


DAY SIX

OVERVIEW OR SUMMARY OF LESSON

The sixth day of the science strand focuses on running water. Students determine where water on their school grounds goes after a rainstorm. Maps are used to establish the relationship between their school/community and the Rio Grande system. A puzzle and a diagram introduce the vocabulary of river systems, watersheds and wetlands.

PROCEDURES

1. Have students think about a summer thunderstorm -- envisioning the deep puddles, running arroyos and swollen rivers after the skies have cleared. Then ask them to write in their journals: *Where does all the stormwater go when it leaves the schoolyard?*
2. Discuss with the class their ideas about where  the water goes. If possible, use topographic maps of the area to determine the exact route to the Rio Grande. Using a map of the larger region, trace the river system's downstream flow from where you are to the point where it leaves the state or enters the Gulf of Mexico.
3. Referring to Handouts #9a and 9b (either as transparency or handouts), discuss what makes a river system. Introduce the terms and concepts.
4. Review how water dissolves a variety of substances. Ask the class what dissolved substances might be carried by torrents of water down normally dry arroyos. Thinking about a river system, what substances might be dissolved in storm water or carried downstream? (*Where is away?*)
5. Now have students return to their initial journal entry and rewrite it, correcting any misconceptions and using correct terminology wherever possible. Help them to make connections between their community and the Rio Grande system at large.
4. Have students complete Handout #10 "Word Search." This contains the vocabulary they will need during the rest of the week.

ALTERNATIVE OR SUPPLEMENTAL ACTIVITIES

1. Have students measure the school grounds and calculate how much water would fall on school property during a rainstorm. (A hypothetical quantity of rain -- such as an inch or 3 centimeters -- could be used as a base standard.)
2. Take your class outside to observe the slope of the land and the direction water would flow to reach a river or tributary. (Students could pool their knowledge of the area to determine the probable course of water to the river.)

3. On a large map of the U.S., determine the watersheds or drainage areas of major river systems. Identify the large area that constitutes the watershed of the Rio Grande (8% of the territory of the U.S. is drained by the Rio.)
4. Let students experiment with the effects of moving water using a large pile of sand and a garden hose in the school yard. Notice how a small stream of water causes erosion. Then experiment with how changes in velocity affect land features.
5. Plan a field trip to identify features of a river system. Students can observe erosion from water run-off, and/or follow the water's course from the schoolyard to the Rio Grande.

CONTENT DISCUSSION

A river system is defined by those areas where surface and ground water contribute to the flow of a main river. A river system includes existing plants and animals.

A watershed is a region in which precipitation collects or flows into various tributaries. Each tributary eventually drains into the mainstem or main river channel. Watersheds, with their many tributaries, can be thought of as a tree formation: The mainstem is the trunk and the large and small streams form the branches.

The Rio Grande watershed covers an enormous area. Not only is 8% of U.S. territory drained by the Rio, but a large portion of the terrain of Mexico drains into it as well. However, since much of the watershed is arid to semi-arid, relatively little precipitation flows into the river system. Also, a great deal of water is drawn off the river for irrigation, use by municipalities, etc.

Riparian areas are crucial to a river system. These are the rich, green zones along the banks of streams and rivers and bordering springs, bogs, wet meadows, lakes and ponds. Certain wooded riparian areas include deciduous trees and shrubs. Shade from vegetation raises the humidity and provides a hospitable habitat for a variety of animals, birds, insects and plants. In New Mexico, wooded riparian areas are known as bosques. These bands of green along the river provide a succulent contrast to our generally arid landscape.

Rivers and riparian zones are mutually beneficial. The river carries nutrient-rich water to plants and animals. The riparian zone, in turn, helps to slow floodwaters and mitigates bank erosion. Also, water released during flood cycles is stored in riparian areas and slowly released back into the river during dry periods, when it is badly needed.

The Egyptians invented the 365-day calendar in response to the Nile's annual flooding.



RIVERY WORDS

Headwaters: Where a river mainstem begins -- usually in a mountainous or hilly area of greater rainfall.

Watershed: The land area that delivers run-off water, sediment and dissolved substances to a body of surface water.

Tributary: A smaller river or stream that flows into a larger river or stream.

Mainstem: The main river channel of the river system into which tributaries flow.

Floodplain: Land along a stream or river that is periodically flooded when the stream or river overflows its banks.

Riparian Area: Located (or living) along or near a stream, river, or other flowing freshwater body.

Arroyo: Seasonal river beds or dry stream beds which carry flowing water after heavy rainstorms or when snow packs melt.

Dam: A structure built across a river or stream to capture water that would otherwise naturally flow along a river or stream. (A dam can control flooding or store water for use during droughts.)

Reservoir: A human-created body of standing freshwater, held in reserve for use. (Often located behind a dam.)

Alluvium: Material transported and deposited by a river; also, any stream or river-laden sediment deposit found in a stream or river channel or low-lying parts of a stream or river valley that is likely to flood.

Fauna: A Latin word meaning the animals of a particular area.

Flora: The Latin word for the plants of a particular area.

Wetland: An area that floods periodically, has waterlogged soils, or is covered with a relatively shallow layer of fresh or saltwater.

RIVER SYSTEM WORD SEARCH

Find 16 words or pairs of words (look in Spanish as well as English!) that describe natural and man-made features in and along a river. Words may read from left to right or from top to bottom or on a diagonal. (Use a ruler or the edge of a sheet of paper to help you discover words hidden on a slant!)

F L O O D P L A I N K R X L
L A A T E T A H I J W I L J
O M U D N R C S U M A V T Y
R B F N H E A D W A T E R S
A S R O A S I R B I E R I Z
R L E V E E R M P N R S B A
R C L P O R S W H S S Y U V
O E D U C V I N B T H S T F
Y B D A V O O P T E E T A K
O F C E F I D A A M D E R E
J A P I H R U G F R F M Y W
K B O S Q U E M G J I L K Y
F G W E T L A N D S L A S A
U H O I F D A N G V M M N N