



Stream Lab or Winter Pond Lab

Class Outline

Brief Synopsis: In warm weather, participants will journey to the banks of the Root River and in cold weather they will walk on water to explore secrets under the ice of the Eagle Bluff pond. Time is spent at the river or pond taking physical measurements and performing chemical tests to help determine the pond or river's water quality.

Outcomes:

1. Students will create a list of methods humans use in order to determine water quality.
2. Students will follow step-by-step written directions to complete three chemical tests on the water.
3. Students will be able to name several human actions that have a direct or indirect impact on water quality.

Outline:

I. Clean Water (20 minutes)

Everyone needs water in order to live, and most people expect to drink clean water. Students will start the class by helping their instructor complete a model of all the water in the world. How do we know when water is clean? We have to do lots of testing. Students will be introduced to the testing and equipment they will use for safe and accurate water quality testing.

II. At the Waters Edge (1 hour)

Using tools and water testing equipment students will measure the water's physical properties and chemical composition in order to determine the water's health. If it is found to be polluted, students will investigate the origins of the pollution and its effect.

III. The Chemistry of Water (1 hour)

It is often difficult to understand what is happening to water at the chemical level. Students will participate in games, activities, and demonstrations to help them understand their tests: causes of pH level changes, how nitrates get into the water, and the impact of dissolved oxygen on organisms living in the water.

IV. Analyze the Data (20 minutes)

Students will develop an opinion about the health of the water they tested and state the rationale for their decision. Students will also discuss the possible pollution sources and predict what will happen if that pollution gets worse.

Quick Facts

Class Length: 3 hours

Ages: Designed for 4-8th grade

Season offered: Year round

Time outside: 2 hours 20 minutes

Hike length/physical activity:

1 mile, includes walking up a steep hill

Pre-requisite/prior knowledge:

Follow detailed written directions

Minnesota Academic Standards:

Science: 4.I.B.2, 4.III.A.1, 5.I.B.1&2, 6.I.B.4, 7.IV.C.1

Math: 4.II.B.1&5, 4.III.A.1, 4.IV.A.1, 4.IV.B.1, 5.I.A.3&7, 5.II.A.1, 5.IV.A.3, 6.IV.A

Language Arts: 4.I.A.1&2, 4.I.C.1&9,

4.III.A.3&4, 5.I.A.2, 5.I.C.1&13,

5.III.A.4, 6.I.A.2&3, 6.III.A.6, 7.I.A.1-3,

7.I.B.1, 7.I.C.9, 7.III.A.1&6, 8.I.B.1&8,

8.III.A.1-2&6-7

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