Title

Buffalo River Watershed

Objective: Students will be able to understand how the Buffalo Watershed works and how different activities affect the river.

Standards:

K-ESS2-2, K-ESS3-3, G.8.K.2, G.9.K.1, G.10.K.1, G.8.1.2, G.9.1.1, 2-ESS2-2, 2-ESS2-3, G.9.2.1, G.8.3.2, G.9.3.1, G.9.4.1, 5-ESS2-2, 5-ESS3-1, G.8.5.3, 6-ESS3-3, 6-ESS3-4

Introduction:

Learning how the watershed works can help students understand how water travels and that water is all around us. The watershed is affected by many environmental and human factors. It is important for students to know what we can do to understand and help the take care of water.

Audience:

6th 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:

watershed, headwaters, watershed divide tributary, confluence, pollution

Material:

Large piece of ribbon (to represent buffalo river)

Yarn (to represent tributaries)

Tributary examples: Ponca Creek, Cecil Creek, Mill Creek, Little Buffalo, Big Creek, Rush Creek, Bear Creek, Leatherwood Creek

Note cards with different pictures of things found throughout Buffalo National River and its tributaries (examples: excess soil, fish, plastic bag, bald eagle)

Examples:

Excess soil 	Smallmouth bass 	Plastic bag 
Blue heron 	River Bamboo 	Deer 

Warm up:

Students will take a look at 3 main waterfalls found in the Buffalo National River Watershed. Teacher will ask what's happening in the picture… (ex: water, movement, elevation change, pool, etc.

Main lesson:

- What is a watershed?

  An area of land that drains its water into a stream or river.

  Reminds students we all live in a watershed - what we do to our water affects others because water is shared by all

- "We all live downstream"- Everything done in a section of the stream affects downstream. The use of land affects the water quality.
- What does a watershed do? It captures, stores and releases water

Do hand motions - captures (pretend you're grabbing something with your hands), stores (keep hands cupped), releases(open hands from cupped position)

Remind students about how water travels down from higher elevation to lower elevations and finds the path of least resistance using gravity.

- Interpret a map of Buffalo River area topography so students can see higher areas and lower areas (where the water travels down to).
- Show the good watershed practices vs. poor watershed practices poster. Shows what people who own land can do to help or harm the water quality in the watershed. Ask students why they think it's important to work on good watershed practices.
  Best Management Practices
    - Riparian zone vegetated (plants on the edge of the river)
    - No livestock on stream

  Poor Management Practices
    - Leads to erosion
    - Bad water quality
- Why do we depend on watershed conditions? - It affects:
  Aquatic life - any living thing that is in the water, animal or plants ex) algae, macroinvertebrates

  Quality of fishes - good watershed condition healthier, bigger, better fish

  Use of water for humans and animals
    - Swimming, fishing, floating. etc.

  Watershed affects all animals and plants live in or near the water
- Why are watersheds important?
    - Drinking water
    - Animals and plants need it as a home
    - Erosion control - the more plants and trees there are the less the land and stream banks erode

- What you do to the land you live on affects the water, which affects all of us.
- Parts of a Watershed - Show picture and describe different parts of a watershed
    - Headwaters- source of a stream or river (where the watershed begins)
    - Watershed divide - a ridge or boundary that separates watersheds
    - Tributary - a smaller stream that feeds into a bigger stream or river
    - Confluence - the place where 2 waterways meet
    - Flood plain - low area next to river that can flood (not always used)
    - Groundwater - water that is below us
    - River channel - path the water in a river takes
    - Show picture of Making of a River
    - Have students share where the following are:
        - Watershed, tributary, watershed divide, confluence, flood plain
        - Ask about what human activities can affect the watershed
            - Farms
            - Factories
            - Trash
            - Erosion
- What can you do to help the watershed?
    - Do conserve water, pick up trash, help plant native plants
    - Do not keep water running, litter
    - Mention different types of trash found in river
    - Water bottles, plastic bags
    - Remember to reduce, reuse, recycle
- Buffalo River Watershed Page from Junior Ranger Book: Identify Watershed Features on Map
    - Go over Map and have students label the different parts of a watershed
        - Headwaters
        - Drainage/Watershed divide
        - Tributary
        - Confluence

Ask: What do you think we can find in the river or streams in the Buffalo River watershed?

Activities:

Activity 1: Journey down the Buffalo National River

Teacher Preparation: Teacher will lay long (10 foot or more) blue ribbon to represent the Buffalo River.

Attached to this ribbon will be light blue yarn to represent main streams that feed into the river.

Teacher will attach different notecards/pictures to the ribbon (river) or light blue yarn (tributaries) to show what can be encountered when traveling down the river

Example: long eared sunfish, water bottle, fertilizer nutrients, macroinvertebrates, plastic bag, bald eagle, excess soil, deer, blue green algae, etc.

Students will be in groups of 2-3 and will be given a tributary to follow (light blue yarn). While following their tributary they will pick up notecards/pictures of things found on their way to the River (a dark blue ribbon).

Student instructions: As you travel down the river you will come across different things found traveling the river (notecards) and we will discover what flows down to the river.

Conclusion: What did we find in the Buffalo River?

What can we do to help the watershed?

Activity 2: Create a Watershed Map

Each student will get a piece of paper; they will crumple it up to make a topographic map

They will draw and label:

- Headwaters
- Watershed divide
- Tributary
- Confluence
- Flood plain
- Groundwater
- River channel

After students label the different parts of a watershed, they will share what the watershed map and identify the parts and explain how their watershed works.

Example: Water travels down from higher elevation to lower elevation, what happens in the watershed will travel down to lower elevation.