Buffalo Caves and Karst

Objective: Students will determine how erosion occurs in karst landscapes and how caves and other landforms are formed in this environment.

Standards:
K-ESS2-1, K-ESS3-3, G.9.K.1, G.9.1.1, 2-ESS1-1, 2-ESS2-2, 2-ESS2-3, G.9.2.1, 3-LS4-3, 4-ESS1-1, 4-ESS2-1, 5-ESS3-1, 6-ESS3-3, 7-ESS3-1, 7-ESS2-2, 7-ESS2-3

Introduction: It is important to learn about karst landscapes within Buffalo National River because Arkansas has one of the largest karst networks in the Midwest United States. The geologic processes in this area form caves, sinkholes, springs, and disappearing streams. Buffalo National River has all of these in various areas of the park.

Audience:
4th grade students

This lesson can be adapted to other ages by simplifying or using more complex vocabulary, using more visuals, and using alternate activities.

Duration: 45 minutes

Vocabulary: karst landscape, percolates, limestone, cave, stalactites, stalagmites, columns, cave popcorn

Materials:

- Pictures of caves, bluff shelters, sinkholes, springs, and disappearing stream
- Different pictures of stalactites, stalagmites, columns, and cave popcorn
- Paper plate
- Modeling clay

Stalactites	Stalagmites	Columns
		

Cave Popcorn 	Stalactites 	Stalagmites 

Warm up: Show students images of a bluff shelter, cave, spring, a sinkhole, and a disappearing stream. Teacher will ask students what these pictures have in common (rocks, water, pebbles, brown). These are all formed in a karst landscape.

Main lesson:

- What is karst landscape? A landscape where rocks are dissolved over time. This creates erosion and leads to forming caves, sinkholes, springs, and disappearing streams.

  Sedimentary rocks are found in karst landscape

  - Limestone
  - Dolomite

  Water percolates through rock and dissolves it over time and this creates openings and leads to erosion which forms different karst features.

- Factors that control or contribute to karst

    - Limestone rock near the surface
    - Rainwater
    - Groundwater circulation
- Karst landscapes features
    - Caves and caverns
    - Sinkholes
    - Springs
    - Disappearing streams

How do caves form?

- Rainwater percolates through limestone
    - Limestone is dissolved to create underground hollow areas
    - Over a very long time these hollow areas get bigger
- Show karst landscape features

  Point out water flow
- Cave Formations (speleothems)
    - These rock formation form as water and minerals drip inside a cave floor and ceilings.
    - Stalactites – icicle shaped- hang on tight to cave ceiling, hang down from cave ceiling.
    - Stalagmites – icicle shaped- form up from the ground.
    - Columns – when stalactites grown down and stalagmites grow upwards enough for them to meet a column is formed.
    - Cave popcorn – Small lumpy formations- water seeps out of the cave wall and splashes when it drips.

- What is it? –Short group activity

Each student will be given a picture of a cave formations. Everyone who has the same speleothem will get in a group to discuss and describe the cave formation they got

Stalactites

Stalagmites

Columns

Cave popcorn

- Animals that live in caves

  It is important to be mindful of the animals living in or using caves.

  Bats

  - White Nose Syndrome (WNS) – fungus that is spread cave to cave and can be deadly to bats.
  - Why are bats important? They eat large amounts of insects. In other parts of the world they are pollinators.

  Salamanders

  Cave Fish

- Indian Rockhouse pictures
  - Cave
  - Waterfall
  - Panther creek
- Speleothems in a cave review

- When visiting caves:
    - Make sure you have the right shoes.
    - Respect wildlife and their home.
    - Do not touch the cave walls.
    - Take nothing but pictures.

Activity:

- Time to make a cave

  Students will get model clay and a paper plate to create their own cave and formations.