Lake Superior Watershed Floor Map Activity

Subject: Science, Social Studies
Grade: 4-8

Duration: one class period

Materials
Per group:
- Lake Superior Floor Map
- Lake Superior Circle Tour Map or State Highway Maps
- Yard sticks or measuring tapes
- Great Lakes Chart
- “Rivers” consisting of name and blue yarn
- Yarn (for plotting watershed boundary)
- Laminated plant and animal figures
- Lake Superior/ Gt. Lakes Watershed Handouts

Lesson Overview
Students become familiar with Lake Superior Geography as they explore the concept of a watershed by mapping rivers and plotting the Lake Superior Watershed boundary. Students identify natural characteristics of the Lake Superior Watershed, and learn that each river system is a part, which makes up the whole of the Lake Superior Basin.

Essential Questions
Why is it important to know where a watershed boundary is?

Objectives
Students will be able to:
1. Define ‘watershed.’
2. Explain why human activities within one watershed can affect all of Lake Superior (and eventually the entire Great Lakes Basin).

Advance Preparation
Spread the Lake Superior Floor Map out on the floor. Have the students gather around the edge of the map. (Tell students to take off their shoes so that the map stays clean, or have them kneel on map with feet off the map.)

Introduction
Ask what is this a map of? (Lake Superior) Have one student place the Lake Superior sign in the middle of the lake. Continue by asking students what they already know about Lake Superior. (Where is the lake located from here? How big is Lake Superior? Is it cold? etc.)
Procedure

Activity 1: Basic Geography and Mapping

1. Explain that all maps must have:
   a) some kind of scale
   b) some way of orienting you to the compass directions. [This map has a bar scale and a compass rose. Other maps may use ratio scales and latitude-longitude lines for orientation.]

2. Ask students where we are located on the map. Have one student place “You Are Here” sign.
   • Next pass out the international signs, state/province, towns and island-park signs to students and have them place their sign in its proper position.

3. Population Comparisons in Great Lakes Basin
   Ask students if they think the Lake Superior area is heavily populated or lightly populated. Show students page 30 in “The Great Lakes: an Environmental Atlas and Resource Book” as a means for demonstrating how few people we have around Lake Superior.

4. Determine length and width of Lake Superior
   Have students guess the dimensions of Lake Superior, then measure length [Duluth to Wawa, approx. 360 miles] and width [Munising to Rossport Canada, approx. 170 miles] using yarn and scale.

Activity 2: The Watershed

Ask students, Where does all the water in Lake Superior come from? [Precipitation onto the lake and runoff from surrounding land. A small component also comes from ground water seepage, but the ground water contribution is assumed to be insignificant, hence we will not discuss it here.]

1. Mapping Rivers
   Pass out 1 piece of blue yarn to each student. Demonstrate how a river might look on a map by pointing out the head and the mouth of the river. Then have each student "map" their river.

   Once students have finished "mapping", have them stand around the map. Ask them if they have any knowledge of what the river looks like…How is the fishing? etc. Then tell the students that these are just some of the rivers which flow into Lake Superior. There are actually over 300 rivers that flow into the Lake, and all these rivers contribute a large amount of water to the lake. (A little less than half of the water in Lake Superior comes from runoff.)

2. Identifying the Watershed Boundary
   Now pick a point between two rivers and ask: if a rain drop falls here where will it run-off to? (The drop may runoff to one of the rivers and then flow into Lake Superior.) Next, pick a point away from the rivers, at the edge of the floor map, and ask the same question: if a rain drop falls here where will it run-off to? (This raindrop may flow into Lake Michigan, Hudson Bay or the Mississippi River, depending on location.) So somewhere, there is a line or boundary, which separates which way a drop of water will flow; toward Lake Superior, or away from Lake Superior.
With students standing at the head of their river(s), pass a ball yard (any color other than royal blue) around the Lake, from the head of one stream to the next. Tell students that this line represents the boundary that defines whether water will flow into Lake Superior or toward some other body of water, in some other direction. Tell them the line is literally called a **DIVIDE** and all the area within the yarn represents the **LAKE SUPERIOR WATERSHED**. It is a nice visual effect to have students lift up the map along the watershed boundary just a little bit to show how water flows downhill toward Lake Superior.

Each river flowing into Lake Superior is part of a watershed (an area on the earth’s surface that receives runoff from precipitation). All the watersheds from the individual rivers around Lake Superior combine to make up the Lake Superior Watershed.

Students may be a little confused when it comes to the St. Mary’s river. Ask them why the yarn is placed at the beginning of the St. Mary’s River? It is because this river drains water away from Lake Superior. The water in the St. Mary’s River is not flowing **INTO** Lake Superior, but **AWAY** from the lake.

3. **Identify Natural Characteristics of the Lake Superior Watershed**

Begin by reviewing facts about Lake Superior:

- Deepest of Great Lakes (Max. = 1333 ft., Avg = 490 ft.)
- Cleanest of Great Lakes
- Holds ½ of water in Great Lakes, 10% of fresh surface water in world and 95% of United States’ fresh surface water
- Holds 3 quadrillion gallons of water (enough to cover lower 48 states with 5 feet of water)!

Ask students to describe the Lake Superior region. [Topics to address are many and it will be easy to get carried away with detail. Try to stick to the highlights.]

1. Is this area highly developed? [L.S. basin population is approx. 700,000 as compared to 34,000,000 for the other four Great Lakes basins, combined]
2. Is there agriculture here? [A little, but generally the growing season is too short, and soils are not very fertile.]
3. What kind of industry is here: iron mining, shipping, logging, tourism

While you are discussing these points, have students place the laminated plant/animal pictures around the lake. We are trying to emphasize that the Lake Superior watershed is relatively natural.

4. **Why Are Watersheds Important?**

Tell students the watershed that they have just generated is a close approximation to the real Lake Superior watershed. Show them a map of the actual watershed. Ask students: Does your school lie within the Lake Superior Watershed? How about your home? [Identify which river’s watershed the school is within.]
“Now what could happen if I pour a gallon of motor oil on the ground out behind my house, could that have an impact on Lake Superior?” (Yes! Anything dumped within the Lake Superior Watershed has the potential to impact the Lake.) “There are quite a few paper mills in Ontario, and the paper-making process generates a significant quantity of pollutants. Where might those pollutants end up if the manufacturers are not careful? [Lake Superior.]

5. Great Lakes Watershed
Show a map of the Great Lakes Watershed and tell students that Lake Superior is just one of the five Great Lakes. Ask students “where does the water from Superior flow? (Into the Lake Huron-Michigan system.) Continue in the same way, following water through the entire Great Lakes system, out to the Atlantic Ocean.

Give students a map of the Great Lakes Watershed. Have them label each lake.

Learning Assessment
1. What must all maps have on them? [a scale and a compass to indicate direction]
2. What did you learn about the geography around Lake Superior?
3. What did we learn by mapping the different rivers that flow into Lake Superior?
4. Where and what is the boundary or divide of the Lake Superior Watershed?
5. Identify where the watersheds for the other Great Lakes are located.
6. What human activities can negatively impact the Great Lakes?

Geography of Lake Superior:
United States and Canada States and Provinces surrounding Lake Superior

- Ontario
- Michigan
- Wisconsin
- Minnesota

Towns/Cities around Lake Superior:
Sault Ste. Marie, Canada & Michigan
Munising
Marquette
L’Anse
Baraga
Houghton
Hancock
Ontonagon
Superior
Duluth
Thunder Bay
Wawa
Marathon
Ironwood
Ashland

Lake Superior Floor Map: Rivers to “Map”

Michigan:
- Tahquamenon
- Two Hearted
- AuTrain
- Huron
- Sturgeon
- Ontonagon

Wisconsin:
- Montreal
- Bad
- Boise Brule

Minnesota:
- St Louis
- Temperance
- Pigeon

Ontario:
- Kaministiquia
- Nipigon
- Gravel
- Aguasabon
- Pic
- White
- Pukaskwa
- Michipicoten

Parks
- Isle Royale National Park
- Apostle Islands National Lakeshore
- Michipicoten Island Provincial Park
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