UNIT III

NAVIGATION

Unit Objectives

1. Review latitude and longitude.
2. Introduce navigational techniques including use of a simple quadrant.
3. Familarize students with seafaring culture including: ship construction and life aboard a ship during the 17th century.
4. Using primary documents to acquaint students with specifics of particular voyages.

Lesson 1

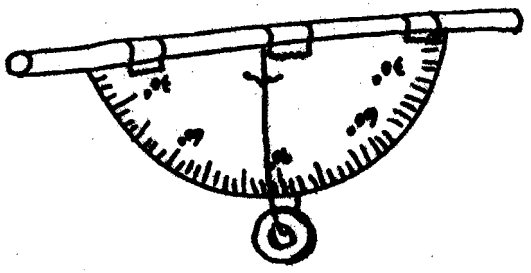
Objectives	Activities	Resources
1. Students will review definitions of longitude and latitude and be able to point them out on a world map. 2. Student will become aware of the navigational information recorded in the journal. 3. Students will use longitude and latitude notations to plot voyage.	1. Ask students to tell a neighbor the definitions of longitude and latitude. Have some students identify on the map. 2. Ask them what purpose latitutude and longitude serve on a map and how they would be necessary for sailing. 3. Discuss development of wind rose/compass, cartography and use of compass for directions. (continued on next page)	1. World map (classroom) 2. *Down to Earth: Mapping for Everbody* by David Greenhood especially chapter 5 "The rose of the Winds."* 3. *The Way of the Ship* by Lawrence C. Wroth, Portland, MA* (continued on next page)

* Both books can be found at the New York State Library

Lesson 1 (continued)

Objectives	Activities	Resources
	4 Have students look through the journal. Ask what kinds of information relevant to navigation was recorded. • why would information on the wind be important? • why are depths of the ocean recorded, and why are they important ? • why would weather be a concern? 5. Have students read through journal and note entries for longitude and latitude. Use map pins to plot various locations in the voyage, or laminate map.	4. Excerpt from journal of Robert Juet, 1610. 5. Adriaen Block Map 1614 — earliest map. First time "New Netherland" appears on a map.

Lesson 2

Objectives	Activities	Resources
1. Students will construct a simple quadrant and practice finding latitude using the quadrant.	1. Using a drinking straw, a protractor, a piece of thread, a washer or some other weight, and tape build simple quadrants with students. 2. Demonstrate and practice finding lat. by sighting Polaris. Either let students do this as homework on a clear night—or go to a planetarium.  3. Have students research use of quadrant or discuss the use with them.	1. Summary of instructions for building a simple quadrant 2. An excellent resource for more information about navigation is *Exploring Navigation* from : Exploratorium 3601 Lyon St. San Francisco, CA 94123-9835

Lesson 3

Objectives	Activities	Resources
1. Students elicit details about life on board ship from a ship log.	1. Assign journal in **small sections** to several small groups. 2. Have each group note major "headings" such as dates of entries, information on position, mention of people, sickness, shipboard provisions, rations for sailors, weather, names of places, unusual events (child birth, pirates, death). 3. Compile information from groups to create a picture of the voyage. Using poster paper labeled with "headings" as described in activity, students write in information they have uncovered on their assignments. • how long the journey took (time line). • plot the course taken (pins on map). • note birth of Storm Van Derzee Bradt (early settler of Rensselaerswyck). His name was "Storm from the Sea" because he was born during a storm. • what shipboard meals were like (drawings on paper plates of typical meal).	1.Selections from log of Rensselaerswyck (VRBM p 355-383)

Lesson 4

Objectives	Activities	Resources
1. Students will become familiar with some aspects of shipboard life. 2. Students will recognize how account invoices can be used to extrapolate information.	1. Distribute account sheet for ship. Discuss with students. 2. Have students go through invoices to determine what costs for ship building were incurred. How much did it cost to build? 3. Have students go through invoices for what food was brought along? Were the diets balanced? What was preserved? 4. Have students determine what cargo was taken? What can you tell about life aboard ship from what was taken? d. Have students determine what kind of artillery was taken?	1. Account and invoice of ship *White Globe* (VRBM-p. 795+) 2. NNF — Life on Board a 17th Century Ship

Lesson 5

Objective	Activities	Resources
1. Students will become familiar with shipbuilding concerns. 2. Students will construct a simple boat and compare its seaworthiness relative to other students' boats.	1. Introduce students to some simple concerns of a shipbuilder. This can be carried out in as much detail as desired. i.e. materials used cargo maneuverability speed power source 2. Give students an assortment of simple materials such as aluminum foil, straws, toothpicks, balsa wood, etc. Have them construct a **very simple** vessel which can hold pennies. Set 4 to 5 boats out in a pan of water. Carefully place one penny at a time in each boat. Count how many it can hold before sinking.	1. *Half Moon* Plans 2. VRBM, p. 799, ship building information. (see previous lesson)

Lesson 6

Objectives	Activities	Resources
1. Students will become familiar with ships of the times and the way in which they were illustrated. 2. Students will create a sailing ship (It can be real or imaginary).	1. Photocopy and distribute illustrations of ships from the period. 2. Discuss with students general characteristics of design and construction. 3. Discuss with students the nature of the illustrations i.e. linearity detail composition texturing and design. 4. Have students draw a sketch of a ship either based on imagination or of their own design. Redo sketch on a final copy using a technique like scratch board or pen and ink.	1. Reproductions of ships from *Sailing Ships* (Viking Press, NY)