JSD 3D Learning Activity Template

Grade: 6th	**Title:** Weave a Web

Utah Science with Engineering Education Standard (SEEd): Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

Key crosscutting concept(s) (CCC): Systems and system models and Energy and matter: flows, cycles, and conservation.
Key science and engineering practice(s) (SEP): Developing and using models and Obtaining, evaluating, and communicating information.

Materials: Ecosystem student reading, forest ecosystem information, food web words, food web recording sheet, pencil, scissors, glue.

Time: 1 hour

Teacher background, key content information and hints: Teachers need an understanding of ecosystems, food webs, producers and consumers.

Prior knowledge that students need: Students should have had previous lessons on ecosystems, food webs, producers, consumers, and decomposers. This should be a culminating lesson to incorporate all parts of an ecosystem and food web.

Learning Activity Plan

These three aspects of a lesson should be identified in your learning activity.

Gathering: Have students partner read and discuss the ecosystems student reading	***Reasoning:*** Students will use the reading and information provided to develop a model of a forest food web.	***Communicating:*** Each pair will share their food web with the class. The class will discuss any differences in the food webs and why other pairs modeled the food web the way they did.

Phenomenon: Energy in an ecosystem flows from the sun to plants (producers) and animals (carnivores and omnivores)

Learning Activity: Each pair of will complete a forest food web.
Materials for Each Group: Ecosystem student reading, forest ecosystem information, food web words, food web recording sheet, pencil, scissors, glue.

Procedure: Show students the provided ecosystem picture and ask them to record what they see. Specifically how are the organism interconnected? After students have had a chance to discuss the picture make a list of the organisms and their connections.

Students then read the ecosystem student reading and forest ecosystem information. They will use the information to make a forest food web. Each pair will share their food web with the class. Discuss any differences and analyze each food web. Students will answer the food web questions discuss the questions as a class.

Assessment of student learning
Teacher informally assesses student understanding as they are working by asking them questions about how they are modeling their ecosystem. Students will be assessed by their food web and questions.

Picture for class discussion

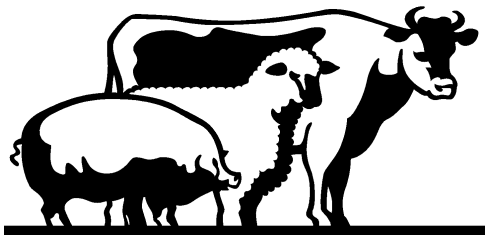
Show this picture of an ecosystem and ask students to record what they observe. How are the organisms they see interconnected? Record what each pair observed as a class.

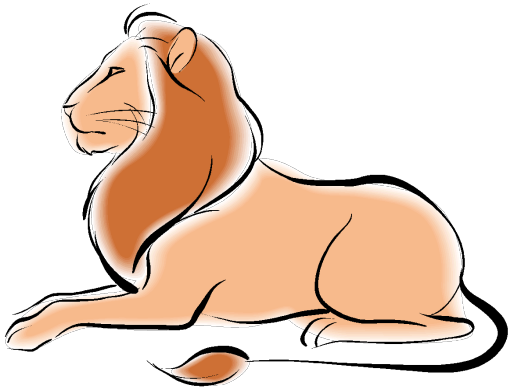
Student reading

Ecosystems

All energy in ecosystems comes from the **sun**, the source of all energy on Earth. The sun's energy is used by **autotrophs**, plants that harness the energy in the sun to make food. Plants are therefore known as **producers** because they do not consume other organisms. Plants form the base of the **food chain** for ecosystems. The plants must have a significant amount of biomass to support the next level.

The next link in most terrestrial food chains is an **herbivore**. An herbivore is an organism that will survive exclusively on plant life. These organisms are the first link in the food chain that consumes other life. They will also serve as food for other organisms. Examples of herbivores include: deer, cows, gazelles and cattle.





Each level above the herbivore is a consumer. **Carnivores** are one type of consumers that would feed upon an herbivore. Carnivores consume only meat. An example of a carnivore would be a lion, dog, or panther. **Omnivores** might also feed upon an herbivore. An omnivore will consume both plants and animals. Humans are considered to be omnivores.

Food chains are excellent ways to look at the flow of energy in an ecosystem. A typical food chain might be: Plant →Mouse →Snake →Hawk. The arrows show the feeding relationship among the organisms. There are usually only 4-5 links in a food chain. This is because energy can run out as it moves up a food chain. This is why food chains usually only have a few links; there is simply not enough energy to sustain chains that are much longer

Food webs show all of the feeding relationships in an ecosystem. For example, a bobcat may eat mice, rats, rabbits and other small animals. In a food chain, only one type of prey can be represented. A food web would show the bobcat consuming many different animals. Food webs are far more accurate because they truly represent the feeding relationships in their entirety.

Forest Ecosystem Information

Foxes eat skunks, weasels, opossums, and mice.

Birds, skunks, and opossums, eat insects.

Hawks eat skunks, weasels, opossums, and mice.

Mice and insects eat acorns.

Snakes eat mice.

Owls eat skunks, weasels, opossums, and mice.

Weasels eat mice.

Trees produce acorns.

Foxes	Weasels	Snakes	Mice
Owls	Hawks	Acorns	Skunks
Opossums	Trees	Insects	Birds

Use this information to make a food web on the next page. When your food web is done please answer the questions on the back of the page.

Names: _____

Food Web

1. How many organisms eat the skunk?

   _____

2. How many organisms does the skunk eat?

   _____

3. Where do acorns come from?

   _____

4. What would happen if the insects disappeared?

   _____

   _____

   _____

Identify the producers and consumers in the food web.

Consumers	Producers