**Tuesday Food Web Water Game**

Lesson Date and Time: October 30, 2012

Materials Needed:

 Draw data table on the board

 6 pieces of paper with organism names on them

 Student Packets (p6)

 21 Student volunteers for parts of food web

 5-gallon bucket (sun)

 6 containers for end of food chains

 16 Styrofoam cups

 Paper slips with organism names

 Something to measure water with (large graduated cylinders?)

 Students calculators

**Objectives:**

Students will discover how energy flows and is transferred between organisms of an ecosystem by assuming various roles in a marine food chain.

**Benchmarks:**

Matter and energy flow through different levels of organization of living systems and the physical environment, as chemical elements are combined in different ways.

Explain how matter and energy are transformed around organisms in an ecosystem, and how energy is dissipated as heat into the environment.

**Greeting:**

Hurricane, an example of an abiotic factor that has a huge impact

SRC meeting tonight

Pages 4-6 due tomorrow

**Anticipatory Set: 10 minutes**

Ask for 6 volunteers.

Hand each of them a sheet of paper that has an organism written in it.

Ask them to rearrange themselves into a line according to who eats who (while the class watches). No help from the audience.

 Phytoplankton have nobody to eat. Where do they get their energy?

**Input: 5 minutes**

1. Let student volunteers (new ones) pick a slip of paper with the name of an organism.
2. Have these students grab a cup.
3. Give the following students a bucket (instead of a cup):

Phytoplankton 1

Zooplankton 2

Baitfish 3

Dolphin 4

Shark 5

Worm 6

1. Today we are going to be modeling the transfer of energy in an ecosystem

We are using water to represent energy

Our source of energy will be a big 5 gallon bucket (think about what this represents).

**Modeling: 10 minutes**

The six volunteers will model the game

1. When we go outside you will need to find your team members that have the same number as you

Teams will range in size from 1-6 people

When your team members are all in position, Link 1 in each team will fill their cup completely from the large bucket.

Raise your hand if you have a number 1 on your slip of paper. **It is up to you to remember and record how many times you get water from the large bucket. You will transfer water till it’s empty.**

Link 1 will immediately go to Link 2 and pour all of the water from Link 1’s cup into Link 2’s cup.

Link 1 immediately returns to the large bucket to refill the cup, and Link 2 immediately goes to Link 3 and transfers water. As soon as the transfer is made, Link 2 returns to receive more water from Link 1.

Continue passing water until your team has completed 5 cycles.

\*Also have these directions written for students to see

1. Everyone else will serve as judges

Rules:

No fingers over the holes

Water must be poured. No passing cups.

**Check for Understanding: 15 minutes**

1. Go outside and have students form a food chain with their team in “rays” around the 5 gallon bucket.

Link number one will stand closest to the energy source (big bucket).

1. Students should be an arm’s length away from each other.
2. When \_\_\_\_\_\_\_\_\_\_ (student volunteer) yells go, number 1 ones will fill their cups with water and the game will begin.
3. Have students put their cups in the big sun bucket.
4. Bring all supplies back to the classroom. DO NOT SPILL water in the end containers
5. Measure the volume of water in each end container. Record these values on the board in mL.
6. Have students copy the data table.

Ask students how to calculate percent recovered for 1(phytoplankton)

Have students calculate the rest (write on the board).

**Guided practice and monitoring: 5 minutes**

Talk with your elbow buddy:

Do you see a general trend? If not what would we expect to see?

Call on students

\*Students should notice that longer food chains lost more water than short food chains.

Discuss sources of error

**Closure: 2 minutes**

We will be talking more about food webs and introducing some vocabulary that goes along with them tomorrow. On Thursday, you will each be assigned a different food web that you will eventually present to the class.

**Independent Practice: In class if time**

HW: questions on page 6 including the graph due tomorrow

 Be prepared to discuss