

EXPLORATION OF POND ALGAE

Lesson By: Joseph Urban

Grade Level: 3

Focus:

This lesson will address the presence of microorganisms in ponds and how to identify them by their physical characteristics and their role in pond ecology.

Objectives:

1. Students will be able to use the terms zooplankton and phytoplankton and how to differentiate between those two classes of microorganisms.
2. Students will be able to do basic tasks with a microscope.
3. Students will explore the role microorganisms play in pond ecology as part of the food chain.

Standards:

EL 3.1.2 2000

Read words with several syllables.

SCI 3.1.2 2000

Participate in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis.

SCI 3.1.3 2000

Keep and report records of investigations and observation using tools, such as journals, charts, graphs, and computers.

SCI 3.2.6 2000

Make sketches and write descriptions to aid in explaining procedures or ideas.

SCI 3.4.1 2000

Demonstrate that a great variety of living things can be sorted into groups in many ways using various features, such as how they look, where they live, and how they act, to decide which things belong to which group.

Background:

There are many organisms that we can see with the naked eye, however, there are thousands or in fact millions more that we can't see. Because they're too small for us to see we call them microorganisms, meaning small living things. Today we are going to look at these organisms that we collect at the pond at Camp Adventure. When you see these tiny creatures you should notice that there are two different kinds of these organisms. One is called zooplankton and the other is phytoplankton. Zooplankton are similar to animals because they move around a lot and are usually colorless. Phytoplankton are similar to plants because they are often green or have some kind of color and don't move around much either. These organisms are extremely important because they are the base of the food chain. Many tiny animals like shrimp and little fish eat them and without them they would disappear and that would be bad for higher level consumers and even us humans.

Materials:

1. Cups
2. Eyedropper
3. Microscope Slide
4. Microscope
5. Paper and Pencil
6. Picture Guide (adapted from <http://cantorsbiologyblog.blogspot.com/2012/02/identifying-microorganisms.html>)

Procedures: (40 Minutes Total)**Part 1 [10 Minutes]**

1. Start by asking what organisms usually live in ponds and then address that there are organisms that are too small for our eyes to see. These are called microorganisms and explain why they are called that.
2. Walk to the local pond and distribute sample cups among the children. Each of the children will collect their own sample of pond water.
3. Walk back to the education center.

Part 2 [10 Minutes]

4. Break up children in groups of 4 or 5 (whichever fashion is the easiest.)
5. Let children use the eyedropper to put sample of water on microscope slide. Let them cover it with a cover lens
6. Give a microscope to each group.
7. Put the microscope at the lowest magnification possible. Collect the group's slide and adjust the coarse knob and fine knob until the image is clearly seen in the eyepiece. Tell the children not to touch these knobs or else the image might disappear.
8. Let each child in the group look at the slide for 2 minutes.
9. Give each child a piece of paper so they can draw their favorite microorganism and give it their own name.

Part 3 [20 minutes]

10. Ask the whole group on what they saw under the microscopes and how they would describe the organisms that they saw. Let some of the children present their drawings.
11. Instruct the children the difference between zooplankton and phytoplankton.
12. Make the children identify their own microorganism as a zooplankton or phytoplankton.
13. Pass around the Picture Guide to see if any of their drawings match up with one of the organisms on that worksheet. To receive a copy of the Picture Guide visit <http://cantorsbiologyblog.blogspot.com/2012/02/identifying-microorganisms.html>
14. Discuss with the children how these tiny organisms are the beginning of the food chain and if they disappear that all organisms in the food chain would suffer.

Optional Game (3 minutes):

1. Make each group select a leader for this game.
2. Give the leader a picture guide and for one minute only see which group leader can find the most microorganisms on their slide.
3. The winning group gets a small prize.

Evaluation:

1. Look through the children's drawings and identification of their own microorganism to see if they comprehend how to differentiate between the two groups.
2. Listen to the children's responses in the group discussion to see if they understand the food chain and how their microorganisms play a key role in it.