Festival Activity: Web of Life

Subject: Science

Concept: Food webs

Key Vocabulary
- Food web
- Food chains

Skills
- Kinesthetic development
- Demonstrating interdependency
- Controlling variables

Materials
- □ Costumes and string provided by activity leader

Your students will be transformed through colorful costumes depicting plants and animals in the salmon's community. Through interactive simulations, students will learn how we are all connected in the web of life.

Grade Level Expectations (GLEs) or Evidence of Learning

Science

1.1.4 Understand that energy comes in many forms.
1.2.1 Analyze how the parts of a system go together and how these parts depend on each other.
1.3.8 Understand that living things need constant energy and matter.
1.3.10 Understand that an organism's ability to survive is influenced by the organism's behavior and the ecosystem in which it lives.

Objective

Students will demonstrate their understanding of the pre-work by creating a model **food web**, an interlocking pattern of **food chains** (the transfer of food energy from organisms in one nutritional level to those in another).

Suggested Procedure

Salmon Festival staff will expand on the concept of food webs. In costumes depicting plants and animals, your students will construct a food web, as introduced earlier in the classroom pre-work.

Pre-Work: Don't Break The Chain, Part I

Subject: Science

Concept: Food chains

Key Vocabulary
- Food chains

Skills
- Identifying systems in nature
- Making models
- Classification

Materials
- □ Scissors
- □ Glue
- □ Student Worksheet, "Don't Break the Chain" - one per student

Students will study the concept of **food chains**, the transfer of food energy from organisms in one nutritional level to those in another.

Grade Level Expectations (GLEs) or Evidence of Learning

Science

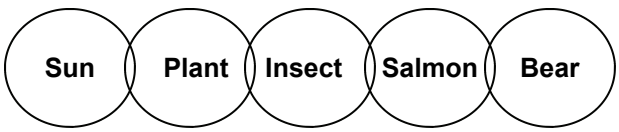
1.1.4 Understand that energy comes in many forms.
1.2.1 Analyze how the parts of a system go together and how these parts depend on each other.
1.3.8 Understand that living things need constant energy and matter.
1.3.10 Understand that an organism's ability to survive is influenced by the organism's behavior and the ecosystem in which it lives.

Objective

Students will demonstrate their understanding of food chains by placing elements of the chain in the correct order.

Suggested Procedure

1. Introduce and discuss the food chain concept. Plants get energy from the sun. Green plants can make their own food by using energy from the sun. Animals get their food by eating plants and/or other animals. A simple order of a plant being eaten by another animal, is called a food chain. Here is an example of a food chain:



2. Distribute Student Worksheet, “Don’t Break the Chain.”

3. Cut out each rectangular shape.

4. Arrange links in order of consumption to form a basic food chain.

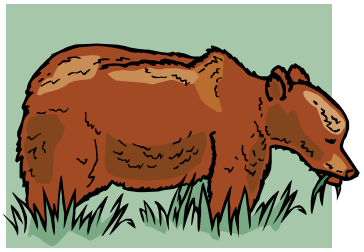
5. Check each student’s arrangement for accuracy (sun-plant-insect-salmon-bear).

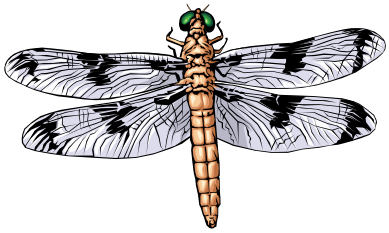
6. Glue the ends of the first rectangle together to form a circle. Thread the next rectangle through the first circle and glue ends together. Continue this process until all links in the chain are connected in the proper order.

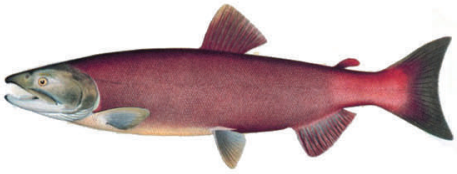
7. Ask your students “where they would fit in the chain?”

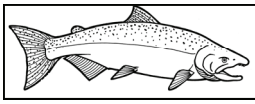
8. Hang your food chains around the classroom so that students can build upon their food chains during the next activity.

Student Worksheet: Don’t Break the Chain









Pre-Work: Don't Break The Chain, Part II

Subject: Science

Concept: Food web

Vocabulary
- Food web
- Food chain

Skills
- Identifying systems in nature
- Making models
- Classification

Materials
- □ Scissors
- □ Crayons
- □ Glue
- □ Student Worksheet, "Web of Life" - one per student
- □ Student food chains from Part I

Food chains can be very complex with many animals depending on the same food source. In this activity students will learn how other animals can be connected to their simple **food chains** by adding side links to create a **food web** (an inter-locking pattern of food chains).

Grade Level Expectations (GLEs) or Evidence of Learning

Science

1.1.4 Understand that energy comes in many forms.
1.2.1 Analyze how the parts of a system go together and how these parts depend on each other.
1.3.8 Understand that living things need constant energy and matter.

Objective

Students will learn about food webs by adding side links to their food chains .

Suggest Procedure

1. Distribute Student Worksheet, "Web of Life."

2. Have the students complete the worksheet by creating their own pictures for additional links.

3. Cut out rectangle shapes from worksheet.

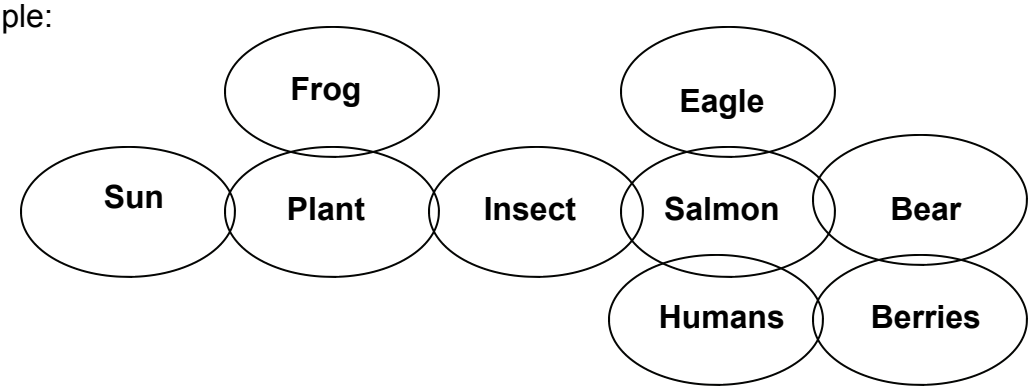
4. Tell students that they should add links from Student Worksheet " Web of Life" to their base food chain from Part I. Instead of adding links in a straight line, have the students add new links to the sides or ends of their existing food chain, as long as the food relationship is appropriate. See example on next page.

5. Draw a classroom base chain from Student Worksheet, "Don't Break the Chain" on the board.

6. Ask students to share their newly formed chain and the relationships within it. After each student responds, have him/her add his/her new links to the classroom base chain.

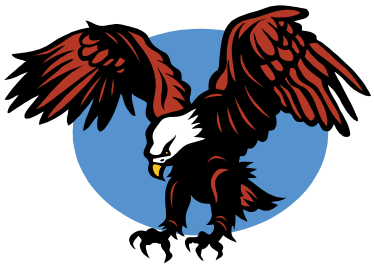
7. After everyone has added their link to the classroom food chain, introduce the concept of food webs. Title the drawing, “Food Web.” Discuss that in nature, many food chains link together or overlap, making a food web.

Example:



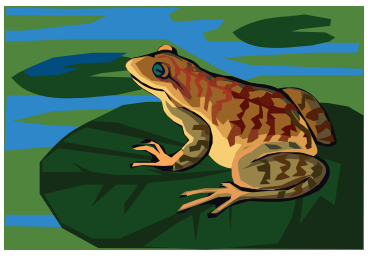
Student Worksheet: Web of Life

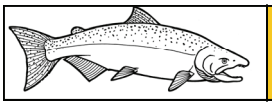
Draw the last food you ate



Draw your favorite animal

Draw your favorite animal's food





Post-Work: Nature's Pyramid

Subject: Science

Concept: Food pyramids

Key Vocabulary
- Food pyramid
- Producers
- Consumers
- Carnivores
- Herbivores

Skills
- Identifying systems in nature
- Classification
- Application

Materials
- □ Paper
- □ Pencils

Location: This physical activity should be conducted in an open area, on a soft surface, such as a grassy school-yard.

Energy is lost whenever it passes from one level to the next. A **food pyramid** forms when a larger number of organisms below supports a smaller number of organisms above.

Grade Level Expectations (GLEs) or Evidence of Learning

Science

1.1.4 Understand that energy comes in many forms.
1.2.1 Analyze how the parts of a system go together and how these parts depend on each other.
1.3.8 Understand that living things need constant energy and matter.

Objectives

Students will: 1) recognize plants as the basis of living communities, and 2) learn about food pyramids through models of a living community.

Background Information

Food is the main source of energy for animals in the environment. The sun is the original source of this energy. Green plants utilize energy from the sun to make food, because they make their own food, they are called **producers**. The animals eat either the plants or other animals to get their supply of energy. These animals, who cannot make their own food, are referred to as **consumers**. Many examples of this type of energy transfer can be seen. These relationships are called food chains or food webs. Scientists diagram food chains in the form of a pyramid to show the true relationship of energy transfer in the environment.

Suggested Procedure

1. Divide the students into three categories based on the following percents:
   Carnivores - 10% of the students
   Herbivores - 30% of the students
   Plants - 60% of the students

2. Ask the students the following questions:
   From what source does the Earth get energy?
   Answer: sun
   What form of life is first to use that energy?
   Answer: plants

How do other forms of life get that energy?
Answer: eating plants

3. Tell your class they will be forming a food pyramid. Ask all “plants” to step forward.

4. Explain that students who are plants will be on the bottom of the pyramid because all animals depend on them directly or indirectly. All “plants” kneel down on all fours, close together in line.

5. Ask all students selected to be a “**herbivore**”, animals that eat plants, to step forward. All plant-eaters (herbivores) stand in a line behind the plants. (Examples of herbivores are deer, rabbits, and beaver)

6. Ask all students selected to be a “**carnivore**”, animals that eat meat, to step forward. All meat-eaters (carnivores) stand in line behind the herbivores. (Examples of carnivores are cougars, coyotes, and wolves)

7. Optional: Now have the herbivores climb on top of the plants and the carnivores on top of the herbivores to form a pyramid. (For safety reasons, students can squat down at different levels to demonstrate the pyramid).

8. Demonstrate the importance of plants by pulling one of the students representing a plant out of the pyramid. What happens to the pyramid?

Discussion

As demonstrated, the higher up in the food chain, the fewer the number of animals there are.

Extension A

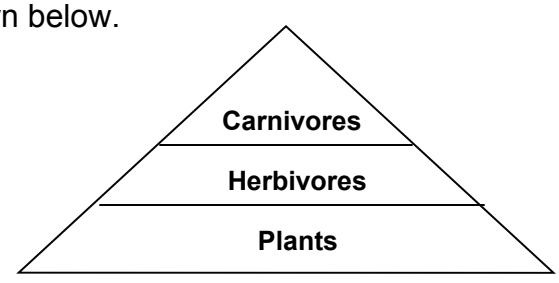
Ask all students who were plants in the pyramid to raise their hands.

Write this number low on the board and label this number “Plants.”

Ask the students who were herbivores to raise their hands. Write this number on the board above the “Plant” number. Label the new number “Herbivores.”

Ask the students who were carnivores to raise their hands. Write this number on the board above the “Herbivores” number. Label this new number “Carnivores.”

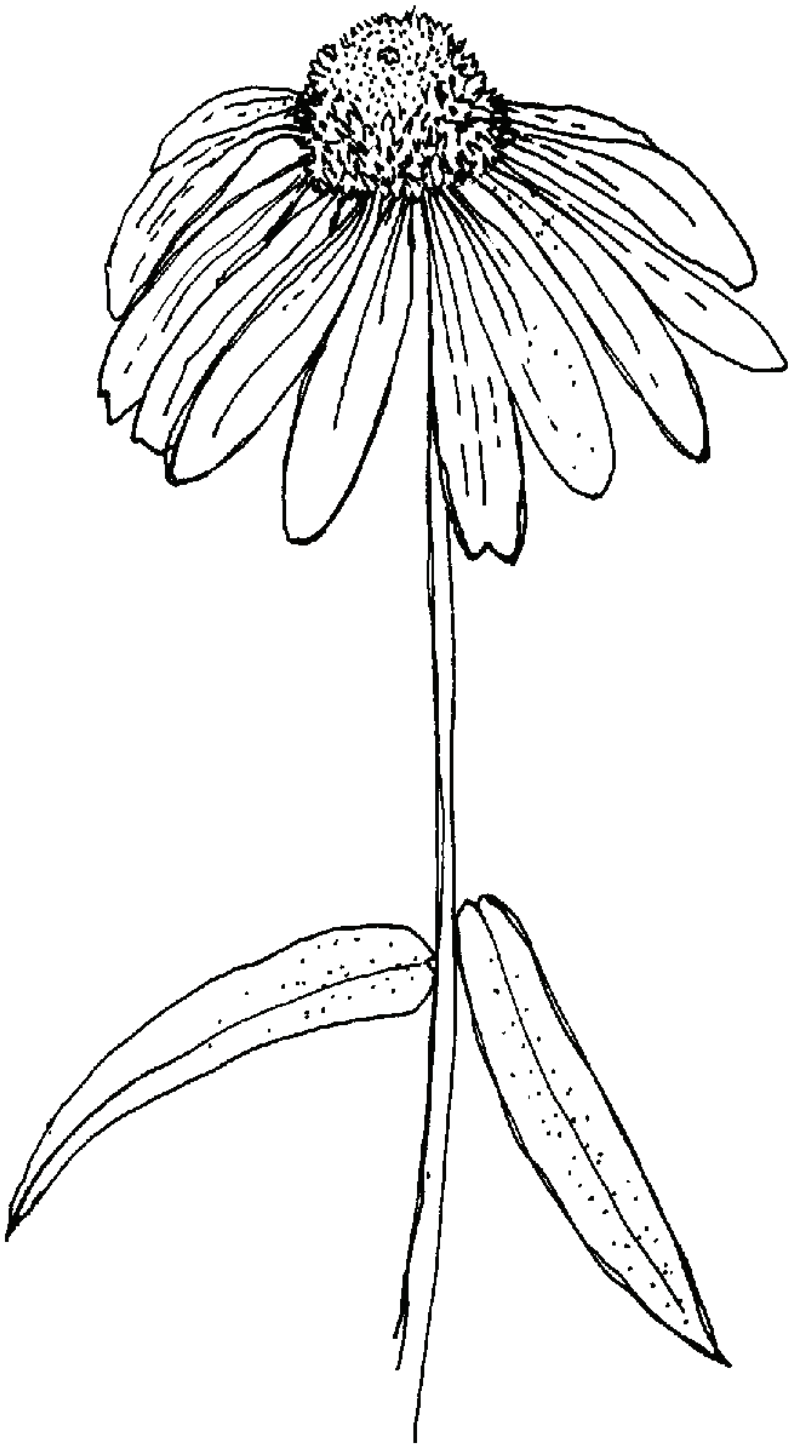
Draw a triangle around the numbers and their labels, with the base of the triangle on the bottom as shown below.



Explain to students that this drawing is called a food pyramid. This drawing shows who eats who, like a food chain, but it also includes the number and ratio of animals or plants found in the community.

Extension B
Make copies of Student Worksheet, “There Once Was a Flower.”

Have the entire class sing this food chain song to the tune of “Old Woman Who Swallowed a Fly.”



Student Worksheet: There Once Was A Flower

There once was flower that grew on the plain, where the sun helped it grow, and so did the rain - Links in a food chain.

There once was a bug who nibbled on flowers, nibbled on flowers for hours and hours! The bug ate the flower that grew on the plain, where the sun helped it grow, and so did the rain - Links in a food chain.

There once was a bird who gobbled up bugs, and creepies and crawlies, and slimies and slugs. The bird ate the bug, who nibbled on flowers, nibbled on flowers for hours and hours! The bug ate the flower that grew on the plain, where the sun helped it grow, and so did the rain - Links in a food chain.

There once was a snake who often grabbed birds, and swallowed them whole, or so I have heard. The snake ate the bird, who gobbled up bugs, and creepies and crawlies, and slimies and slugs. The bird ate the bug, who nibbled on flowers, nibbled on flowers for hours and hours! The bug ate the flower that grew on the plain, where the sun helped it grow, and so did the rain Links in a food chain.

There once was a fox, and I'll make a bet, he'd eat anything he could possibly get. The fox ate the snake, who often grabbed birds, and swallowed them whole, or so I have heard. The snake ate the bird, who gobbled up bugs, and creepies and crawlies, and slimies and slugs. The bird ate the bug, who nibbled on flowers, nibbled on flowers for hours and hours! The bug ate the flower that grew on the plain, where the sun helped it grow, and so did the rain Links in a food chain.

The fox, he grew older and died one spring day, but he made the soil rich, when he rotted away. A new flower grew where he died on the plain, and the sun helped it grow, and so did the rain - Links in a food chain.

Author Unknown