

3rd Grade: We Rely on Each Other- Food Chains/Webs

Session I: Jordan River Riparian Forest Food Web – In Classroom

Sample Timeline

0:00 Arrive at the school, sign in at the office, and meet the teacher in their classroom. Make sure teacher has made copies of worksheets, organize supplies, and set up activity.

0:05 Introduction to educator, Jordan River Commission, and the outline for the day

0:10 Introduction to Food Webs

0:20 Activity 1: Jordan River Food Web Game

1:00 JRC educator leaves school *Make sure to set a date for the 2nd field lesson plan

Behavioral reminder before you start:

Today we are staying in the classroom for our activity so that means:

- Use inside voices
- No running
- Leave materials in the pan
- Ask lots of questions

Note: It may be useful to chat with teacher beforehand to understand procedures they already use in the classroom. For example, some teachers are very strict about students raising their hands before and being called on before answering questions. Also, ask if they already have an attention grabber (teacher: 1,2,3 eyes on me. Students: 1,2 eyes on you)

Introduction

Today we will be staying in the classroom learning about how living and nonliving things interact with each other. We will explore the Jordan River food web to help us visualize these interactions! Then in our next session, we will walk to the Jordan River to search for evidence of interactions. This means you need to be prepared to make lots of observations using ALL of your senses!

Key Concepts

- Students will understand that organisms depend on living and nonliving things in their environment
- Students will understand for every action there is a reaction in the web
- Students will learn the common plants and animals found in Utah's environments and how these species adapt to the environment in which they live

Ideas to Cover

Food Chains/Webs

Every living thing needs energy in order to live. Every time animals do something they use energy to do so. Animals get this energy from the food they eat, and all living things get energy from food. Energy is necessary for living things to grow.

A food chain shows how each living thing gets food, and how nutrients and energy are passed from creature to creature. Food chains begin with plant life and end with animal life. Some animals eat plants; some eat other animals.

- Plants are called *primary producers* because they produce their own food through photosynthesis. It takes an enormous number of individual plants to support the other parts of the web.
- At the next level of the food chain are *primary consumers*, those who eat the plants (herbivores). Primary consumers include rabbits, mice, deer and some types of insects, fish and birds.
- Primary consumers are eaten by *secondary consumers*, which are meat eaters (carnivores) or animals that eat both plants and meat (omnivores). These animals are predators such as birds of prey, some snakes, foxes, wild cats, and coyotes.
- *Tertiary consumers* eat the secondary consumers and may either be carnivores or omnivores (omnivores eat both plants and animals).
- Any of these components of the food web can be broken down by *decomposers*, small creatures and other organisms, such as bacteria and fungi, that reduce dead plant or animal matter into smaller particles.
- A decaying plant, for example, will be broken down into nutrients that enrich the soil, which in turn supports the growth of more plants.

Food webs show how plants and animals are connected in MANY ways to help them all survive. Food chains follow just one path of energy as animals find food.

Sometimes the role of a plant or animal in the web will change, or it may be removed from the food web all together. What effect will this have on the web?

Sequencing Ideas/Suggestions

Start a warm up discussion with the students to understand what they already know about interaction between species, food chains, food webs, common species on Jordan River

- What is a food chain? Food web? Are they the same thing?
- Give an example of a food chain on Jordan River
- Where do humans fit on the food chain? (Producers, consumers, decomposers)
- Are humans' carnivores, omnivores, or herbivores?

To help us better understand how energy is transferred in food chains and food webs, we're going to play a game! This game will require you to work with your classmates to

arrange yourselves into a food chain. So let's make sure we FULLY understand how a food chain works.

- Do an example on the board with the students:
 - Sun-> Tree -> Butterfly (sun gives light energy for photosynthesis) -> (tree leaves contain energy and minerals) -> (body contains energy and minerals)
 - Have students explain how the energy is being transferred
- Second example with blanks for students to fill in (as a class)
 - Sun-> _____ -> Butterfly -> _____ -> Red-tailed Hawk
- Third example with additional links to hint at Food Web

Activity 1: Jordan River Riparian Food Web Game

While students are still at their desk, pass out a Food Web card to each student and instruct them to hang it around their necks. Do NOT read the back of the card! We are going to pretend we are the plant or animal on our card. It is our job to work together to create a food web by holding hands which will represent a food chain.

For this activity, I will stand in the center of the room and represent the sun. From our example on the board, what does the sun do in the food chain? (supplies light energy for plants).

- Who might want to hold my hand?

It is up to you ALL to work together to figure out which animals eat which plants and which animals eat animals to build the other food chains. Once we begin, I will no longer answer any questions, but you're encouraged to talk to your classmates and work together.

- Are there any questions before we start?

Give the students 10-15 minutes to get the idea and to wrestle with who eats what from their common knowledge. After all the students are a part of the chain, tell them they have about 5 minutes to read the back of their card and make any necessary changes.

After students have made their final changes to the food chain, do a quick walk through while they're still linked. Start with the sun and follow the food chain to the end.

Good job! Now that we understand a food chain. Let's move into a food web. A food web shows how plants and animals are connected in many ways. Since various animals eat more than one type of plant and carnivores eat more than one type of herbivore, a complicated, branching system can be temporarily created by incorporating yarn.

With students still linked in their food chain go through with yarn and make other connections. For example: A fox eats both the Bullock's Oriole and the Red Tailed Hawk. Have the students holding the fox card hold on to part of the yarn and connect with the Oriole and Red Tailed Hawk (each student holds a piece of the yarn).

Continue this process by having the students instruct you where to go. Example: whoever has the coyote card should realize coyote can eat a Mule Deer (although they are not likely to kill it).

When done, collect cards and have students return to their seats.

Ask the students the following discussion questions:

- What is the food chain?
- What is it at the top of the food chain? Bottom of the food chain?
- Name an herbivore, carnivore, omnivore.
- What is the difference between a food chain and a food web?

Session II: We Rely on Each Other - Jordan River EcoWalk – Field Day

Sample Timeline

0:00 Arrive at the school, sign in at the office, and meet the teacher in their classroom. Make sure teacher has made copies of worksheets, organize supplies, and set up activity.

0:05 Warm up, Activity 1: Jordan River Web of Life

0:15 Activity 3: We Rely on Each Other Jordan River EcoWalk

0:55 Go over worksheet and Q&A

1:00 JRC educator leaves school *Make sure to set a date for the 2nd field lesson plan

Behavioral reminder before you start:

Today we are going outside so we have a few more rules:

- No running
- No pushing/shoving
- Stay on the path/trail
- No climbing on rocks or trees
- No throwing of any kind
- Stay with the group and away from the water
- Leave all wildlife alone
- Ask lots of questions

Note: Make sure to make a stop at the bathroom before heading outside. Tell students to go even if they do not think they have too.

Introduction: For our field session, we will take a walk to the Jordan River to find and record any evidence of interactions! We will use the Jordan River EcoWalk worksheet as a guide, but be sure to record other field notes along the way.

Key Concepts

- Students will observe interactions between living and nonliving things

Activity 2: Jordan River Web of Life (Warm Up)

Pass out large index cards or strips of paper, write the name of each plant and animal on the list. Assign a plant or animal to each student in the class and have them hold their card to the front of their shirt.

Have the class stand in a circle. Select a plant to begin making the web. Give that student a ball of string and have them wrap the end once around his or her hand and then pass the ball of string to something that eats that plant.

- This student should then wrap the string around his or her hand and then pass the ball of string to either something that eats this animal or to something that it eats.
- Remember that many of the plants and animals should be connected to several others. (If a student receives the ball of string a second time it should be passed to a different person than he or she passed it to the first time.) Continue in this manner until you have formed a complex, living web.

Once the web has been completed (all possible connections have been made), have the students take a step back until the web is tight.

Review with students that sometimes the role of a plant or animal in the web will change, or it may be removed from the food web all together. What effect will this have on the web?

Activity 3: We Rely on Each Other – Jordan River EcoWalk

Pass out Jordan River EcoWalk cards to each students to hang around their neck. Also, hand out the We Rely on Each Other worksheet to complete the EcoWalk.

Explain the worksheet to the students and tell them the EcoWalk cards are there to help them. They may also use the EcoWalk cards to help identify any plants or animals they spot on their journey. Tell them to be sure to record any observations they would like to share with the class later.

Note: If you allow students to wander “freely” make sure to establish clear boundaries. Save 5-10 minutes at the end of session to review the worksheet and answer any questions.

Sequencing Ideas/Suggestions

To begin, tell the students we will be going on a Jordan River EcoWalk. We will be making observations and looking for evidence of interactions in the Jordan River Food Web. Let’s review the review the concepts - what animals eat and who eats them. Introduce or review the terms herbivore, carnivore, omnivore, predator, prey, producer and consumer.

Circle students up and complete the warm up activity (Food Web)

As you are walking around with the students encourage them to point out anything they think may be evidence. If they observe something else or spot wildlife, be sure to point it out so the rest of us can see it!

Use the We Rely on Each Other worksheet as a guide to engage students. See a list of inquiry-based questions below, to help students drive the lesson.

Background Information

Food chains and food webs are crucial science concepts that help children understand how living things in nature are connected, and how humans' actions can affect the environment. Remind your children that living things are divided into different groups, including producers and consumers. Consumers are further divided into more groups such as herbivores, carnivores, and omnivores. A food chain shows how living things rely on each other for food and how energy is moved from one living thing to another. A **food web** is a group of connected **food chains**. Food chains and food webs show the interconnected relationships between predators and prey. Remind your children that a predator is a living thing that hunts animals, and that prey is an animal eaten by predators.

Living things are divided into many different groups, including producers and consumers. **Producers**, also called autotrophs, are living things that can produce, or make, their own food. Plants use photosynthesis to produce their own food and grow. We recommend watching the [Parts of a Plant](#) movie together as a review. Tiny aquatic organisms such as plankton also rely on the Sun's energy to make their own food. Most of Earth's living things are made up of producers. **Consumers** are living things that eat other living things. **Herbivores** are animals that eat only plants, such as deer, squirrels, and butterflies. **Carnivores** are animals that eat only other animals, such as lions, sharks, and preying mantises. **Omnivores** are animals that eat both plants and animals, such as bears, hedgehogs, and humans. Although not mentioned in the movie, children might also like to learn that there are two rarer types of consumers, parasites (who feed off of other living organisms) and scavengers (who eat animal carcasses but do not hunt themselves).

All living things rely on each other for food and energy. A food chain shows this relationship and how energy gets transferred from one living thing to the next. For example, a plant uses the energy from the Sun to make its own food. Insects such as caterpillars rely on the plants for food. Small birds eat caterpillars, while other animals such as predatory birds, cats, and foxes hunt smaller birds. Review with your children that a predator is a living thing that hunts animals, and **prey** is an animal eaten by predators. In the example above, caterpillars are prey for small birds, and small birds are prey for cats and foxes. In turn,

cats and foxes are vulnerable to larger predators. Remind your children that an animal can be both a predator and prey for another animal.

A food web is a group of connected food chains. In the ocean, plankton use sunlight to produce their own food. Krill feed on plankton, while squid, fish, seals, penguins, and some species of whale feed on krill. Seals and penguins also feed on krill and squid, and seals prey on penguins as well. Killer whales and sharks feed on both seals and penguins. Adult killer whales are considered to be at the top of the food web because they have no natural predators. The food web is a complex system that is delicately balanced.

Predators help control the population of prey. If certain predators become threatened, endangered, or extinct, the population of their prey might increase and create an imbalance within the ecosystem. If certain kinds of prey become endangered, a species of predator might find food difficult to find and their own numbers might decrease. Human involvement in the form of habitat destruction, pollution, use of pesticides, and overfishing can negatively affect food webs and food chains.

Help your children understand that humans' actions can affect countless other organisms. Let them know that, while extinction—the loss of a species—has always occurred within the ecosystem, its rate has increased more than 1000% since the industrial revolution began 200 years ago. Children should be aware of environmental problems and actions they can take to help their world. Remind them that they are part of the food web, too. Exploring these concepts with your children will help them understand the world around them and foster a sense of global community and responsibility.

Ecology - study of interaction of organisms and their environment

Ecosystem -energy flow from the sun and mineral cycle

Photosynthesis - conversion of light and CO₂ into organic materials

Food Web - who eats what, when, where, why

Food Chain - a single strand of a food web, ie. primary producer (plants), herbivore, carnivore, secondary carnivore).