

QUIKSCIENCE LESSON PLAN  
SUBMITTED BY VENTURA HIGH SCHOOL  
*OCEAN INTEGRATION*

SUBJECT: science  
GRADE: 9-12  
LESSON TOPIC:  
Maritime history, human interactions with the oceans

LESSON OBJECTIVE:  
To educate students on early ocean navigation and how ocean conditions can affect ocean transportation.

STATE STANDARDS:  
California standards for earth sciences, grades 9-12  
6. Climate is the long-term average of a region's weather and depends on many factors.  
As a basis for understanding this concept:

- a. Students know weather (in the short run) and climate (in the long run) involve the transfer of energy into and out of the atmosphere.
- b. Students know the effects on climate of latitude, elevation, topography, and proximity to large bodies of water and cold or warm ocean currents.
- c. Students know how Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition, and other factors, such as solar radiation and plate movement.
- d. Students know how computer models are used to predict the effects of the increase in greenhouse gases on climate for the planet as a whole and for specific regions.

PROBLEM:

How were sailing ships and the ocean influential in affecting history, language, commerce and science?

MATERIALS:

Internet access, world maps, sailing ship models (with materials used to make them), timeline of civilizations, with the spread of languages, and the commodities that were traded.

PROCEDURE:

The emphasis will depend on the subject you are teaching. These can either be individual projects that are presented to the class to create the entire picture, specific groups in a class, or an integrated review of many concepts. It will be presented from the point of view of Science since that is our focus for this project.

The teacher has to pick the time period of interest, for example the sailing ships of the Spanish Main, that will provide the setting. We can determine the length of voyage for

that time period, including crossing whole oceans nonstop. This will be the reference point for the following questions.

Assuming a class size of 35 will give you groups of 3 or 4 and each group works on one question. The groups can draw numbers to find out what they will do.

1. What were the engineering obstacles, in terms of boat design, that had to be overcome to transition from day-long voyages to months long trips?
2. What sort of body chemistry issues had to be dealt with on long voyages?
3. How did the diet affect the health of the teeth and skin? How did UV rays affect the skin?
4. How have different populations evolved to deal with different diseases and how have those diseases changed the populations of the Earth when brought to indigenous populations?
5. How did the desire to make these long trips parallel the improvements in navigation, and the ability to accurately measure latitude, longitude, velocity and time? Including knowledge of stars and their apparent movements.
6. What technologies, like limes for scurvy or the chronometer, were exchanged as a result of trading for gold, silk, spices, slaves, etc.? How did this affect each culture, both the giving and receiving?
7. How did the various weather patterns and large ocean currents affect where and when sailors could go? How did those same energy movements affect where they lived? How is global warming affecting the currents?
8. How did the presence of mixing ocean currents and the resulting abundant fisheries help establish populations and commerce? As the fisheries are being depleted or destroyed, how is that affecting the culture/population that is dependent upon it? Including chemical pollution and biomagnification of those pollutants.
9. Why was ocean travel so influential compared to land-based modes of transportation?
10. Why were countries of small size often the ones with the best and most adventurous sailors?

DATA:

If a computer lab is available then one or two class periods can be spent there researching the answers to these questions. Otherwise the same amount of time in a library and if the current time period then interviewing people who have experienced the question being asked of them.

RESULTS:

If PowerPoint is the mode of presentation then each group can make up one to disseminate their findings to the rest of the class.

CONCLUSION:

The students will prove that oceans were and are integral to the advancement of a particular population in ways they had not considered prior to this study.