

Colorado Water

Subject Area: Science, Social Science

Unit Title: Natural Resources

Grade Level: 4th & 5th grade

Objectives: Students will identify Colorado's water sources on a chart and will elaborate on its impact on lives in the West.

Colorado Content Standards to be covered:

ECONOMICS

Standard I - Students understand that because of the condition of scarcity, decisions must be made about the use of scarce resources.

Standard II - Students understand how different economic systems impact decisions about the use of resources and the production and distribution of goods and services.

Standard V - Students understand the effects of interactions between human and physical systems and changes in meaning, use, distribution, and importance of resources.

Standard VI - Students apply knowledge of people, places, and environments to understand the past and present and to plan for future.

SCIENCE

Standard I - Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.

Standard IV - Earth and Space Science: Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.

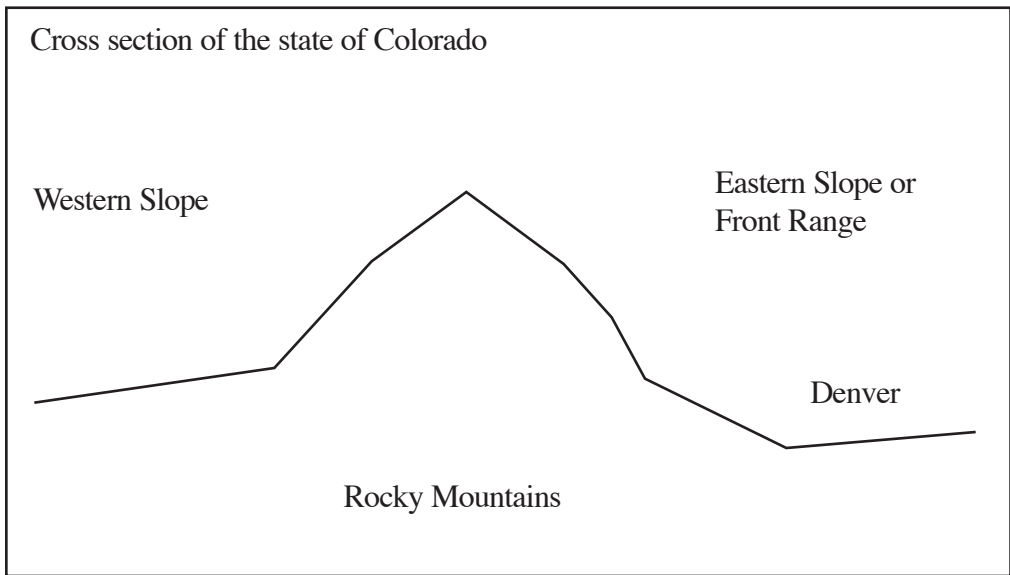
Materials:

- 10 cups of water
- cups
- sticky notes or scraps of paper
- Colorado map

Anticipatory Set: Photocopy the "KWL" handout on the last page and brainstorm with your students, having them fill in what they already know about Colorado Water (first column "K"), what they want to learn (middle column "W"). After the lesson, they can fill in the last column with what they learned ("L"). Then read the following statement to the students: "Denver or the Front Range naturally has all the water it needs," and have students write "true" or "false" on a sticky note or on a white board.

Input:

Colorado's water story begins hundreds of miles away from the state. Clouds form over the western United States and are carried by air currents over Colorado. Weather fronts build and eventually lose their moisture when confronted by a huge barrier, the Rocky Mountains! Most of Colorado's precipitation falls on the western



side of the mountains and on the high peaks. As a result, 70% of our water is on the western side of the mountains. The Denver area is semi-arid, receiving about 14 to 15 inches of precipitation each year. Denver is on the eastern slope of the Front Range and is about 80% of the total population of Colorado, yet most of the water flows west. In order to have enough water for people living in the Denver area, snowmelt from the

western slope must be directed toward the east.

Draw a cross section of the state of Colorado (see left) on the blackboard. Locate where your students go to school, whether it's the Western Slope, Rocky Mountains or Front Range. You can show on a Colorado map also.

Tunnels have been built through the mountains from western slope rivers and reservoirs. This water must be shared with other states downstream through which these rivers flow, which means that we have the right to use only a certain amount of the water that originates in Colorado. We are meeting our needs for water today, however if in the future extended droughts and population growth continues, we would experience serious problems. We all need to use water wisely in order to conserve our supply.

Checking for Understanding: At the end of this section, choose one of the following for a quick check: ask the students to partner share and think, pair and share, do a quick 3 word write up as an exit slip, do a quick sketch or give each other a quick thumbs up or down to check for understanding. Determine the level of mastery for each student and provide individual remediation as needed.

Procedures/Activities: Colorado's Water Story

Prep:

Move desks or tables into the middle of the classroom to represent the Rocky Mountains.

Directions:

1. Have 80% of your students stand on the "east side" (the Denver area) and 20% on the "west side."
2. Give students on the "east side" 3 cups of water to hold. Give students on the "west side" 7 cups of water. This represents the natural percentage of water in these areas.
3. Discuss with the students what this means in terms of how much water people have to use.
4. Brainstorm with the students how they can get more water to the "east side" of the mountains. Some may suggest going over the mountains. Point out that it is hard to make water go uphill, and since it is very cold in the winter at the higher altitudes, the water might freeze, and we would have to wait for it to melt again before we could use it in Denver. Option: Simulate this by putting a ladder or objects between to show what you have to get through. In addition, a fan can be used for cold or half way there say, "Stop, your water froze,

etc.” The best way is to go through the mountains. This is the way it is done through tunnels that bring water from rivers on the western side of the Rockies to Denver. The people on the western side need some of the water too, as do people in other states sharing these rivers. People on the eastern side cannot have it all. Colorado’s water has to be shared by many and used carefully.

5. Help students to see that not all the states have this problem. Some states get most of their water from under the ground (groundwater in aquifers) and others have a large lake from which to draw water. Have your student take the journey down the Colorado River. The journey is found on the CD “A River Journey–Water in the West.” You can receive this CD free from Colorado Foundation for Agriculture.

Adapted from Drips, Drought, Drains, Drinks: A Colorado Water Conservation Curriculum for Grades 4, 5, 6 by Judy Elliott published by the Denver Water Department

Closure:

Review and clarify the key points of the lesson by filling in the “L” column on the “KWL” handout. Then repeat the statement you made and ask for “true” or “false” on the sticky note again. Finally, ask the students for suggestions they may have on how to conserve water, and go over some of the options below. Have your students commit to one way to conserve water. Then, post their choices in the room and periodically review. If possible, go on a field trip to NCWCD to learn more about Colorado water and to see a model of Big Thomson watershed, the conservation gardens and more.

Clever Ways to Conserve Water

- Flush the toilet only when you need to.
- Never flush bugs, Kleenex or clean toilet paper down the toilet.

K (Know)	W (Want to Learn)	L (Learned)

- Use a low-flow toilet.
- Use a glass of water to rinse when you brush your teeth, and turn off the water while brushing.
- Fill a pitcher of water and put it into the refrigerator instead of running the water until it is cold for a cold drink.
- Wash clothes only when there is a full load in the washing machine.
- Use a water saving shower head and take shorter showers.
- In the summer, don’t water your lawn every day.
- Use a sprinkler and garden hose or drip line to water.
- If you have a drippy faucet, tell your parents so they can fix it.
- Wait for the dishwasher to be full of dirty dishes before you run it.
- When you wash dishes in the sink, don’t leave water running. Instead, fill the sink with water to wash.