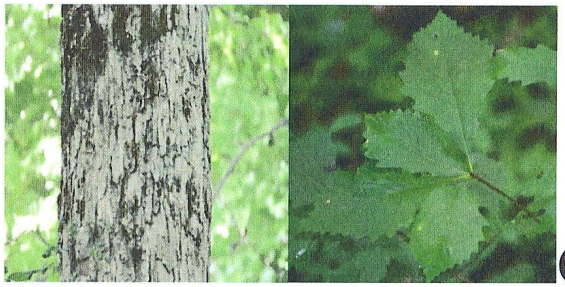
Maple

Mayapple

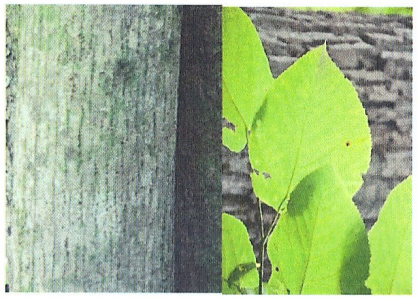


Buckeye

Wild Ginger



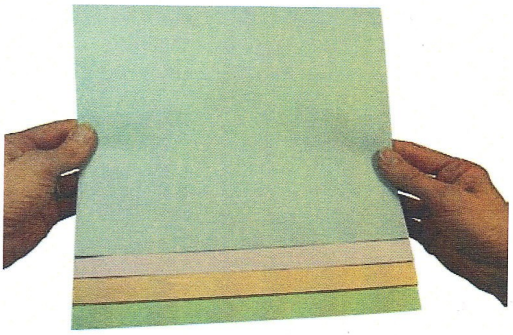
Chestnut Oak



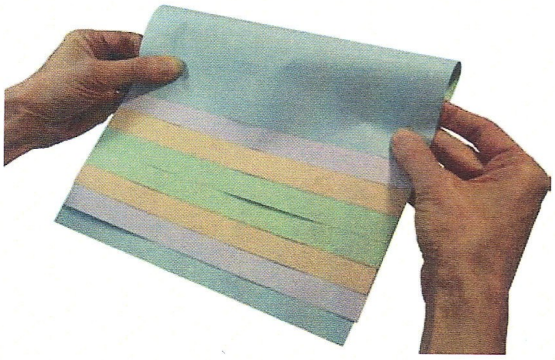
Basswood

How to make a Layered Look Book Foldable®*

1. Stack four sheets of paper (8 ½" x 11") together, placing each consecutive sheet around ¾ of an inch higher than the sheet in front of it.

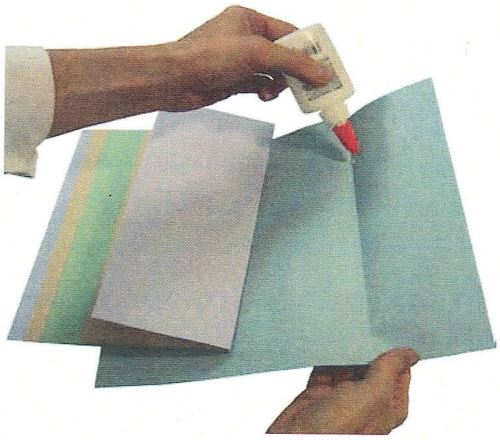


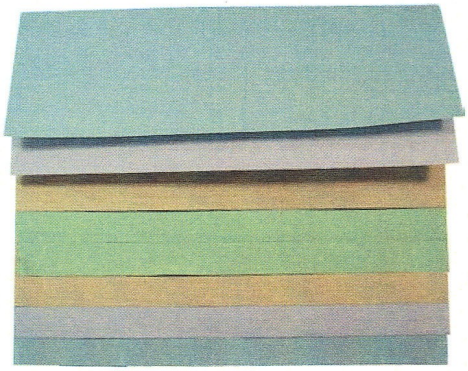
2. Bring the bottom of both sheets upwards and align the edges so that all of the layers or tabs are the same distance apart.



3. When all of the tabs are equal distance apart, fold the papers and crease well.

4. Open the papers and glue them together along the valley/center fold.





PEER AND SELF EVALUATION RUBRIC

PROJECT TITLE:_____

GROUP MEMBERS:_____

Please rate your contribution to the group and evaluate the group on a scale from 1 – 10 with 10 being the highest.

INDIVIDUAL EVALUATION: **Name**_____

_____1. Following teacher's instructions

_____2. Asking meaningful questions

_____3. Contributing ideas and information

_____4. Helping the group stay on task

_____5. Contributing materials

_____6. Asking for help when needed

_____7. Sharing responsibilities

_____8. Respecting others

_____9. Explaining things to others

_____10. Doing things on time

_____11. Doing my best

I could improve on_____

I rank my contributions to the group as_____because_____

_____.

GROUP EVALUATION:

_____1. Following teacher's instructions

_____2. Asking meaningful questions

_____3. Contributing ideas and information

_____4. Staying on task and meeting deadlines

_____5. Sharing responsibilities

_____6. Respecting others

_____7. Explaining things to others

_____8. Solving problems within the group

_____9. Consistent effort

_____10. Producing a quality product

I rank our group's efforts at working together as_____because_____

_____