Exploring a Freshwater Ecosystem
Grade 5

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References:

- CPS Curriculum Guide
- http://www.mbgnet.net/fresh/lakes/index.htm
- http://www.mbgnet.net/fresh/rivers/index.htm
- http://www.uen.org/utahlink/pond/

Benchmarks & Objectives:

GLI LS-1: Describe the role of producers in the transfer of energy entering ecosystems as sunlight to chemical energy through photosynthesis.

GLI LS-2: Explain how almost all kinds of animals' food can be traced back to plants.

GLI LS-3: Trace the organization of simple food chains and food webs (e.g., producers, herbivores, carnivores, omnivores, and decomposers)

GLI LS-4: Summarize that organisms can survive only in ecosystems in which their needs can be met (e.g., food, water, shelter, air, carrying capacity and waste disposal). The world has different ecosystems and distinct ecosystems support the lives of different types of organisms.

GLI LS-5: Support how an organism's patterns of behavior are related to the nature of that organism's ecosystem, including the kinds and numbers of other organisms present, the availability of food and resources, and the changing physical characteristics of the ecosystem.

Materials:

- Fish tank with rocks/gravel, water, fish, plants, snails, air pump, and light.
- Cups to hold objects of ecosystem while students observe them.

Key Definitions:

Abiotic Factors- all of the non-living factors found in an ecosystem- soil, water, temperature, air, and sunlight
Producer- Organism that makes its own food using photosynthesis
Consumer- an organism that feeds on other living things
Decomposer- Simple organisms, such as bacteria and funcus, that break down dead plant sand animals and return their nutrients back into the ecosystem
Predator- An animal that hunts, kills and eats other animals
Prey- An animal that is hunted

Procedure:

Go through each part of the freshwater ecosystem. Ideally the kids should be in small groups. For each item, place in a cup and set in the middle of the table of the group.

Allow the group to observe and ask questions about each part of the ecosystem. This is also a good first lab because it is simple and can be used to teach them how to take good notes in their lab journals.

Structure of Lab:

Lab #1- Exploring a Freshwater Ecosystem

Purpose- I will identify and learn about the different parts of a freshwater ecosystem.

[Stucture- on board]

Part of Ecosystem:_____
Gets its food from _____
Energy role: _____
Observation 1 (encourage any type of observation)
Observation 2 (encourage any type of observation)

1. Floating Plant (Hyacinth)
- Produces its own food from sunlight (photosynthesis)
- Energy role: Producer
- Observation 1- Floats on surface which gives best access to light
- Observation 2- Roots hang underwater to collect nutrients and water

2. Goldfish
- Eats plants and small organisms for food.
- Energy role: Consumer
- Observation 1- Different colors allow it to blend into rocks (camouflage)
- Observation 2- Able to swim quickly to avoid predators

3. Long green plant (Embryophyte)
- Produces its own food from sunlight (photosynthesis)
- Energy role: Producer
- Observation 1- Plant does not have roots
- Observation 2- Looks like a rope

4. Algae
- Produces its own food from sunlight (photosynthesis)
- Energy role: Producer
- Observation 1- Grows on any stationary object (rocks, plants, side of ‘tank’)
- Observation 2- Green and slimy

5. Snail
- Eats algae and plant leaves for food
- Energy role: Consumer
- Observation 1- It has a hard shell that protects it from predators
- Observation 2- Unable to move quickly from predators

6. Bacteria
- Eats dead plants and dead animals
- Energy role: Decomposer
- Observation 1- Smells bad

Observation 2- Too small to see

7. Rocks/Dirt

Does not need food
Energy role: Abiotic Factor
Observation 1- Does not respond to touch
Observation 2- Hard and heavy

Discussion:

1. What would happen if all the plants were to die? –The consumers would eventually die. The ecosystem would fall apart.
2. What are some other types of ecosystems?
3. Why do we call this a freshwater ecosystem?