



Partner names: _____

Dissolved Oxygen (DO) Investigation

Background information:

Dissolved oxygen (DO) is molecular oxygen (O_2) that is dissolved in water. It is important because it is used by fish and other aquatic animals for breathing. It is also consumed during decomposition of organic matter by bacteria and other decomposers. Low oxygen levels in water (anoxic conditions) can be harmful to aquatic organisms.

DO is added to water in a number of ways:

- It is absorbed from the air— the rate of absorption is increased when air bubbles are mixed in the water, like in a flowing river or an aquarium bubbler.
- It is created by photosynthesis done by aquatic plants.

Cold water can hold more dissolved oxygen than warm water.

For today's activity you and your partner(s) will be testing the DO levels of a number of different types of water.

Materials:

One water sample tube (with cap) per group, DO measurement device, tap water, electric kettle, ice cubes/ice water

Procedure:

1. Make a data table on the next page to record the **DO** and **temperature** for the following six water samples.
 - a. Tap water
 - b. Tap water warmed by 10°C with water from the kettle
 - c. Tap water that has been cooled by 10°C with ice or ice water
 - d. Tap water that has been shaken in a capped water sample tube for 30 seconds
 - e. Tap water warmed by 10°C with water from the kettle that has been shaken in a capped water sample tube for 30 seconds



- f. Tap water cooled by 10°C with ice or ice water that has been shaken in a capped water sample tube for 30 seconds
2. For each sample, use the DO measurement device and temperature probe (or thermometer) to find the DO level and temperature.
3. Record data in your data table on the next page.

Data table (every student must have their own data table – use pencil):



Analysis questions:

1. What is the independent variable in this investigation?
2. What is the dependent variable in this investigation?
3. What are some variables that must be controlled in this investigation?
4. Why does the effect of temperature on dissolved oxygen make a difference to an environmental scientist studying the health of an aquatic ecosystem?