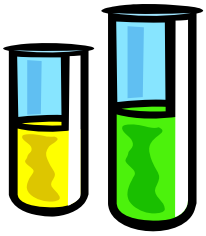
Water Quality Field Samples

Grade: Fifth



Location(s):
A body of water.

Activity Length:
60+ minutes

Preparation:
Set the field trip boundaries and mark/flag them. Mark any hazards.

Part 1: Introduction to Water Quality Tests

Materials:

- Flag stakes
- Reference Sheets
- Chemical Testing Kits
- Record sheet

Activity:

1. While in the classroom, introduce chemical tests and purposes of tests; site survey form
2. Field Orientation; Introduction for Safety; guidelines
3. Small Groups - 3 students
4. Review procedures for the tests
5. Give each group their testing kit, record sheet and assign them a sample station.
6. Students complete the tests and questions on record sheet.

Part 2: Student Led Experiments

Materials:

- Record Sheets
- Probes

Activity:

1. Explain to the students they will design an experiment using one of the chemical tests (in small groups).
   a. Develop a testable question (that can be answered using the chemical tests just completed)
   b. Develop Procedures to collect data to support your testable question
   c. Design a chart to record data.
   d. Predict/Hypothesize
   e. Graph your results (possibly back in class)
   f. Draw Conclusions
2. Provide Examples of testable questions.
3. Students brainstorm, share their basic plan with teacher. Teacher then gives them the form.
4. Students will conduct experiments.

Group Names _____ _____ _____

Date_____ Time_____

Chemical Data Record

Location / Name of Site_____ Sample Station #_____

* Circle your sample station on site map

Air Temperature: _____

pH	Dissolved Oxygen	Water Temperature	Phosphates	Nitrates
_____ (#)	_____mg/l	____ C ____ F	_____mg/l	_____mg/l

<u>Use your reference charts to help you answer the following questions.</u>

pH

Is your pH is (circle one) acidic neutral basic

Your pH is most like which everyday item? _____

Is your pH in the optimal range for most life? _____ If not who might be affected?

Is there anything unusual about the pH? _____

Dissolved Oxygen

Using the dissolved **oxygen saturation chart**: follow the directions to determine the percentage of saturation of dissolved oxygen in your sample.

Percent of Saturation _____ %

Does the water have enough oxygen to support a healthy fish population?

Dissolved Oxygen Levels	
2.0	Fish can live for short periods.
< 3.0	Few fish survive for extended periods of time
< 5.0	Fish grow and develop slowly
6.0 +	Healthful for most fish

Water that has a dissolved oxygen saturation level of 80 – 125 % is considered ideal for healthy fish.

Is your level of saturation of dissolved oxygen ideal? _____

Phosphates

Unpolluted water should have a phosphate level of .1 mg/l or less.

How do your results of phosphates compare to this level (< , > , =)? _____

Water high in phosphate encourages algae to grow.

When completing your site survey did you notice any excess algae growth? _____

Nitrates

Unpolluted water should have a nitrate level of 1 mg/l or less.

How do your results of nitrate compare to this level (< , > , =)? _____

Water high in nitrates encourages algae to grow.

When completing your site survey did you notice any excess algae growth?

Group Names _____ _____ _____

Date_____ Time_____

Scientific Method

Develop a testable question (that can be answered using the chemical tests just completed).

_____

_____

Develop procedures to collect data to support your testable question.

_____

_____

_____

_____

_____

_____

Design a chart to record data.

Predict/Hypothesize

_____

_____

Graph your results (possibly back in class)

Independent Variable _____ Dependent Variable _____

Draw Conclusions

_____

_____

_____

_____