Soo Locks Exploration: The Place Where Michigan Was Born

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School: Northwestern High
Subject: Life Science/Social Studies
Grade Level: 10th - 12th [Special Needs Students]
Duration: 55 minute periods [5 days]

Visit to Soo Locks: Pass through the gates of Soo Locks Park and come face to face with 155 years of maritime history. But there’s more to see and do than just watch the freighters, barges, and tugboats as they navigate the 21-foot drop between Lake Superior and Lake Huron. Parents may appreciate the MacArthur Lock and the Poe Lock and the 8.6 million tons of cargo that pass by viewing platforms every year, but what’s a kid to do?

Adapted from ‘Are you ready for Locks Quest? Laugh and learn while exploring Soo Locks Park’

Lesson Overview: This lesson will explore the Soo Locks from its colorful history that includes the early native residents of the area, the Ojibway Indian, via a scavenger hunt titled Locks Quest that challenges students to find the answers to 26 questions about the Soo Locks.

Goals:
- Familiarize students about the beautiful Soo Locks
- Prompt students to locate the Soo Locks using a Michigan and Great Lakes map
- Demonstrate a connection between Science:
  - Biology, Ecology, Earth, and Chemistry
  - Science Skills: Observing, comparing, recording, classifying, analyzing
  - Science Education Standards
  - Scientific Inquiry
  - Populations and ecosystems
  - Science and human impact
- Math; Reading Comprehension
- Demonstrate a connection to geography
- Promote appropriate use of technology

Learning Objectives [Scaffold Instruction]:
At the end of this lesson, students will be able to
- Locate on a Michigan map four major ports and their cargo [two upper peninsula ports and two lower peninsula ports]
- Explain what a freighter is, its uses and its functions
- Explore the beautiful Soo Locks through the a scavenger hunt

Essential Questions:
1. Where are the locks located and why are they needed?
2. How do the Soo Locks operate?
Materials: [Per class]
- Computer & LCD projector
- Port Activity Cards [created by Dr. Del Reese]

Resources: [Per student]
- Map of Michigan
- Teacher made port activity cards

Procedures:

Day 1-Day 2

Pre-Assessment: TW ask students what they already know about locks to prompt interest and assess prior knowledge.

Direct Instruction: TW provide each student with a map of Michigan and the Great Lakes.

SWBAT use their port activity cards to help them locate one port on one of each of the five Great Lakes and circle it with a pencil. As a class, we will discuss the location of the ports and what each import and/or export. TW then draw attention to the port in Sault Ste. Marie, Michigan, in the Upper Peninsula to bring focus to the Soo Locks.


Day 3-Day 4

SWBAT complete the scavenger hunt activity worksheet using the internet websites.

Assessment:

Use the student’s completed scavenger hunt worksheet for correctness to assess their knowledge of the Soo Locks.

Michigan Content Standards:

Ecosystems L.EC: Develop an understanding of the interdependence of the variety of populations, communities and ecosystems, including those in the Great Lakes region. Develop an understanding of different types of interdependence and that biotic (living) and abiotic (non-living) factors affect the balance of an ecosystem. Understand that all organisms cause changes, some detrimental and others beneficial, in the environment where they live.

L.EC.M.3 Biotic and Abiotic Factors
- L.EC.06.31 Identify the living (biotic) and nonliving (abiotic) components of an ecosystem
**Fluid Earth E.FE:** Develop an understanding that Earth is a planet nearly covered with water and that water on Earth can be found in three states, solid, liquid, and gas. Understand how water on Earth moves in predictable patterns. Understand Earth’s atmosphere as a mixture of gases and water vapor.

**E.FE.E.1 Water**
- **E.FE.02.11 Identify water sources (wells, springs, lakes, rivers, oceans)**

**E.FE.E.2 Water Movement**
- **E.FE.02.22 Describe the major bodies of water on the Earth’s surface (lakes, ponds, oceans, rivers, streams)**

**Resources**


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**Soo Locks Scavenger Hunt Questions and Answers**

1. **Q.** How do you get ice out of the locks at the Soo?

   **A.** We have large air bubblers which can be individually controlled to move ice flows out of the gate recesses to allow them to open and close. When ice is particularly heavy, we bring ships part way into the lock chamber pushing ice ahead of them,
back them out, lock a load of ice into the lower river, raise the lock, then bring the ship into an ice free lock.


2. Q. Who operates the Locks in Sault Ste Marie, Michigan?
   
   A. Operated by the U.S. Army, Corps of Engineers

3. Q. “Lakers” are fresh-water vessels, what are “Salties”?
   
   A. Salties are ocean-going vessels.

3. Q. When was the MacArthur Lock and the Poe Lock built?
   
   A. The MacArthur Lock was built in 1943 and the Poe Lock was built in 1968

4. Q. The big 1000’ Lakers need to use the second lock (The Poe) that is 1200’ long, 110’ wide and 32 feet deep, but you can still get close enough for a really good view. The MacArthur Lock was built in 1943 and the Poe Lock was built in 1968. The two other locks, Davis and Sabin. Which two locks are not in use today?

   A. The Davis and Sabin

5. Q. What cargo carried by some of the vessels?

   A. Cargo carried by some of the vessels might include iron ore (usually taconite pellets) limestone, coal, grain, cement, salt or sand.

http://www.exploringthenorth.com/soo/locks.html

History of the Soo Locks
The Federal Government took control of the property and the lock system in the 1870's. Their stewardship continues today, administered by the U.S. Army Corps of Engineers. The Soo Locks are the busiest locks in the world, and include the largest lock in the Western Hemisphere, completed in 1968.

**Throughout the colorful history and on into the future, the roots of our heritage go back to the native residents of the area.**

The St. Marys River is the only water connection between Lake Superior and the other Great Lakes. There is a section of the river known as the St. Marys Rapids where the water falls about 21 feet from the level of Lake Superior to the level of the lower lakes. This natural barrier through navigation made necessary the construction of the locks project known as the St. Marys Falls Canal.

The world-famous Soo Locks form a passage for deep-draft ships around the rapids in the St. Marys River. Before white men came to the area, the Ojibway Indians who lived nearby portaged their canoes around the "Bawating" (rapids) to reach Lake Superior from the St. Marys River.

Early pioneers arriving in the territory were forced to carry their canoes around the rapids. When settlement of the Northwest Territory brought increased trade and large boats, it became necessary to unload the boats, haul the cargoes around the rapids in wagons, and reload in other boats.

**The First Locks**
In 1797, the Northwest Fur Company constructed a navigation lock 38 feet long on the Canadian side of the river for small boats. This lock remained in use until destroyed in the War of 1812. Freight and boats were again portaged around the rapids.

Congress passed an act in 1852 granting 750,000 acres of public land to the State of Michigan as compensation to the company that would build a lock permitting waterborne commerce between Lake Superior and the other Great Lakes. The Fairbanks Scale Company, which had extensive mining interests, in the Upper Peninsula, undertook this challenging construction project in 1853. In spite of adverse conditions, Fairbanks' aggressive accountant, Charles T. Harvey, completed a system of two locks, in tandem, each 350 feet long, within the 2 year deadline set by the State of Michigan. On May 31, 1855, the locks were turned over to the state and designated as the State Lock.

Toll Pay and Federal Government
Boats which passed through the State Lock were required to pay a toll of four cents per ton, until 1877, when the toll was reduced to three cents. Within a few years, commerce through the canal had grown to national importance, and the need for new locks became clear. The funds required exceeded the state's capabilities, and thus, in 1881 the locks were transferred to the United States government, and were placed under the jurisdiction of the U.S. Army Corps of Engineers. The Corps has operated the locks; toll free, since that time.

**Ships, Ships, and More Ships**

The two active Locks, the MacArthur and the Poe, handle an average of 10,000 vessel passages per year, which means visitors are almost certain to get a glimpse of one or more of the many ships that ply the Great Lakes. From viewing stands situated at the Lock’s edge, enjoy an up-close-and-personal glimpse of life aboard freshwater and ocean-going freighters, some of which can carry as much as 72,000 tons of cargo in a single pass. In 2008, a stunning 80.6 million tons of cargo passed through this engineering marvel. Unique vessels are occasionally sighted, including tall ships, sailboats, cruise ships, and military crafts.

**A stroll in the park**
A few steps from the water’s edge, a serene park of shady grass, defined walkways, manicured gardens and a democracy of trees representing those found throughout the Upper Peninsula await you. Take command of a comfortable bench for freighter watching or stroll the length and breadth of this beautiful green space.

**History comes alive**

The story of the Soo Locks is a fascinating history lesson that comes alive in the Soo Locks Visitors Center. Illustrative displays and scheduled films tell the story of Native Americans, French explorers, fur traders and others who portaged canoes and cargo around the impassable rapids until the discovery of iron ore and copper in the Lake Superior basin led to the push for a more cost-efficient means of bypassing the rapids. This free facility is a must-see location, but don’t worry about missing some of the action in the Locks. The helpful staff monitors radio transmissions and are willing to share news of an arriving freighter.
Music to your ears

It is the definition of the perfect summer evening. The warmest months bring a certain artistic flair to the Soo Locks, when a weekly concert series is featured at the eastern end of the park. Free to the public, the annual series features a variety of music groups and entertainers. Bring a lawn chair and a sweater (this is the Soo, after all) and find your own grassy vantage point that combines music, water, and ships. The colorful, dancing waters of a nearby fountain provide a romantic backdrop and a not-to-be-missed photo op. When the concert is complete, there’s always an ice cream parlor or fudge shop beckoning from nearby.