

On the Ocean: **Using Math to Draw the Mayflower**

Grade: Third

An integrated lesson plan covering two sessions of approximately 30 minutes each.

Lesson-Planning Approach

Some learners perceive their “world” as a whole, where all things are interconnected and dependent upon each other. These “integrated” students face major challenges in coping with our dominant educational, social, and economic systems, which tend to present information in a linear fashion without the necessity of integration into meaningful context. Integrated students are at-risk of failing as they attempt to grasp information in ways that do not match their experience. Among large populations of at-risk students are many from Native American and similar cultures who do not regard their world as a sum of parts but as a blend of all that they experience.

This lesson plan does include some traditional, linear approaches to delivering information (checklists, rules, analysis, problem solving and organization). In addition to the traditional, linear delivery of information, this lesson plan also includes some of the following strategies, designed to appeal to at-risk students as they learn academic/life skills:

- ❖ Integration of technology
- ❖ Story telling/anecdotal information
- ❖ Non-competitive group and team work
- ❖ Performance-based assessment and rubrics
- ❖ Visual presentations and practice through technology and other means
- ❖ Activities appealing to multiple intelligences (Gardner)

Lesson Overview

This lesson is designed to teach students the size of the Mayflower in an attempt to give them some perspective to the trip that the Pilgrims undertook. After accessing information from a web site, students will draw and label in perspective to show the size of the ship's rooms in comparison to a human. Then students will discuss the number of people on the ship and the time they spent on the ship.

Lesson Objectives

Project Objectives: When students complete this session, they will be able to...

- ❖ Draw, label and measure the Mayflower to perspective.

Integration of Other Functional/Academic Skills: (Critical thinking is required throughout the lesson.) Students will be able to..

Math: round numbers, convert feet into grid size

Listening: teacher direction of the dimensions of the Mayflower as read to group

Language: apply vocabulary from topic for discussion

Art: draw a proportionate cross section of the Mayflower with guidance

Technology: read Internet site showing pictures of the Mayflower II to gain information

State/National Standards (Complete as Appropriate)

Colorado Model Content Language Arts Standards

Standard 1: Students will read and understand a variety of material.

Standard 4: Students apply thinking skills to their reading, writing, speaking, listening, and viewing.

Colorado Model Content Math Standards

Standard 5: Students use a variety of tools and techniques to measure, apply the results in problem-solving situation and communicate the reasoning used in solving these problems.

Colorado Model Content Art Standards

Standard 4: Students relate the visual arts to various historical and cultural traditions

Colorado Model Content Technology Standards

Standard 5: Students will use technology to advance and enrich learning.

Standard 6: Students will use technology to enhance all areas of the fine arts.

Websites

Support:

http://www.kidinfo.com/American_History/Colonization_NE_Colonies.html

Pre-requisites

Knowledge of subject at a Third grade level, fine motor skills

Required Materials

- ❖ Pencil
- ❖ Ruler (optional)
- ❖ Copies of Mayflower, one per student (Handout 1 and 2)
- ❖ Copies of Grading rubric (Handout 3), can be copied on back of handout 2
- ❖ Text books from prior lessons and to refer to during discussion

Handouts

- ❖ Copy of the Mayflower with rooms
- ❖ Mayflower on a grid without rooms
- ❖ Grading rubric

Required Equipment/Technology

- ❖ 1 Computer with Internet connection
- ❖ Overhead projection
- ❖ Overhead image of the Mayflower, preferably copied from web site image

THE LESSON

Preparation

Activity	Instructor Notes
Discuss the topic	Students should be familiar with this topic prior to this activity. Use cross section of the ship to teach the different rooms and their uses.
Study the web page for information and discussion	Have web pages ready before lesson and saved in favorites.
Pass out copies of the overhead image.	Have photocopies of the overhead to pass out for students to refer to at their desks. At the same time pass out the grading rubric (can be front/back copy to save paper and organization).

Presentation

Compare measurements of Mayflower II to grids on paper. Mark the overhead image with the length measured in feet.	Prior to lesson, find, print and copy the image onto a transparency. Have the measurements determined ahead of time.
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Performance and Practice

Instructions for students	Teacher notes
Follow the teacher's instruction and the overhead image to learn how to convert feet into grid lengths. Copy information onto own paper.	Have all students begin in the same place on the grid paper so they don't run off the page. Provide time for students to complete each step with you. Check for accuracy as students work.
Work carefully so you don't get behind or lost. Use your own copy of the Mayflower to guide you. Cross out the measurements when you are done with them. If you want to add details to your picture do so.	Help students having difficulty. Try to give measurements one section at a time so it's not too overwhelming. Encourage class to stay with you as you walk them through each step. Allow students who are able to, to work independently after they get the hang of converting the measurements. Collect student's work for next class period.

Part II

Activity	Instructor notes
Continue working on project with direction from the teacher and overhead sheet.	Pass out papers for completion.
Collect students finished project and rubric sheet.	Students who finish early can add color and details to the ship. Ones who don't finish can be graded on what was completed.

Lesson Assessment Strategy (Formative – As the lesson progresses)

Preparation, Presentation and Overall Implementation (Instructor)

1. Are the instructions and expectation for the class clear from the beginning?
2. Am I spending sufficient time on modeling the skills I want students to acquire?
3. Is there enough variety in the lesson to appeal to most learning preferences?
4. How many learning intelligences am I addressing?
5. Are students "connecting" to lesson objectives? How?
6. How is this lesson "integrated?"

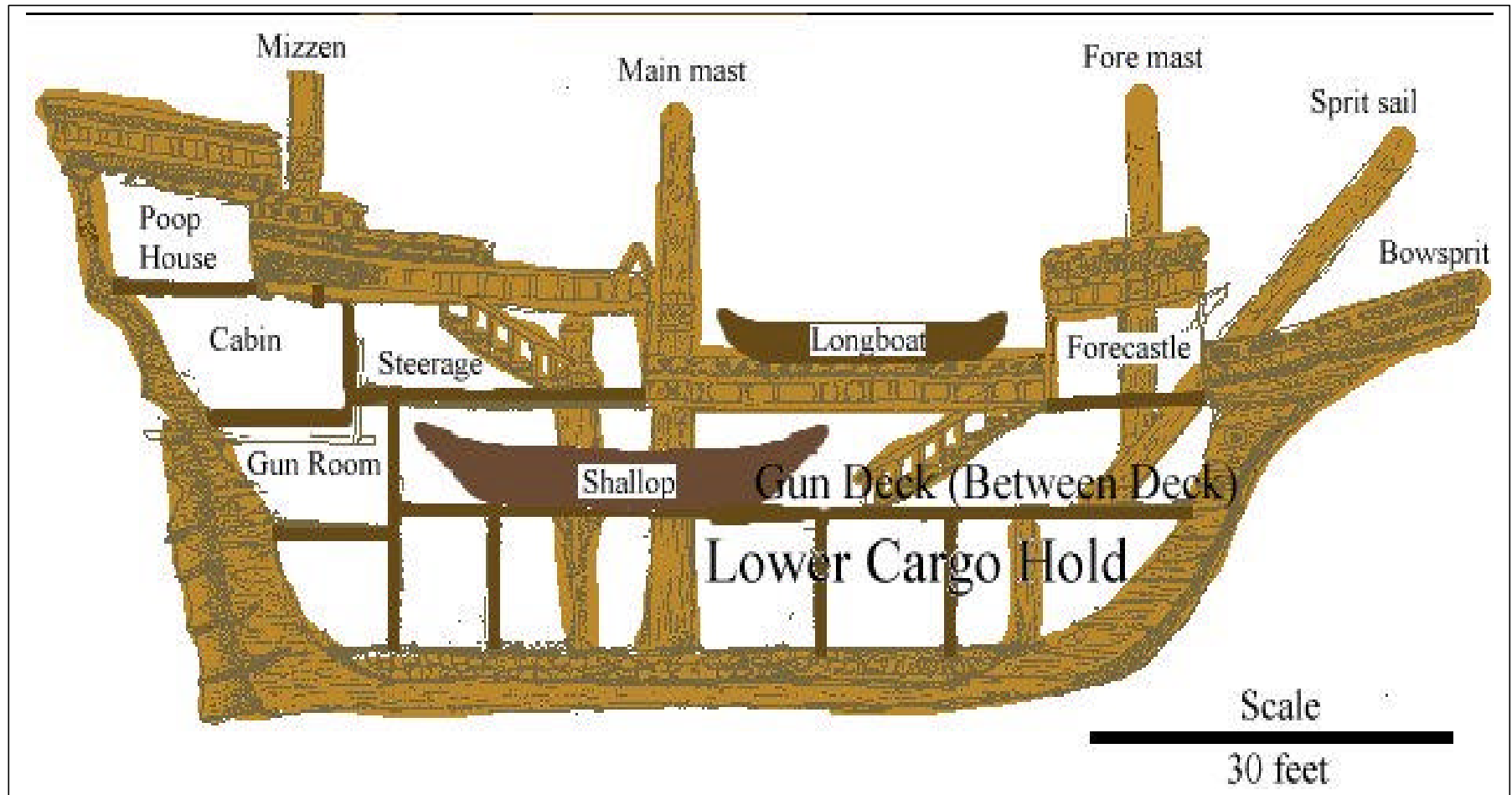
Performance and Practice (Student)

1. Do all students have the skills to follow instructions? If not, what measures am I taking to address the challenge?
2. Are all students participating in the activities either by active observation or by voicing their thoughts?
3. Am I identifying the strengths of each student and pairing/grouping people accordingly? What results am I getting?
4. How are students performing? Are all of them able meeting 80% of the lesson objectives? If not, what am I doing to help them achieve more?

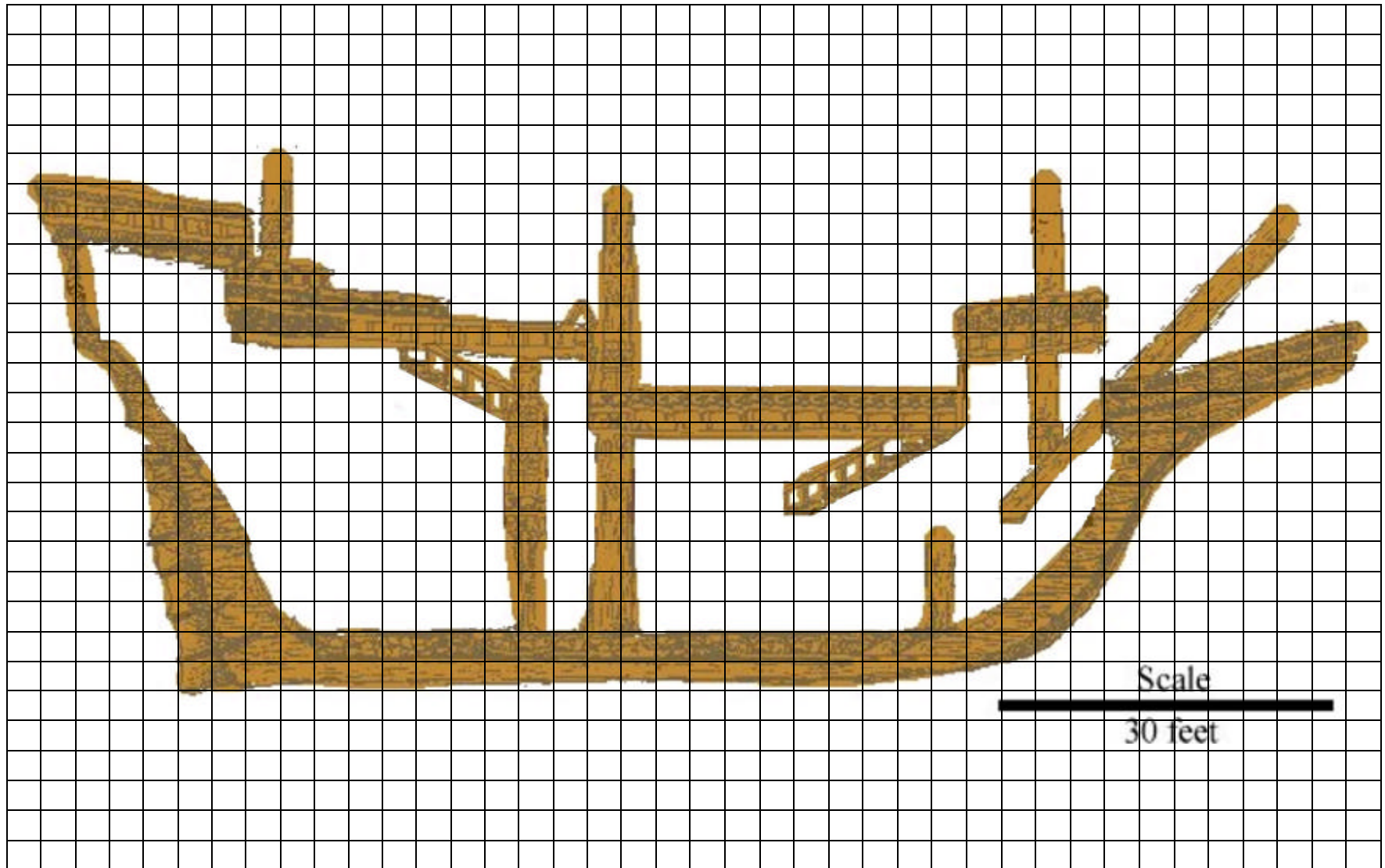
Technology

1. Is the technology working?
2. How are students reacting to the technology and what so I need to remember when I teach this lesson again?
3. How are students applying or wanting to apply their technical skills in other areas?

Mayflower with Rooms/Labels - Handout 1



Mayflower Grid No Rooms/Labels - Handout 2



Grading Rubric - Handout 3

Item Score	0	1	2	3
Web site Discussion	Did not participate	Did not contribute ideas but participated and appeared to understand as others provided examples	Contributed some ideas but had some difficulty with applications.	Contributed many ideas to the discussion and helped arrive at correct responses for each item.
Following Direct Instruction	Did not follow instructions	Participated in some of the instruction but did not complete project correctly.	Followed instruction but had some difficulty with parts of project.	Followed instruction and project with accuracy.
Converting feet to Equivalent Grid Spaces	Did not convert properly.	Converted properly with teacher help only.	Needed some extra help converting but completed on own.	Converted on own after group instruction and assisted peers when needed.
Work shows effort (Project does not have to be finished to score a 3)	Work is sloppy and careless.	Work is done with some neatness but unclear in areas.	Work is neat and clear but extra time was not used to add detail or color.	Work shows care and is neat with detail.
Project turned in on time	Not turned at all.	Turned in two days late.	Turned in one day late.	Turned in on time.

Activity Checklist

Discuss topic	
Study the web page in-group. Read text on the page that pertains to picture.	
Pass out copies of the web page image – Mayflower with rooms and labels	
Read the measurements from the page	
Pass out grid design of Mayflower without rooms and labels	
Demonstrate how to convert measurements in feet to cubes on the grid.	
In-group, draw rooms onto grid paper one section at a time.	
Add details and color if needed.	
Collect finished project and grade with rubric	

Technology Checklist

Go to site: http://www.kidinfo.com/American_History/Colonization_NE_Colonies.html	
Chose Mayflower Web pages	
Dimensions and Images – Read and discuss this on-line page with your students.	
Use overhead projector to enlarge same image	