

EXPLORE

4 | Follow the Water

GRADE LEVEL

K-3

45 minutes



Developmental Modifications: For younger students, have them fill in the Journal Page labels as a class.

summary

Students act out the Great Lakes water cycle, read a water flow poem, sing a water cycle song and label the water movements on a map.

objectives

- Describe the Great Lakes water cycle.
- List at least 3 parts of the Great Lakes water cycle.
- Show the movement of water through the Great Lakes.

prerequisite

Some knowledge of the water cycle is helpful.

vocabulary

Water cycle: also known as the hydrologic cycle; the series of conditions through which water naturally passes from water vapor in the atmosphere through precipitation upon land or water surfaces and finally back into the atmosphere as a result of evaporation and transpiration

Watershed: the area that drains into a river or lake; the Great Lakes watershed is also known as the Great Lakes basin

Condensation: change from a less dense to a denser, or more compact form

Evaporation: pass off into vapor from a liquid state

Precipitation: to change from a vapor to a liquid or solid and fall as rain or snow

setting**subjects**

Geography, Geology, Hydrology, Language Arts

standards

This Great Lakes in My World activity is aligned to the Common Core State Standards and to state learning standards in:

Illinois
Indiana
Michigan
Minnesota
New York
Ohio
Pennsylvania
Wisconsin

This alignment is available on your Great Lakes in My World CD in the "Standards" folder and on-line at <http://www.greatlakes.org/GLiMWstandards>.

materials

- Map of the Great Lakes watershed (p. 418)
- String or rope for lake outline
- Water cycle cards
- Signs for water cycle stations
- Poem "Drip Drop" (p. 420)

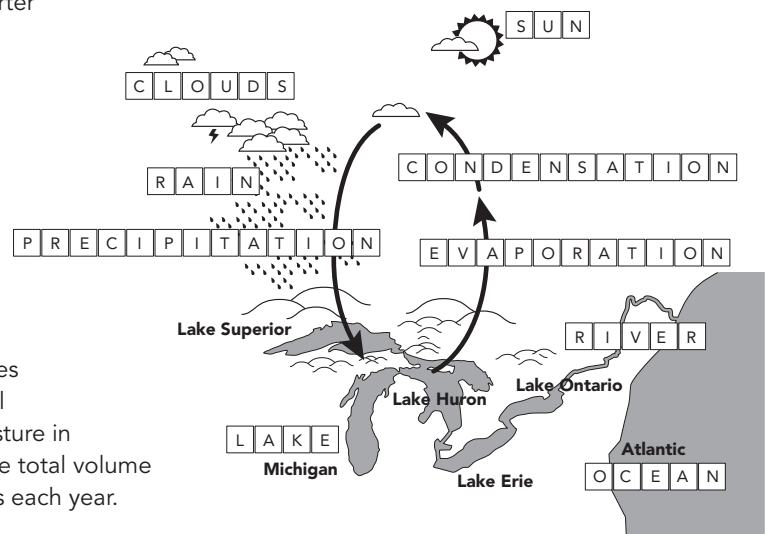
background

The Great Lakes...

- And their connecting channels are the largest group of freshwater lakes on Earth.
- Cover 94,000 square miles, and hold 6 quadrillion gallons of water.
- Drain 200,000 square miles of land. (All runoff water in the 200,000 square mile watershed of the Great Lakes flows into one of the lakes.)
- Make up one-fifth of the world's fresh surface water supply and nine-tenths of the United States' supply.
- Watershed includes eight states and one province: Minnesota, Wisconsin, Illinois, Indiana, Michigan, Ohio, Pennsylvania, New York, and Ontario.
- Watershed is home to (as of 2002), over 33 million people, including one-tenth of the U.S. population and one-quarter of Canada's population.

The Water Cycle

The water levels in the Great Lakes vary on short time scales, by season and year to year, but remain steady over a long time period. The water levels can fluctuate 30cm-60cm per year (12in-24in). They are influenced by precipitation, upstream flows, groundwater, surface water runoff, evaporation, diversions, and human regulations. Westerly winds carry moisture into the Great Lakes basin in air masses from other parts of North America. An approximately equal amount of water leaves the basin through evaporated moisture in departing air masses and the outflow into the ocean. Of the total volume of water in the Great Lakes, only 1% enters the Great Lakes each year.



procedure

1. In small groups, have students look at maps of the Great Lakes watershed (p. 418). Help them find where they live in the watershed on the map. Students decide whether the lakes are all connected or separate: Can they trace the water clear through between each lake or is there land in the way? *Students should find that the lakes are all connected.*
2. Ask students if they think that the water moves between the lakes, or is still. *The water flows between the lakes: From Superior to Michigan and Huron, to Erie, Ontario, then out to the Atlantic.* Read the poem Drip Drop and discuss the path that the water drop takes.
3. On their journal page maps, have students draw arrows through all of the lakes, showing how the water moves throughout the system. Use either p. 413 or p. 418 map. Draw an example on the board or overhead so that students can see what they are trying to draw.
4. Ask students to guess where else water might come from or go to (think about the water cycle). *Streams, rivers, groundwater, plants, animals, clouds, etc.* If students are unfamiliar with the water cycle, draw a picture that shows how evaporation, precipitation, and condensation happen in the Great Lakes watershed.
5. To teach or review the water cycle, try singing the following song with students that uses the tune of "Found a Peanut" or "Oh My Darling Clementine" (same tune): "Evaporation, Condensation, Precipitation all day long. These are the steps of the water cycle, and they continue on and on." Hand motions should be included to indicate evaporation as an upward motion, condensation as a fluffy, cloud-like motion, and precipitation as a downward motion, using the fingers to indicate raindrops or snowflakes.

Hydrological Cycle Game

Students will act out a simple Great Lakes water cycle.

6. In an open space, use string to make an outline on the ground of the Great Lakes. Call this station: Great Lake. Set up stations for Cloud (evaporation), Groundwater, River, Precipitation and Ocean, according to the cards.

procedure

<p>1</p> <p>CLOUD The sun comes out, causing the drops of water to evaporate. They become water vapor. The water vapor condenses into clouds. → CHOOSE 2</p>	<p>2</p> <p>PRECIPITATION Tiny drops of water in the clouds fall down as rain/snow. → CHOOSE 3, 4 OR 5</p>
<p>3</p> <p>GROUNDWATER The water seeps into the ground, to an underground river. → CHOOSE 4 OR 6</p>	<p>4</p> <p>RIVER The water goes into a river above ground that flows into your Great Lake. → CHOOSE 1 OR 3</p>
<p>5</p> <p>GREAT LAKE The rainwater falls into your Great Lake. → CHOOSE 1 OR 6</p>	<p>6</p> <p>OCEAN The water flows into the St. Lawrence River and into the Atlantic Ocean. → CHOOSE 1</p>

Follow the directions to vary the order of these cards and show students that stages of the water cycle are not linear, but happen according to different circumstances. Make sure they make sense as they are being read.

7. Have some or all of the students stand next to a station that you choose, and tell them to pretend to be drops of water. If they stand next to multiple stations, you will need to read directions for each station each time.
8. Choose a card from the stack, or have a student choose a card from the stack, and read aloud to the class. The cards may be rearranged, and cards will be repeated. (For example, evaporation will need to be done more than once.) Students should act out the instructions on the card, pretending to be water drops in the Great Lakes.

wrap-up

1. Have a short discussion with the class about the water cycle, and the places where water can be found in the Great Lakes watershed. Ask students if they can think of any other places water can be found that were not a part of the game. *Plants and animals.*
2. Have students label the water cycle elements on the Great Lakes map in their journals, using the words provided. See map on page 411 for an example.
3. If you have not yet sung the Water Cycle Song, it is a good concluding activity (see #5).

assessment

Rubric on page 463

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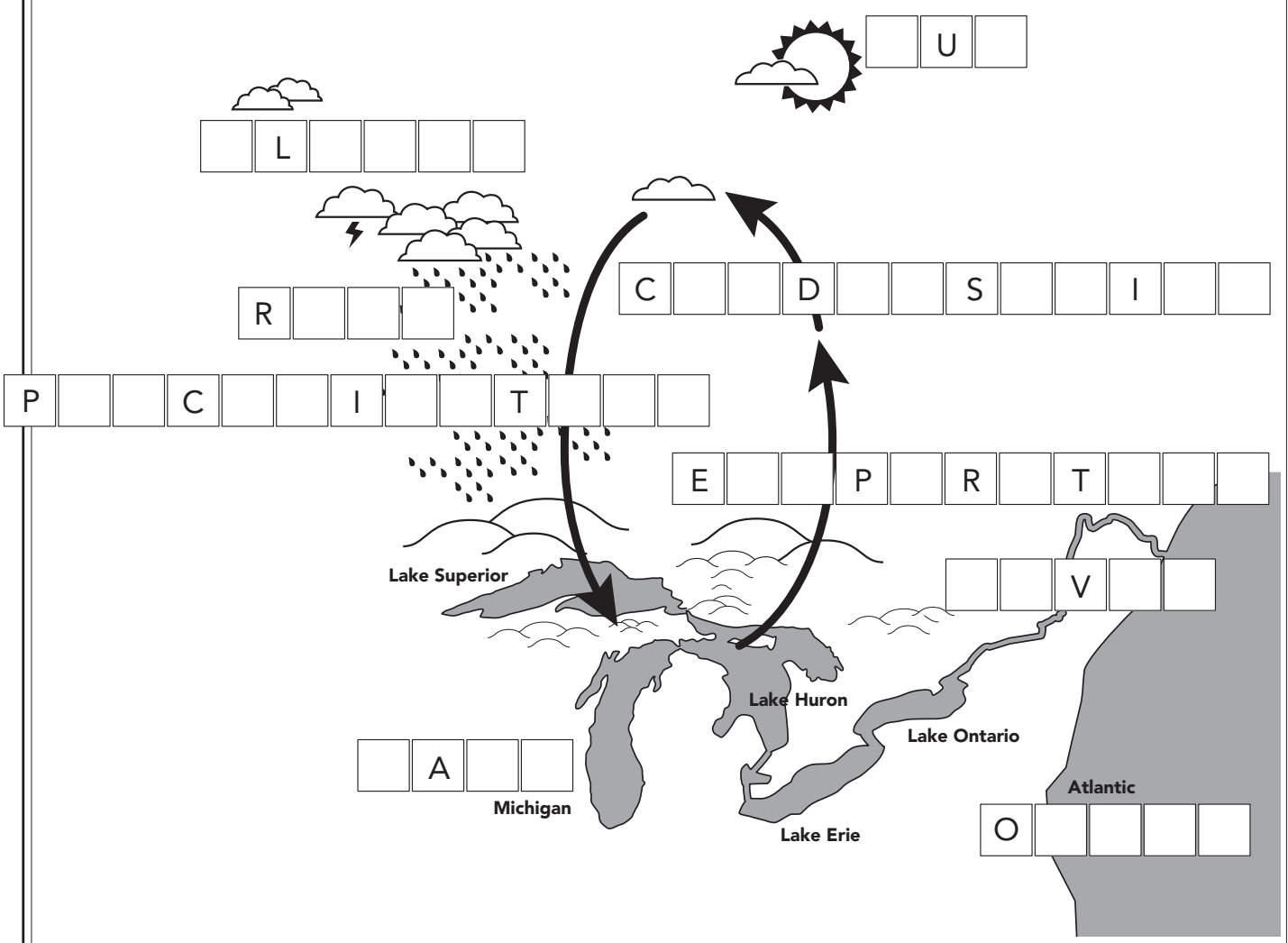
FIRST NAME																				
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[1] Use these words to label the picture below.

- SUN
- CLOUDS
- EVAPORATION
- LAKE
- RAIN
- CONDENSATION
- RIVER
- OCEAN
- PRECIPITATION

[2] What is the name of the water that helps the Great Lakes stay full, but can't be seen in this picture? Hint: It is found underground!

The water is called: G W A T E R



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