

Where Are We Now?---A Lesson in Great Lake Map-Making & Map-Reading

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Ontonagon Area Junior High School

8th Grade Middle School Mathematics (LD, At Risk, Spec Ed)

Lesson Overview: This 2-day lesson to engage academically disadvantaged and/or challenged students in map reading and map making

Michigan Grade Level Content Expectations

M.UN.08.EG08 - convert one unit of measure to a larger or smaller unit given the conversion factor

G.LO.08.EG02 - find and use locations using simple coordinate systems such as maps and first quadrant grids

G.LO.08.EG03 - read, interpret and use maps and grids with legends, landmarks and city blocks.

Learning Objectives:

The student will be able to:

- Find various Great Lakes locations
- Describe directions to travel by water from where we are to those locations

Materials:

Math Textbook (McDougall-Littell Middle School Math Course 3- ISBN: 0-618-50817-1), art/Table of "Great Lakes and St. Lawrence Seaway Ports", large 3 ft by 2 ft white card stock, black/blue/red etc Magic Markers, laminated tags (names of ports, states, lakes), rulers, sketching pencils, 1/4X1/4 inch grid paper, commodity/materials icons/tags (coal, grain, limestone etc), compasses/dividers, handouts and software (maps) listed below

Anticipatory Set: Where does all that coal for the Power Plant come from? Where did all that limestone for our break-wall out into the lake come from? How does it get here? What's the best way to transport that much stuff?

Procedure

1. Present chart (Great Lakes and St. Lawrence Seaway Ports) using computer generated (or overhead) projection and handouts of same for each student.
2. Point out ports that ship vs receive various materials including coal and limestone (highlight legend on chart and physical icons).
3. Give each student a small map copied on grid paper of the Great Lakes and have them locate at least ten limestone or coal shippers or receivers (at least 3 minutes). "Bigger is Better":
4. In groups of four students, each student will generate his/her individual portion of a larger (36" by 24") outlined map of the Great Lakes using the 8.5" by 11" copies then tape the pieces together. Each must select a quadrant he/she will copy and cut the map into four pieces and copy that one. Ensure no names of cities or locations are on the maps; just coastlines. Shadow student groups and help them use dividers to triple sizings when translating from smaller to larger paper (ie:1" becomes 3") and reminding them to always work from the center of the larger + smaller map.

Independent Practice: homework will be to memorize $\frac{1}{4}$ (each one selects a different $\frac{1}{4}$) of the locations on the list of 40 important Great Lakes locations in preparation for quiz to be taken by the entire group of four tomorrow.

Closure: Can you describe where we are and how to get to.?

Adaptations (For Students With Learning Disabilities): peer review and remediations in chosen groupings and pairings; Special Ed consultant to mentor individuals

Possible Connections to Other Subjects: Geography, Great Lakes History, Visual Arts

New Terms:

Coordinate plane a coordinate system formed by the intersection of a horizontal number line (x-axis) and a vertical number line (y-axis)

Quadrant one of four regions that a coordinate plane is divided into by the x-axis and y-axis

Dilation transformation that stretches or shrinks a figure

Scale drawing a diagram of an object in which the dimensions are in proportion to the actual object's dimensions

Scale factor the ratio of corresponding lengths of a figure and its image after dilation

Assessment:

Group quiz taken after review on 2nd day of lesson. Large map of entire Great Lakes Watershed (from attachments at GLM Inst) will be displayed with numbers at 40 locations to be identified by students