The Story of the Edmund Fitzgerald: Weather or Not to Go?

Lesson Overview
We'll explore shipping on the Great Lakes using the Great Lakes floor map to identify important shipping and receiving ports in Michigan and on the Great Lakes, and also to trace the route of various cargoes from their source to various destinations in the Great Lakes system. We'll learn about the Wreck of the Edmund Fitzgerald using both the song lyrics and a short video clip. Using the Great Lakes floor map, students can follow the course of the Edmund Fitzgerald.

Learning Objectives
Students will be able to:
2. List the top five cargoes shipped on the Great Lakes.
3. Use a Great Lakes-St. Lawrence Seaway map to locate important shipping and receiving ports in Michigan and on the Great Lakes.
4. Learn some shipping vocabulary: cargo, shipwreck, laker, saltie
5. List 3 aids to navigation:
   ♦ Automated lighthouses
   ♦ Fog horns
   ♦ Buoys act like “traffic signals” guiding vessel operators safely along waterways (http://www.boat-ed.com/mi/handbook/toc.htm)
   ♦ Radio communication
   ♦ Radar
6. Design your own freighter and see which ship can carry the largest load of taconite pellets!

Materials (per student)
Did You Know Quiz on Great Lakes Shipping & Answers (one copy per person, plus overhead of the quiz) pencils
“The Wreck of the Edmund Fitzgerald” CD by Gordon Lightfoot
Song lyrics for “The Wreck of the Edmund Fitzgerald”
Student page - Questions for song lyrics of “The Wreck of the Edmund Fitzgerald”
Great Lakes floor map with laminated port labels
Maps of Great Lakes states or Great Lakes Environmental Atlas
Yarn
Bags of cargo (ten each): coal, iron ore pellets, salt, gravel, salt, grain
Overhead projector
LCD projector
Thunderstorm sounds (CD or tape – optional)
Raising of the Bell (show 5 min. segment on Shipwreck of the Edmund Fitzgerald) DVD
Clay – 8 oz per plastic sandwich bag
Foil – 8x8”

Opener: Distribute Did You Know Quiz on Great Lakes Shipping.
How many questions on the quiz could you answer? Considering how important shipping on the Great Lakes is, its surprising how little many of us know! Let’s take a quick look at the answers (overhead).
Are you a:
   Deck Hand  = (0-3 correct answers) You’re heading for a shipwreck!!
   First Mate = (4-7 correct answers) Get the books out and study up!
   Engineer = (8-12 correct answers) Good job!
   Captain = (13-15 correct answers) WOW!!

In this presentation, we’re going to:
♦ Find out what happened to the Edmund Fitzgerald, the most famous shipwreck;
♦ Find out what types of cargoes are shipped on the Great Lakes, where the cargo comes from, where it goes, and why its important;
♦ Meet a captain of a ship (optional)
♦ Design boats of clay or foil and see whose boat design can hold the most iron ore pellets (taconite).

Activity #1

Activity #2
Watch a short clip of the sinking Edmund Fitzgerald. The Edmund Fitzgerald was a 729-foot freighter carrying 26,000 tons of iron ore, when it was overtaken by a terrible storm and sank in Lake Superior with all 29 hands lost on November 10, 1975.

What do you think it is like to be on a ship during a storm? Has anyone been on Lake Superior, on the Ranger III or Isle Royale Queen on the way to Isle Royale, during stormy weather?

There are two main theories for what happened to the Edmund Fitzgerald:

Open Hatch Theory:
- Coast Guard believed there were leaking hatches
- Believed large waves entered cargo hold through bad seals around hatches
- Believed that some hatch clamps were not fastened securely

Shoaling Theory:
- Lake Carriers Association thought the ship struck bottom at Six Fathom Shoals, damaging the hull of the ship;
- Believed the captain accidentally drove ship over shallow area
- Pressure from hitting bottom would have blown vents off of deck

Activity #3
A total of 30,000 people have died on the Great Lakes in recorded history. The most shipwrecks have occurred on Lake Superior and Lake Huron, and mostly during the month of November. Aids to navigation help ships avoid shipwrecks. What are some of these?
Aids to navigation:
- Automated lighthouses
- Fog horns
- **Buoy**s are the “traffic signals” that guide vessel operators safely along waterways (http://www.boat-ed.com/mi/handbook/toc.htm)
- Radio reports providing essential information, such as weather advisories, height of waves, speed of wind
- **Weather advisories:**
  a. **Small Craft Advisory**: Winds in the range of 21 to 33 knots (24 to 38 mph) which are conditions considered dangerous to small vessels.
  b. **Gale Warning**: Winds in the range of 34 to 47 knots (39-54 mph).
  c. **Storm Warning**: Winds 48 knots (55 mph) and above.
- Radar

Weather or Not to Go: What to Do If Caught in Foul Weather:
- Put on **personal flotation devices** (life jackets) and make sure they are properly secured.
- If there is fog, **sound your fog horn**.
- Head for the nearest shore that is safe to approach.
- Head the bow into the waves at a 45 degree angle. PWC should head into the waves at a 90 degree angle.
- Reduce speed.
- Seat passengers on the bottom of the vessel, as close to the centerline as possible.
- Minimize the danger of having your vessel struck by lightning by seeking shelter in advance of a storm. If caught on open water during a thunderstorm, stay low in the middle of the vessel.
- Secure loose items. Have emergency gear ready.
- Keep the bilge free of water.
- If the engine stops, drop anchor from the bow. If you have no anchor use a “sea anchor,” which is anything (a bucket on a line, a tackle box) that will create drag, and hold the bow into the wind.

Activity #4
Learn some Great Lakes geography using the Great Lakes floor map. Provide maps of Great Lakes states to refer to:
- Place labels for 8 Great Lakes states and each of the 5 Great Lakes
- Use maps to place labels for shipping and receiving ports
- Use yarn to connect the shipping port to a receiving port
- Which state has the most Great Lakes ports? **Michigan**
- Which cargo is most often shipped?

Activity #5
Design your own “laker” and see whose ship can carry the largest load!
- Everyone gets 8 oz. of clay or a 8”x8” foil square to make a boat.
- Count the number of pellets your ship can carry. Weigh the pellets.
Learning Assessment:
1. Explain what happened to the Ed Fitzgerald.
2. List the top five cargoes shipped on the Great Lakes: iron ore, limestone, coal, grain, general cargo, salt, cement, liquid cargo.
3. List ten shipping and receiving ports in Michigan and on the Great Lakes.
4. Define: cargo, shipwreck, laker, saltie
5. Describe the story of the Edmund Fitzgerald.
6. List 3 aids to navigation:

Resources
   There are several links to further sites with valuable information: http://corfid.com/gl/wreck.htm
2. Additional information on the Ed Fitz shipwreck: http://www.boatnerd.com/fitz/
   http://www.nauticalworks.com/fitz
3. Webcam of boats going through the port of Duluth, MN. http://lsmma.com/webcam.htm -
4. Edmund Fitzgerald song lyrics:
   http://www.corfid.com/gl/Albums/Summertime_Dream/The_Wreck_Of_the_Edmund_Fitzgerald.htm
5. Edmund Fitzgerald song lyrics explained: http://home.europa.com/~random7/fitz.htm#line
6. Statistical information about the vessels going through Duluth:
7. Lake Carriers Association provides information on Great Lakes shipping: www.lcaships.com

Background

At the time it was launched in 1958, the 729-foot long freighter S.S. Edmund Fitzgerald was the largest ship to ply the Great Lakes. On November 10, 1975 the Fitzgerald left Superior, Wisconsin carrying 26,000 tons of iron ore pellets (taconite) bound for Detroit. Though the day was bright, in her path lay a terrible storm with 60 mph winds and waves in excess of 15 feet high. As the storm built, her experienced Captain Ernest McSorley bore north across Lake Superior, seeking the relative shelter of the Canadian shore, on his way to Whitefish Bay.

Luck was not with the ship or the crew. The radar system and its backup failed. The storm took out the power to Whitefish Point's light and radio beacon. Though the light was brought back on line, the radio beacon was not. The Arthur M. Anderson another ship following 10 miles behind the Fitzgerald, received reports that the ship was listing to the starboard and of other structural damages to the vessel.

The Ed Fitz suddenly foundered approximately 17 miles from the entrance to Whitefish Bay (47º North Latitude, 85º 7' West Longitude). Captain McSorley indicated to the captain of the Anderson that he was having difficulty and was taking on water. Only two
of three ballast pumps were working. The Fitz had lost her radar and damage was noted to ballast tank vent pipes. He was overheard on the radio saying, "don't allow nobody (sic) on deck." McSorley said it was the worst storm he had ever seen.

At 7:10 PM, Captain McSorley delivered what was to be his final message: "We're holding our own." The Arthur M. Anderson lost the Fitzgerald's image on its radar screen at 7:25 PM. The ship and crew of 29 men, including a Great Lakes Maritime Academy cadet, went down with the ship which lies broken in two sections in 530 feet of water in Lake Superior north of Whitefish Point.

Surveyed by the U.S. Coast Guard in 1976 using the U.S. Navy CURV III system, the wreckage consisted of an upright bow section, approximately 275 feet long and an inverted stern section, about 253 feet long, and a debris field comprised of the rest of the hull in between. The two sections lie within 170 feet of each other.

The U.S. Coast Guard, report on August 2, 1977 cited faulty hatch covers, lack of water tight cargo hold bulkheads and damage caused from an undetermined source. The National Transportation Safety Board unanimously voted on March 23, 1978 to reject the U.S. Coast Guard's official report supporting the theory of faulty hatches. Later, they revised their verdict and a majority agreed that the sinking was caused by taking on water through one or more hatch covers damaged by the impact of heavy seas over her deck.

This is contrary to the Lake Carriers Association's contention that her foundering was caused by flooding and ballast tank damage resulting from bottoming on the Six Fathom Shoal between Caribou and Michipicoten Islands.

**Open Hatch Theory:**
- Coast Guard believed there were leaking hatches
- Believed large waves entered cargo hold through bad seals around hatches
- Believed that some hatch clamps were not fastened securely

**Shoaling Theory:**
- Lake Carriers Association thought Ed Fitz struck bottom at Six Fathom Shoals, damaging hull of ship
- Believed the captain accidentally drove ship over shallow area
- Pressure from hitting bottom would have blown vents off of deck

Several expeditions have been mounted to the wreck and have been the subject of some controversy. On July 4th, 1995 the ship's bell and stanchion were recovered from where they lay in 550 feet of Lake Superior. A replica of the bell, engraved with the names of the 29 crew members, was left in its place. The bell was presented to the relatives of the crew and rung thirty times -- once for each member of the crew and a final time in honor of all who have lost their lives at sea. The bell was given to the Great Lakes Shipwreck Museum at Whitefish Point to serve as a memorial to the ship and crew.
The Wreck of the Edmund Fitzgerald (6:28 min.)

The legend lives on from the Chippewa on down
Of the big lake they called 'Gitche Gumee'
The lake, it is said, never gives up her dead
When the skies of November turn gloomy
With a load of iron ore twenty-six thousand tons more
Than the Edmund Fitzgerald weighed empty.
That good ship and true was a bone to be chewed
When the gales of November came early.

The ship was the pride of the American side
Coming back from some mill in Wisconsin
As the big freighters go, it was bigger than most
With a crew and good captain well seasoned
Concluding some terms with a couple of steel firms
When they left fully loaded for Cleveland
And later that night when the ship's bell rang
Could it be the north wind they'd been feelin'?

The wind in the wires made a tattle-tale sound
And a wave broke over the railing
And every man knew, as the captain did too,
T'was the witch of November come stealin'.
The dawn came late and the breakfast had to wait
When the Gales of November came slashin'.
When afternoon came it was freezin' rain
In the face of a hurricane west wind.

When suppertime came, the old cook came on deck
sayin' Fellas, it's too rough to feed ya.
At Seven P.M. a main hatchway caved in, he said
Fellas, it's been good t'know ya
The captain wired in he had water comin' in
And the good ship and crew was in peril.
And later that night when his lights went outta sight
Came the wreck of the Edmund Fitzgerald.

Does any one know where the love of God goes
When the waves turn the minutes to hours?
The searchers all say they'd have made Whitefish
Bay if they'd put fifteen more miles behind her.
They might have split up or they might have capsized;
May have broke deep and took on water.
And all that remains is the faces and the names
Of the wives and the sons and the daughters.

Lake Huron rolls, Superior sings
In the rooms of her ice-water mansion.
Old Michigan steams like a young man's dreams;
The islands and bays are for sportsmen.
And farther below Lake Ontario
Takes in what Lake Erie can send her,
And the iron boats go as the mariners all know
With the Gales of November remembered.

In a musty old hall in Detroit they prayed,
In the Maritime Sailors' Cathedral.
The church bell chimed till it rang twenty-nine times
For each man on the Edmund Fitzgerald.
The legend lives on from the Chippewa on down
Of the big lake they call 'Gitche Gumee'.
Superior, they said, never gives up her dead
When the gales of November come early!

Summertime Dream album by Gordon Lightfoot
http://www.corfid.com/gl/Albums/Summertime_Dream/The_Wreck_Of_the_Edmund_Fitzgerald.htm
The Story of the Edmund Fitzgerald
Weather or Not to Go?

Listen carefully to the song of the Edmund Fitzgerald and see if you can answer these questions:

1. What did the Chippewa Indians call Lake Superior? 
   __________________

2. How many tons of iron ore was the Ed Fitz carrying? ________

3. In which month did the Edmund Fitzgerald go down? __________

4. Where was the ship heading? 
   ___________________________

5. Did the crew get to eat breakfast that day? Yes No It was late

6. What time did the main hatchway cave-in causing water to rush into the ship? 
   ___________________________

7. How many more miles did they have to travel to reach the shelter of Whitefish Bay? __________________________

8. Do they know for sure what caused the Ed Fitz to sink? Yes No

9. What are the two ideas for what may have happened? 
   (i) ____________________________ (ii) ____________________________

10. How many men were lost on the Edmund Fitzgerald?________