

"Healthy Water, Healthy People" Experiment: Parameter - Temperature



Temperature Sensor (PS-2125)



Overview:

Temperature dictates metabolic function, reproductive timing and duration, and therefore, the life cycle of aquatic organisms. Temperature also effects other water quality parameters such as dissolved oxygen.

Equipment:

For each lab group:

- Temperature Sensor:
[PASPORT \(PS-2125\)](#)
- Computer Interface:
[PASPORT Xplorer \(PS-2000\)](#) | [PASPORT Xplorer GLX \(PS-2102\)](#)
- Tap water or distilled water if available
- Samples of soil from various locations
- 500-mL beakers (or similar containers)

Software Setup:

1. Click on one of the links below to download a pre-configured DataStudio file for this Temperature experiment, and then open the file.

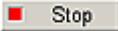
File Format: [Windows \(.zip file\)](#) or [Macintosh \(.sit file\)](#)

When the file is opened, you should see a graph display and a table display of Temperature vs. Solution #, as well as a digits displays of Temperature.

2. Connect the Temperature sensor to an Xplorer or Xplorer GLX.

Experimental Procedure:

Data Recording:

1. Fill at least two beakers of equal size, to two-thirds depth with tap water.
2. Measure the temperature of all samples to confirm that they are starting at the same temperature.
3. Collect several sediment samples from various locations, such as agriculture land, wetlands, forest, garden, playground, etc.
4. Leave one beaker with only water as a control.
5. Add sediment samples to each of the other beakers and label the beakers accordingly. Mix them well.
6. Place the beakers, uncovered, in a sunny location.
7. Place the Temperature Sensor into the first beaker.
8. If outdoors and not connected to a computer or laptop, press the () on the Xplorer or GLX to begin collecting data. Watch the digits display for the temperature reading to stabilize, and note the result. Click the () on the Xplorer or GLX to end data collection.
9. If indoors and connected to a computer or laptop, click the Start button () in DataStudio. Watch the digits display for the temperature reading to stabilize, and note the result. Click the Stop button () in DataStudio to end data collection.
10. Repeat steps 7-9 for each beaker.
11. Record the temperatures throughout the day and identify changes between the time-of-day or soil sample.
12. If you have collected data remotely using Xplorer or GLX, your data can be downloaded to the computer automatically. Connect the Xplorer or GLX to the USB port on your computer using the cable provided, and follow the on-screen prompts to view your data in DataStudio.
13. As an extension, you may wish to use the Dissolved Oxygen sensor to measure the amount of DO level of the water samples, at the beginning of the experiment (when all samples are the same temperature) and at the end of the experiment (when samples have reached different temperatures).
14. How does the water temperature influence dissolved oxygen levels?