Gambling in the Desert

Lesson Overview

Students learn how people can strain and deplete water resources. The students identify where US sources are scarce and use a case study of Las Vegas, Nevada where water shortages might be looming.

Grade Level(s)

6-12

Duration

2-3 days

Teacher Note: Depending upon the pace of the students and time available, complete opening activities and begin mapping in class the first day. Students can finish mapping and do the reading as homework. Evaluate the maps and discuss the reading the following day in class.

Geography Themes

Human-environmental Interaction

- People interact with the environment to obtain a variety of resources that meet their needs and wants
- Distribution of resources varies from place to place
- People adapt to, or modify, the environment in different ways
- People's adaptations to, or modifications of, the environment are influenced by the characteristics of the environment in which they live
- Technology results in changes in the environment
- Environmental change may influence regional and global systems

Geography Standards

The geographically informed person knows and understands...

(#14) how human actions modify the physical environment.
(#16) the changes that occur in the meaning, use, distribution, and importance of resources.

Materials Needed

For Students:

- Newspaper article (one per student), "Drop by Drop, Water Worries Collect in West"
- Blank outline map (one per student) of the United States showing state boundaries
- Atlas with thematic map showing precipitation pattern in the United States
- United States Population Growth Data Sheet (either a student handout or students can copy this information)

- A set of colored pencils or markers

Main Objectives of the Lesson

Students are expected to:

1. Identify and analyze different ways in which people and the environment interact.
2. Use maps to compare and analyze the spatial distributions of different physical and cultural geographic phenomena.

Suggested Teaching Procedure

Preparing the Lesson

1. Photocopy sufficient copies of the reading and outline maps

Opening the Lesson

1. Illustrate the relative scarcity of fresh water:

- 97% of all water is saltwater (about half in the Pacific Ocean and half in other oceans and seas)
- 2.5% of water is locked up in glaciers and ice caps and unavailable for use
- Less than 1% of water (less than one drop in a hundred) is ground or surface water, and much of that is hard to get to or polluted

Teacher Note: Add some drama to these statistics by pouring water out of a transparent quart jar into a bucket to show how little freshwater is generally available. Guide students to the conclusion that people must use water wisely.

2. Ask the students what problems people might have with water and note their answers (e.g., pollution, watering the lawn at noon in the summer, dripping faucets).
3. Ask students where in the United States they might expect to find the most serious problems of water availability. Have them suggest possible reasons for these problems. (Look for the problem of inappropriate land use, such as building cities or farming extensively in dry areas.)
4. Tell the students that they are going to locate where water availability problems in the U.S. are most serious and consider solutions.

Developing the Lesson

1. Using the outline map of the United States and the atlas reference maps, have students draw a precipitation map of the USA coloring in the different levels of precipitation.

Teacher Note: Clear area value maps normally have a range of four - six different colors to indicate increasing levels from lighter to darker colors. Very dark colors should not be used on this map because population data will be added to the map later on in the lesson.

2. Ask students to scan their maps to identify by visual inspection the ten driest US states. (Encourage use of a political map of the US as needed.) The students should list the states, putting the driest states (in their estimation) at the top of the list.
3. Review and discuss the lists, providing students with the precipitation data shown below.

Teacher Note: The student lists should correspond pretty closely to the following chart showing the normal annual precipitation (inches) of western and mountain state population centers shown below. Geographers commonly define a desert climate as having less than 10" of precipitation annually.

Nevada	Las Vegas	4.19"
Arizona	Phoenix	7.11"
New Mexico	Albuquerque	8.12"
Montana	Helena	11.37"
Idaho	Boise	11.71"
Wyoming	Cheyenne	13.31"

California	Los Angeles	14.85"
Utah	Salt Lake City	15.31"
Colorado	Denver	15.31"
North Dakota	Bismarck	15.36"

4. On the precipitation map, have students indicate by hatch mark (/////) the fastest growing US states from the information given on the data sheet. Ask the students to identify which (and how many) of the driest states are among the fastest growing states.
5. Now, tell students they will focus on a case study of Las Vegas, Nevada. Have them read "Drop by Drop, Water Worries Collect in West" (in class or as homework).
6. After they complete the newspaper article, organize the students in groups. Tell them that they are an advisory committee to the US Secretary of the Interior. Because some states are involved in the pending water crisis, the federal government must come up with a plan to deal with it. The students must prepare the plan supported by their findings and the facts in the article.

Concluding the Lesson

1. Have students present their preliminary responses to the class orally for discussion. Assign a final written report based on group findings and class discussion as homework.

Extending the Lesson

1. Study the location and distribution of other water sources available to this region. Compare this region with other US regions.

Source Information

Hugh Dellios, "Drop by Drop, Water Worries Collect in West," *Chicago Tribune*, 24 July, 1994, Section 1, pages 1 and 12 - 13.

Geoffrey Lean, Don, Hinrichsen, and Adam Markham, *Atlas of the Environment* (New York: Prentice Hall Press, 1990), 57-60.

Robert Farnighetti, ed., *The World Almanac and Book of Facts 1994* (Mahweh, NJ: Funk & Wagnalls, 1993), p. 166.