Learning Direction & Degrees of Movement

Grade Level: 6th Grade Special Education Math (5-7 students)

Lesson Overview:
Students will measure a route, find the distance, figure the direction in degrees and solve the time it takes for each leg of a boat trip.

Sources Consulted:

Taken from our activity in class with adjustments to suit the level of the students

Materials Needed:
Hinged parallel rules
NOAA Chart

New Vocabulary:
Knot - A unit of speed used in boating (approximately 1.15 statute miles/hour)
Nautical chart - A map used to navigate on bodies of water

Focus Question:
When your parent has to run errands, what does that mean? A: he/she has to make different stops along the way to get things done before getting home. Does your parent plan a certain route to make it less driving time or distance? What if you were on the water and wanted to make stops along the way, what would be some good things to know?
Learning Objectives:
Students will learn how to measure the degree on a chart using a hinged parallel rules. Students will cooperate with each other by filling out a chart.

Benchmarks:
Algebra  A.RP.06.10 Represent simple relationships between quantity using verbal descriptions, formulas or equations, tables & graphs

Measurement   M.UN.06.01 Convert between basic units of measurements within a single measurement system

Classroom Activity:
Students will be shown a map (NOAA Chart 14972 Keweenaw Waterway). The teacher will pick a starting point and a final destination. Each student will pick a stopping point along the route. It could be a buoy, a landmark or what every floats their boat as long as it between the start and finish. Each student will have a table to fill out. (See attachment). The student who picks the closest spot to the start will measure first. With guidance from the teacher, the students will use the hinged ruler to find the direction degree (I will use the normal degree reading), measure the distance in statue miles and calculate the time in minutes using 6 knot per hour. Thus 6 x 1.15 = approximately 7 mph. Students will use this formula $T = \frac{d}{s} \times 60$ to find the time in minutes. After each student is done measuring they will report their results to the class and each student will record each measurement on their paper. A student could have more than one reading depending on the route.

Assessment:
Students will be assessed on their measurements and conversions from their table. Students will write if using this chart would be feasible and will name three situations that could causes problems.
<table>
<thead>
<tr>
<th>Name</th>
<th>Start</th>
<th>Stop</th>
<th>Degree Direction</th>
<th>Distance in Miles</th>
<th>Time in minutes</th>
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