**Investigating Dissolved Oxygen Using Sensors**

**Open Inquiry** Adapted from Vernier Experiments

Dissolved oxygen is one of the primary indicators of the quality of an aquatic environment. Oxygen enters water from the surrounding air, as a product of photosynthesis, and as a result of rapid movement of water. A Dissolved Oxygen Probe can be used in a wide variety of tests or investigations to determine dissolved oxygen concentrations (DO) and changes in dissolved oxygen concentrations.

In this Preliminary Activity, you will gain experience using a Dissolved Oxygen Probe as you determine the DO level of water samples provided by your teacher. You will perform 2 tests. First, test DO in fresh water at 3 different temperatures then, at room temperature in 3 different salinities (salt, fresh and brackish).

After completing the Preliminary Activity, you will first use reference sources to find out more about dissolved oxygen issues in the environment before you choose and investigate a researchable question dealing with dissolved oxygen. Some topics to consider in your reference search are:

* Water pollution
* Eutrophication
* Thermal pollution
* Photosynthesis

Once you have researched environmental issues regarding DO, the sensor can be attached to the ROV to collect data.

 **Before you begin, answer the pre lab questions. You will need to do some research in order to get thorough answers.**

**Pre Lab Questions**

1. How is DO related to the water quality of an ecosystem?
2. List 3 factors that affect DO.
3. What DO levels would you expect to see in a “healthy” water body? In an “unhealthy” water body?

**Procedure**

1. Create a data table to record your data. Include the three types of water samples you have been given, a column for each temperature and a row for DO.
2. Measure and record the temperatures of the water samples given to you by your teacher
3. Use the DO sensor to measure the DO levels of each sample. Be sure to rinse the sensor in between each sample with deionized water.
4. Record results in your data table.

*Answer analysis questions on the back of this page*

**Analysis**

1. What relationship(s) did you notice between DO and temperature?
2. How did the salt water DO reading compare to the fresh water DO?
3. Make an educated guess as to why there is a difference in DO from salt water to fresh water.
4. Are there any external factors that may influence DO levels in our classroom versus in the outdoors?