

I - Introduction to the LUMCON Bayouside Classroom

Benchmarks

- SI-M-A3 using mathematics and appropriate tools and techniques to gather, analyze, and interpret data; (1, 2, 3, 4, 5)
- SI-H-A3 using technology and mathematics to improve investigations and communications; (1, 2, 3)
- SI-M-A8 utilizing safety procedures during scientific investigations; (3, 5)

Objectives

- The teacher can use these activities to lay the foundation for students to participate in Bayouside Classroom by learning to use the equipment and sampling at their school.
- TSWBAT:
 - describe the Bayouside Classroom water sampling protocol.
 - define and understand the equipment used, and the underlying principles for the measurement of temperature, salinity, and dissolved oxygen.
 - measure temperature, salinity, and dissolved oxygen safely and accurately.

Vocabulary

Temperature	Thermometer
Dissolved oxygen	Winkler titration
Salinity	Refractometer
Safety equipment	Parameter
Titration	

Activities

1 As homework before the class in which this will be discussed, assign students to read the “Water Quality” and “Bayouside Classroom Water Sampling Program” Sections of *What is the BC?* on the Bayouside Classroom website and answer the questions below.

(www.lumcon.edu/BayousideClassroom)

Questions:

- 1) What is water quality?
- 2) Why do humans care about water quality? Why is it particularly a concern for residents of Terrebonne Parish?
- 3) Name and define the parameters measured in the Bayouside Classroom Water Sampling Program.

2 Read the *Methods* on the Website. Go over each instrument in class. Allow students to practice reading the thermometer and refractometer using tap water. Open the Dissolved Oxygen kit and describe the steps of the analysis. Show the students how to use the laminated instructions with color as a guide to finding the right reagent, and illustrate both reagents and various containers used at each step, including rinse and waste bottles.

Make sure to introduce subjects that are likely to go unnoticed.

- Help the students realize the **dangers** associated with sampling, from vehicular traffic, to falling into sometimes-dirty water, to risks associated with the methods they are using. Remind them that their behavior is all-important in the success of this program. They must be careful in the field: avoid shaking bottles vigorously, and wear gloves and goggles.

- Research scientists like Dr. Finelli can use the data if they are of good **quality**. Students control quality by following good technique: always hold reagent bottles vertical above (and not touching) solutions, carefully read thermometer, refractometer and titrator scales and check team members' readings. Also, carefully fill the DO titrator to ensure that no air bubbles are present.
- Introduce and define new terms in class: variation, parameter.

3 Assign students to read the *Methods*, and *Safety and Quality* sections on the Website and fill in the included worksheet for each parameter. If they do this correctly, they will have covered most of the vocabulary they should learn with this lesson.

4 Measure temperature, salinity and dissolved oxygen of surface water at the school site. Emphasize safety in getting to the field site and completing analyses. Emphasize correct technique to get the best quality data possible.

5 Enter data onto the website. Help the students to retrieve all of the data for your school site on the computer. Assign them to complete the following exercises.

- 1) Make a table: List each parameter in the first column, and add two more columns labeled with the dates samples were collected at your school (9/12/02 and the day you just sampled). Leave space for a third column (for the next activity). Fill in the table with the data for each parameter.
- 2) Which measurements change from one day to the next? Why do you think these parameters change in the interval between sample collections?
- 3) Which parameters do not change? Why do you suppose these parameters don't change?