Great Lakes Maritime Transportation Lesson
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Grade/Subject: 7th and 8th grade Art

Unit Overview:

During this unit, my students will become familiar with the Maritime shipping industry. They will learn about the taconite mining processes at the Hibbing mine, the Soo Locks, the shipping season on the Great Lakes, cargoes carried by 1,000 footers, maritime impacts on the U.S. society, invasive species of the Great Lakes, and the history of the Split rock lighthouse.

Sources:
• www.mnhs.org/places/sites/srl/history/index.htm (Split rock Lighthouse)
• Hibbing Taconite DVD
• Great Lakes Shipping powerpoint overview and outline
• Photographic slide show of Maritime Shipping Institute by Tim Sweet
• Exotic, Invasive, Alien, Nonindigenous, or Nuisance Species: No Matter
• What You Call Them, They’re a Growing Problem, NOAA, Great Lakes
• Environmental Research Laboratory.

Teaching and Learning Objectives:

1. Students will be able to name the three main cargoes shipped on the Great Lakes.
2. Students will be able to name the largest “laker” on the Great Lakes.
3. Students will be able to identify the Poe Lock as the sole lock able to hold 1,000 footers.
4. Students will be able to identify the length of the Great Lakes shipping season.
5. Students will be able to name the percentage of U.S. iron ore produced by the state of Minnesota.
6. Students will be able to define invasive species.
7. Students will be able to identify the purpose of the Split rock lighthouse.
8. Students will be able to identify careers that interlink science and art.
9. Students will use acrylic paints and canvas to successfully create an art piece inspired by the Great Lakes and the shipping industry.

Science/ Biology Benchmarks

BL.1A Generate new questions that can be investigated in the laboratory or field.

BL.2D Evaluate scientific explanations in a peer review process or discussion format.

BL.2E Evaluate the future career and occupational prospects of science fields.

BL.2k Analyze how science and society interact from a historical, political, economic, or social perspective.
Visual Arts  Benchmarks

**ART.I.VA.M.1** Select materials, techniques, media technology, and processes to achieve desired effects.

**ART.I.VA.M.2** Use art materials and tools safely and responsibly to communicate experiences and ideas.

**ART.I.VA.M.4** Be involved in the process and presentation of a final product or exhibit.

**ART.II.VA.M4** Use subjects, themes, and symbols that communicate intended meaning in artworks.

**ART.III.VA.M.2** Observe and compare works of art that were created for different purposes.

**ART.III.VA.M.5** Describe how personal experiences influence the development of specific artworks

**ART.IV.VA.M.2** Describe and place a variety of art objects in historical and cultural contexts.

**ART.V.VA.M.2** Describe and compare skills involved in arts-related and visual arts careers.

**ART.V.VA.M.4** Describe ways in which the principles and subject matter of other disciplines taught in the school are interrelated with the visual arts.

Procedure

Day One

I will speak to my students about my trip to Duluth for the Great Lakes Maritime Transportation Teacher Institute. I will show them the photographic slide show by Tim Sweet of the Institute. I will describe the location of each slide. My students will then write a journal entry about the slide show. Next my students will view the Welcome to Hibbing Taconite DVD. After they have viewed the DVD, I will answer any questions the students have about the Hibbing Taconite mine and they will again journal their thoughts on the movie.

Day Two

Students will view the Great Lakes Shipping overview powerpoint presentation. I will present the outline information to them while the powerpoint slides are being shown. While the powerpoint is being presented to the students, I will write the main ideas down on the overhead. The students will write notes as well. I will then go to [www.mnhs.org/places/sites/srl/history/index.htm](http://www.mnhs.org/places/sites/srl/history/index.htm) on the internet, to review historical information on the Split rock lighthouse with the students. Students will then write a one to two page journal entry on what interested them most about the powerpoint presentation and the historical information regarding the Split rock lighthouse.
The information that will be conveyed to the students is available at the following website (www.mnhs.org/places/sites/srl/hostory/index.htm), and is enclosed below.

A single storm on Nov. 28, 1905, damaged 29 ships, fully one third of which were the uninsured property of the steel company fleet. Two of these carriers foundered on this rocky coastline, which some called "the most dangerous piece of water in the world." A delegation led by the steamship company president descended upon Washington, D.C., and in early 1907, Congress appropriated $75,000 for a lighthouse and fog signal in the vicinity of Split Rock.

The U. S. Lighthouse Service completed the 7.6-acre facility in 1910 and operated it until 1939, when the U.S. Coast Guard took command. By that time, Split Rock's picturesque setting near the North Shore highway, built in 1924, had made it "probably the most visited lighthouse in the United States."

**Lighthouse Operating Agencies**

When Split Rock Light Station was commissioned in 1910, all beacons in the United States were under the authority of the U.S. Lighthouse Service. USLHS had its roots in the federalization of all lighthouses in 1789. It was a branch of the Commerce Department, and had jurisdiction over anything to do with lighthouses.

In 1939, the USLHS was absorbed into the U.S. Coast Guard, which continues to operate all lighted aids to navigation in the United States today. It runs only one manned light station: Little Brewster Island in Boston Harbor, the first lighthouse built on American soil. All other lighthouses in the United States are either automated or decommissioned in the face of new navigational technology such as LORAN (Long Range Navigation), radar and GPS (Global Positioning System).

**Closing of the Lighthouse**

The station closed in 1969 when modern navigational equipment made it obsolete. The State of Minnesota obtained the scenic landmark in 1971. Minnesota Department of Natural Resources operates
Split Rock Lighthouse State Park, a 2,200-acre state park that offers hiking, picnicking and tent camping to visitors.

In 1976, administrative responsibility for the 25-acre Split Rock Lighthouse Historic Site was given to the Minnesota Historical Society. The Society continues the dual goals of preservation and interpretation of Split Rock Light Station for the generations to come.

Day Three
Students will create an acrylic painting on canvas inspired by the Great Lakes and the Great Lakes shipping industry. They will work the entire class period on their paintings.

Day Four
Students will complete their acrylic Great Lakes paintings today. Students will then present their paintings to the class and read their journal entries aloud.

Main Ideas Students Should Know

1. The largest laker on the Great Lakes is the 1,013 foot Paul R. Tregurtha
2. A 1,000 foot laker carrying 65,000 tons is equivalent to
   - A 5.6-mile unit train
   - 2,167 trucks, bumper to bumper for 24.6 miles!
3. The Poe lock is the only lock that can accommodate 1,000 foot ships
4. Laker season on Lake Superior is 10 months long
5. The “Big 3” cargoes on the Great Lakes are:
   - Iron Ore
   - Coal
   - Limestone
6. Minnesota mines produce 70% of the iron ore in the U.S.
7. Maritime impact on the U.S. economy is $2 trillion per year
8. Exotic species continue to create long-lasting problems in the Great Lakes.

Unit Assessment

Journal entries from day one and day two will be graded on content and demonstration of knowledge.

Acrylic Painting will be graded on creativity and originality of idea, incorporation of the Great Lakes and or Great Lakes shipping into their artwork, neatness of work, project completion, and time used wisely.