MYSTIC SEAPORT THE MUSEUM OF AMERICA AND THE SEA TM

Mystic Seaport for Educators
Science on the 38th Voyage of the *Charles W. Morgan*
Lesson 1 of 6: Water Transparency and Whales
Teacher Introduction

MSE Lesson 1: Water Transparency and Whales

Grade Level: 6-8 grade

Time Frame: 45 minutes

NGSS Science Standards:

1. MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem

2. MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations

Learning Objectives:

- Students understand the concept of Secchi depth, and are able to determine this depth visually from the video
- Students understand how photosynthesis is related to Secchi depth
- Students are able to predict which factors may influence water clarity as determined by Secchi depth
- Students are able to analyze data to determine the relationship between Secchi depth and the base of the photic zone
- Students can use Secchi depth to make further predictions about the ecosystem and food web

Materials/Resources:

- Computer and projector
- Video presentation
- Worksheet
- Secchi Disc Video: https://www.youtube.com/watch?v=gsCUvN6KgRM

Instructional Strategies:

Part 1 (10 minutes): To begin the lesson, ensure that every student has a worksheet. Ask students to read the "Introduction" component of their worksheet

Part 2 (10 minutes): After students have read the introduction, show students a video of a Secchi disk being lowered into the water, with the number corresponding to depth visible on the side of the screen. This will play twice – once in real-time, and the second time more slowly. Ask students to use the video to fill in the corresponding space in question 1 of the worksheet

Part 3 (25 minutes): Ask students to complete the worksheet as per the instructions

Further Resources:

- Students can contribute, either individually or as a class, to an online project that asks ordinary citizens to provide their own Secchi depth data, with instructions to create a homemade Secchi disk. The following website can also be used to explore Secchi depth reading worldwide using real-time data.
  http://sailorsforthesea.org/programs/ocean-watch/searching-phytoplankton