

Lesson 1 - Great Lakes Watershed

Jon Way

jonway@deerfieldschools.us

Deerfield Public Schools

8th Grade Earth Science

Lesson Overview - Students will construct a plaster model of the Great Lakes area and trace an outline of the Great Lakes region. Next students cover the model of the states and provinces with plaster of Paris creating a relief map. Students will use various colors of paint to display features such as watersheds. They will paint the major rivers that enter into the Great Lakes, shade in the individual river and lake watersheds, and finally, shade in the area that would be considered the Great Lakes watershed. Students will compare the Great Lakes watershed with other major watersheds in the United States including, the Mississippi River, Columbia River, Rio Grande, and Colorado River watersheds. Students will also learn about each of the Great Lakes, and the river systems that surround the lakes. Finally, students will be able to recognize smaller watersheds within larger watersheds. My goal is for student to be able to identify the watershed in which they live in, **as well as the interconnectedness of the Great Lakes waterway that is used for shipping goods to people across our country.**

Sources Consulted - This lesson is a scaled down version of the watershed activity that we completed at the institute. Instead of a large canvas map, the students will create their own relief map using plywood, plaster of Paris, and Paint. This lesson could be used in a general science class or social studies/geography class. This is a lesson I completed as an elementary student. Our focus was on the topography of South America. Students will be able to examine the topography of the Great Lakes. However, the three dimensional map will be used for more than analysis of the topography. Flow of water, watershed areas, and shipping routes could be traced using this map. The connection to Great Lakes transportation for this lesson would be the different materials shipped from around the Great Lakes and the watersheds that are used for shipping. Students would be able to trace the path of salt, coal, grain, and iron ore as it moves via the Great Lakes and then is transported throughout the Midwest. Other possible topics that could be discussed include the amount of material that is transported on the Great Lakes. Illustrating how much material is transported would help the students realize how valuable this watershed is. Resources consulted include; More Than Just a Lake lesson included in GLMT binder, Michigan Sea Grant pamphlets provided by the University of Michigan and Michigan State and funded by NOAA, and great-lakes.net - teaching geography - http://www.great-lakes.net/teach/geog/intro/intro_1.html .

Learning Objectives - "At the end of this lesson, students will be able to"

- Describe a watershed.

- Differentiate between a watershed and a divide.
- Describe how water moves through the Great Lakes system.
- Understand the defining role that rivers have in watershed identity.
- Identify the river drainage basin in which they live.

State or National Benchmarks Addressed

Grade 7 Science E.ES.07.82 Analyze the flow of water between the components of a watershed, including surface features (lakes, streams, rivers, wetlands) and groundwater.

Grade 6 Social Studies 6 – G1.1.1 Describe how geographers use mapping to represent places and natural and human phenomena in the world.

Materials – Students will already have a completed relief map of the Great Lakes region.

Materials Needed – Various colors of paint and paintbrushes.

New Vocabulary:

- Tributary
- Watershed
- Divide
- River Mouth
- Headwaters

Focus Questions:

What is a watershed?

What watershed do you live in?

Classroom or Field Activities

1. Students will start with a plaster of Paris map of the Great Lakes Region similar to the map found below (Image 1).



Image 1

2. On day one students will work on painting in the major rivers that enter into the Great Lakes. On their plaster of Paris map they will create an image similar to image 2. The rivers included for my class are the Ontonagon R., Menominee R., Escanaba R., Manistee R., Ausable R., Muskegon R., Saginaw R., Grand R., Huron R., Kalamazoo R., Raisin R., St. Joseph R. At this time they will also identify the major river closest to their home. Depending on time, other major rivers from the surrounding states will be added to the map.



Image 2

3. On day 2 students will first read about river systems and watersheds in their books. Next, the PowerPoint on watersheds will be displayed and discussed (Attachment 2). Finally, the major watersheds in the United States will be explored using the website - http://edna.usgs.gov/watersheds/html_index.htm

- On day 3 students will paint the major Great Lakes watersheds on their plaster of Paris map. The map will resemble image 3.

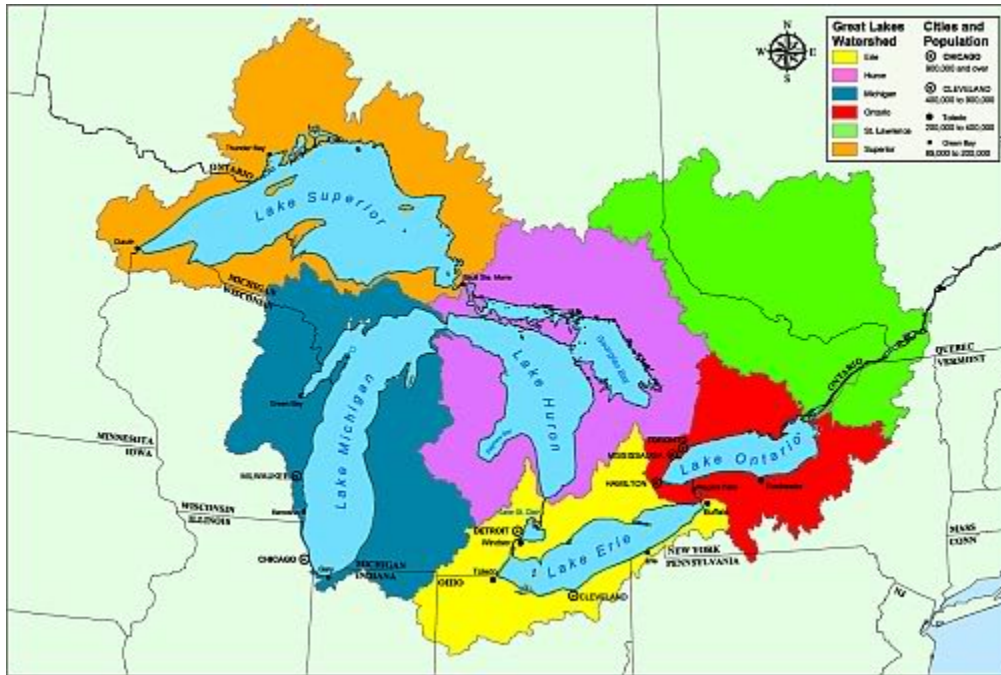


Image 3

- On day 4 students will compare the Great Lakes watershed as a whole to other major watersheds in the United States. This would also be a good time to discuss the amount and type of material that is transported on the Great Lakes. Students could locate the major ports on the Great Lakes and display what types of materials are being transported from those locations. They could then display the destination for the materials by painting lines on their map to illustrate shipping routes. Each line could be assigned a color to illustrate a certain material being shipped on the Great Lakes. Students will complete the section assessment at the end of the section. The vocabulary will be reviewed for a quiz on day 5.

Assessment - Students will start with a pre-assessment or preconception survey on watersheds (Attachment 3). Students will finish with a post-assessment. The quiz will include questions on the Great Lakes and watersheds (Attachment 4).

What is a Watershed?

On the lines provided below, explain in your own words what a watershed is.

In the space below sketch what you think a watershed looks like.

Watershed Quiz

Multiple Choice Questions – Answer the following question by selecting the best choice.

1. Which of the Great Lakes is not only the largest in volume, but also the deepest and coldest?
 - a. Ontario
 - b. Huron
 - c. Superior
 - d. Michigan
2. The Great Lakes contain how much of the world's freshwater supply?
 - a. 1/5
 - b. 1/4
 - c. 1/3
 - d. 1/2
3. What country other than the United States do four of the Great Lakes border on?
 - a. Mexico
 - b. Cuba
 - c. Canada
 - d. China
4. What is the largest of the Great Lakes?
 - a. Huron
 - b. Superior
 - c. Erie
 - d. Michigan
5. Of these Great Lakes, what one is the farthest south?
 - a. Erie
 - b. Superior
 - c. Huron
 - d. Ontario
6. What Great Lake is the farthest east?
 - a. Michigan
 - b. Huron
 - c. Erie
 - d. Ontario
7. What Great Lake lies entirely within the United States?
 - a. Michigan
 - b. Huron
 - c. Ontario
 - d. Erie

8. What state does Lake Erie NOT border?
 - a. New York
 - b. Indiana
 - c. Pennsylvania
 - d. Ohio
9. What Great Lake has the longest shoreline?
 - a. Michigan
 - b. Ontario
 - c. Superior
 - d. Huron
10. What Great Lake is the most shallow at 210 feet deep?
 - a. Huron
 - b. Michigan
 - c. Ontario
 - d. Erie

Short Answer – Answer the following questions in your own words.

1. What is a tributary?
2. What is a watershed?
3. What is a divide?
4. What is the largest watershed in the United States?
5. What watershed do you live in?