



Owls

For this unit of study, students will work in groups to gather information about owls. In particular, they are to be responsible for the I can statements which are the learning targets for this activity.

The unit should be introduced through the use of the anticipation guide. It works best to do this as a whole class and to fully discuss the students' predictions.

As students are working, the teacher should check for understanding often. Students will demonstrate their learning through the differentiated assessments included.

Anticipation Guide

Statement	Agree	Disagree
Owls have an excellent sense of smell, which helps them locate prey in the darkness.		
Owl pellets are owl poop.		
Owls are strictly carnivorous.		
All species of owls are nocturnal.		
Adult owls have few natural predators.		
It is a federal crime to intentionally injure or kill an owl.		

Anticipation Guide answers

- Scientists believe that most birds have little or no sense of smell with the exception of hummingbirds and carrion feeders. Owls rely on their binocular vision and strong sense of hearing to locate prey.
- Owl pellets are not poop. They are formed in the gizzard and regurgitated. They are made of prey materials that cannot be digested such as bones and fur.
- Owls are strictly carnivorous. They have many adaptations that allow them to hunt and eat other animals, such as sharp talons, keen vision and hearing, sharp beaks for tearing meat, and silent feathers for silent flight.
- Several owls are crepuscular (most active at dawn and dusk) or diurnal (most active during the day). Some examples of owls that are not nocturnal are the Northern Hawk Owl, the Snowy Owl, and the Burrowing Owl.
- Adult owls have few natural predators. They are at the top of the food chain. Their most common predators are larger owls. Like the young of most animals, the owlets are largely defenseless and susceptible to predation.
- The Migratory Bird Act of 1918 protects all North American Owl Species. This act makes it illegal for people to take migratory birds, their eggs, feathers, or nest. It is also illegal to hunt, pursue, wound, kill, or transport a migratory bird.

Learning Targets

I Can Statements

- I can describe the energy flow in the food web of an owl.
- I can describe what an owl pellet is and how it is made.
- I can define nocturnal, diurnal, and crepuscular.
- I can explain the terms predator and prey.
- I can draw a simple food chain showing the energy flow from the sun to an owl.
- I can describe the unique physical and behavioral characteristics of an owl.
- I can classify the role of each organism in the food web of an owl.



OWL ACTIVITIES

OWL PELLETS

The website www.kidswings.com allows students to do a virtual owl pellet dissection. The dissection worksheet for this activity is on the next two pages.

OWL THINK DOT ACTIVITY

This is actually an assessment in a game format. See the pages that follow for the instructions.

SHOW AND TELL BOARD

Students will create a show and tell board. They will choose to create a poster, Power Point, or brochure which will classify the role of each organism in the food web of an owl. They will also be able to explain the energy flow in the food web of an owl. and rubric is included in the following pages.

THINK-TAC-TOE CHOICE BOARD

The tic-tac-toe choice board allows students to choose three activities that will create a tic-tac-toe. (down, across, or diagonally) This allows for student choice in assessment. The choice board is included in the pages to follow.

LITERATURE CONNECTION

Read students the novel, Poppy by Avi. Poppy is a work of fiction that also provides much information on owls. The following pages include a synopsis of the novel as well as one lesson plan on ecosystems that compliments the novel.

OWL EYES

An activity that will demonstrate to students how an owls eyesight works and how it is very different from the eyesight function of humans.

The Polite Term is Pellets

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Written by Doug Newman

The low, muffled "hoo-hoo" of a great horned owl sounded across our backyard, just as I began to drift off to sleep. The calling seemed to come from a group of large white pines near the back corner of the yard. Through the window, I saw a dark form quietly fly out from the pines, cruise over a neighbor's hayfield and then return.

The owls in our yard sent me looking for information on them. Owls are active at night and make their living by catching and eating other animals. They catch animals with their claws, called talons, and carry them back to their roosts. Roosts are regularly used sites, often located near nests, and are places where owls perch and eat their prey. Owls commonly roost in solitary trees or groups of trees that stand out from the rest, such as large old trees adjacent to fields or stands of pines or cedars in a forest that is mostly hardwoods.

When we eat bony foods, like fried chicken, we use our teeth, a fork or our fingers to remove the meat from the bones. Similarly, owls use their hooked beak to pull flesh from the bodies of larger animals, such as cottontail rabbits. But when a hungry owl catches something small, such as a mouse, it often swallows the animal in a single gulp.

After an owl swallows a mouse, strong acids in the owl's stomach begin to digest the mouse's muscle and other soft parts. The owl can't digest the bones and fur that come along with the meal, so the owl's stomach forms these indigestible materials into tight packages called pellets. Several hours after a meal, an owl will regurgitate one of these pellets. The pellets, along with feathers and other remains, can be found under owl roosts.

Pellets vary in size and shape, but the most commonly found—those from great horned owls—are about 2 to 4 inches long and 1 to 2 1/2 inches in diameter. They are gray-colored, densely packed and lightweight when dry.

To find some pellets, first choose an area where you have seen or heard great horned owls in the past. Then check likely areas for roosts, such as large trees and pine and cedar thickets. Look on the ground near the trees for the white splashes that are the owl's droppings. You may also notice prey remains, such as fur or feathers. Pay special attention to large trees with limbs that are horizontal near the trunk. Once you find white splashes or other obvious signs of a roost, search carefully for the gray pellets.

By looking at the bones, bone fragments, tiny skulls, hair and other materials in the pellets, you can tell what kinds of animals the owls are eating. To open up a pellet, place it in a pie tin or other shallow dish with a small amount of water. Use a pair of old table forks or tweezers to carefully tease apart the pellet and examine its contents.

Like a police detective, you can look carefully at the skulls, jawbones and other items to figure out which animal they came from. Use a magnifying glass if you have one. Try to match the skulls you find to the ones pictured here. Even hairs and feathers sometimes can be identified. *The Wild Mammals of Missouri* is a good reference for identifying rodents from skulls and other fragments. Look for it in a school or public library.

Great horned owls usually eat mice, voles, shrews and rabbits, but sometimes they eat skunks, muskrats, house cats, weasels, mink, flying squirrels, snakes, frogs and birds. They will even attack and eat other hawks and owls.

Predators, such as owls, are an important part of nature. Owls survive by eating the large number of mice and other animals produced by nature each year. By consuming this surplus, owls help to control some prey populations. But the reverse is also true: a shortage of prey animals limits the number of owls that can survive. This codependency brings about a balance between predator and prey.



Virtual Owl Pellet Dissection Worksheet

Length: _____

Width: _____

How many of the following
bones did you find?

Humerus: _____

Femur: _____

Lower Jaw: _____

Skull: _____

Vertebrae: _____

Shoulder Blade: _____

Ulna/Radius: _____

Ribs: _____

Pelvic Bones: _____

Tibia/Fibia: _____

How many animals did this owl eat?

What do the contents in this pellet tell you about the owl's diet?

What habitat do you think this owl would be hunting in?

OWL THINK DOT ACTIVITY

STUDENT DIRECTIONS

Materials:

Think dot sheet

Number cube numbered from 1-6

Science log/journal for each individual student

Directions

- You will work with another student.
- Roll the number cube
- Find the number you have rolled on the think dot sheet.
- Discuss what you know and what you have learned about the topic
- Record the information you have discussed with your partner in your science log/journal.

THINK DOT SHEET

<p>1</p> <p>EYESIGHT</p>	<p>2</p> <p>HEARING</p>	<p>3</p> <p>SILENT FLIGHT</p>
<p>4</p> <p>TALONS AND BEAK</p>	<p>5</p> <p>BEHAVIOR</p>	<p>6</p> <p>DIET</p>

SHOW AND TELL BOARD

Learning Targets:

- I can classify the role of each organism in the food web of an owl.
- I can explain the energy flow in the food web of an owl.

THE TASK

Construct a food web with the owl at the highest trophic level. Be sure to include producers (green plants) and decomposers in your food web. Also, include the sun. Label the role of all organisms and use arrows to show the energy flow between each organism. Finally, explain in words the flow of energy in the food web.

MAKE YOUR SHOW AND TELL CHOICE FROM THE TABLE BELOW.

Show	Draw a poster showing a food web with the owl at the highest trophic level. Label the role of all organisms (consumer, producer, decomposer). Use arrows to show the energy flow between each organism.	Create a PowerPoint Presentation showing a food web with an owl at the highest trophic level. Label the role of all organisms (consumer, producer, decomposer). Use arrows to show the energy flow between each organism.	Create a brochure Presentation showing a food web with an owl at the highest trophic level. Label the role of all organisms (consumer, producer, decomposer). Use arrows to show the energy flow between each organism.
Tell	Explain the energy flow in the food web by writing a descriptive paragraph .	Explain the energy flow in the food web by writing a story .	Explain the energy flow in the food web by writing detailed sentences .

SHOW AND TELL BOARD RUBRIC

Target	5	3	1
I can classify the role of each organism in the food web.	I have accurately illustrated and classified all of the organisms as consumer, producer, or decomposer in the food web.	I have accurately illustrated and classified some of the organisms as consumer, producer, or decomposer in the food web.	I have accurately illustrated and classified very few of the organisms as consumer, producer, or decomposer in the food web.
I can explain the energy flow in the food web of an owl.	I have pointed all arrows in the correct direction of the energy flow and have accurately described the flow of energy in the food web.	I have pointed some of the arrows in the correct direction of the energy flow and have partially described the flow of energy in the food web	I have pointed few of the arrows in the correct direction of the energy flow and have not described the flow of energy in the food web

THINK TIC-TAC-TOE CHOICE BOARD

Directions: Choose three activities in a row (down, across, or diagonally) to form a tic-tac-toe. For each choice, select a different physical or behavioral characteristic. (**Eyesight, hearing, silent flight, talons and beak, behavior, or diet**)

<p>Create a game for learning about the importance of one of the physical or behavioral characteristics of owls.</p>	<p>Create a Power Point presentation that could be used to teach students the importance of one of the physical or behavioral characteristics of owls.</p>	<p>Write and recite a poem that shows the importance of one of the physical or behavioral characteristics of owls.</p>
<p>Make a flow chart to summarize important information about one of the physical or behavioral characteristics of owls.</p>	<p>Write an essay about the importance of one of the physical or behavioral characteristics of owls.</p>	<p>Plan and present a debate about which one of the physical or behavioral characteristics of owls is most important.</p>
<p>Write and present an advertisement explaining which one of the physical or behavioral characteristics of owls is most important.</p>	<p>Write and perform a song or rap about the importance of one of the physical or behavioral characteristics of owls.</p>	<p>Write and illustrate a children's book explaining the importance of one of the physical or behavioral characteristics of owls.</p>

Poppy By: Avi

This book is an excellent fictional story that also provides much information on owls.

"Poppy is a story about a female mouse named Poppy who loses her boyfriend to an evil owl called Mr. Ocax. Poppy meets and befriends a porcupine named Ereth who is very cynical. He agrees to help Poppy get rid of Mr. Ocax and he provides her protection. Then Poppy tries to kill Mr. Ocax to seek revenge and eventually succeeds."

Alisa, Resident Scholar

"No creature is allowed to stray from their home unless they ask the permission of Mr. Ocax, a great horned owl. One night, a young deer mouse called Poppy and her boyfriend Ragweed go dancing on Bannock Hill without permission. Then Ragweed gets eaten by Mr. Ocax. Poppy narrowly escapes the needle sharp talons of the vicious Mr. Ocax. Then when it is time to ask permission to move, Poppy is chosen and she notices that when she mentions "New House" Mr. Ocax immediately says no. Then she decides to investigate further and goes to New House. On her way, she meets a cranky old porcupine and they become friends. Then, she finds out the truth about New House and has a struggle to the death with Mr. Ocax."

Anthony, Resident Scholar

" Poppy is a young deer mouse whose troubles began when she and her mouse mate Ragweed are caught on a hill by Mr. Ocax, the owl. Without his permission, he immediately justifies his rules by killing Ragweed, and Poppy manages to scrape an escape from his deadly talons.

After another terrifying encounter with Mr. Ocax to ask permission for her entire family to move into a new farm, she is blamed on all sides by her siblings when their request was denied. Heartbroken and lonely, Poppy sets off on her own journey to ask help from a mysterious creature in the forest, the only animal that Mr. Ocax has ever feared..."

Mai Tsuji, Resident Scholar

Environmental Lesson from "Poppy" By Avi

Classroom sessions/estimated time: Reading the novel, Poppy will take approximately 3 weeks if you read 15 minutes daily. Creating models of ecosystems will take 5 class periods. Map activity will take 1 class period.

Grade Level: 4- 5

Purpose: The purpose of this lesson is to study the concept of an ecosystem and to learn about the physical characteristics typical of ecosystem environments.

Objectives:

Upon completion of this lesson, students will be able to

1. Identify six ecosystems,
2. Describe the main differences and similarities between the six ecosystems,
3. Explain map essentials,
4. Identify the flora and fauna of an ecosystem,
5. Identify animals common to each ecosystem,
6. Explain the flow of energy and the cycling of matter through an ecosystem,
7. Locate ecosystems throughout the United States.

Materials Required:

- Book: Poppy by Avi (ISBN: 0-531-09483-9)
- Six boxes (I use the empty Xerox paper boxes)

- Variety of art materials -- clay, markers, construction paper, toothpicks, etc..
- Copy of map from Poppy for each student (map is found before the first page of the book)
- Encyclopedias/internet/books
- Large map of the United States

Procedure:

1. Introduce the novel by passing out a copy of the map of Dimwood Forest from Poppy. Have students study the map. Ask several questions to check for understanding, thus reviewing map essentials. For example, "If you are standing on Bannock Hill, in which direction would, you travel to reach Gray House?"
2. Next, begin reading Poppy. On the blackboard or a flip chart, make a list of all the animals and plants mentioned in the first chapter. Explain that each of the six ecosystems students will study will have certain animals and plants.
3. In chapter 2, Lungwort explains that the family will have to move due to a food shortage. Explain and discuss the flow of energy in a food chain. Discuss the connection of the flow of energy in a food chain to the ecosystem and to humans.
4. Continue to read the novel. Explain that students will work cooperatively to create a model of an ecosystem (desert, deciduous forest, taiga, tundra, grassland, and tropical rain forest). Each model will include a map that shows where the ecosystem is located. The map will contain map essentials: title, orientation (compass rose), date, author, legend and scale. Each model will have the plants, animals, climate and landscape that pertain to that ecosystem. In addition to the model, students will explain at least five food chains in their ecosystem.
5. Locate areas of the United States that contain the six ecosystems studied. Indicate those locations (rough boundaries) on a large map of the United States. Discuss any patterns or relationships that the students may observe between the ecosystem locations.

6. Invite other classes to view the models of the ecosystems and the U.S. ecosystem locations map.

Assessment:

- Students will be evaluated on level of quality of completed models of the ecosystems. (A class-generated rubric will indicate levels of achievement.)
- Students will be evaluated by their accurate and complete explanation of the five food chains in their ecosystem.
- Positive group interaction and participation in project development will also be assessed.
- Participation in the United States ecosystem location discussion.

Adaptations/Extensions:

- Go on a field trip to a local forest, grassland, or wetland.
- Make a recipe that comes from each ecosystem -- tropical rain forest punch has pineapple juice, orange juice, and lime sherbet or eat moose tracks ice cream for the taiga.
- Dissect an owl pellet and discuss the flow of energy from mouse to owl.
- Research the location of the six studied ecosystems around the world.



OWL EYES

Objective: To explore how owl eyes function differently than human eyes.

Materials:

- One cardboard tube from a roll of paper towels.
- One pencil

Procedures:

- Cover one eye with your hand and hold a pencil about one foot in front of you.
- Keep looking straight ahead while you move the pencil to the side. You should still be able to see the pencil out of the corner of your eye.
- Stop moving the pencil when you can no longer see it. How far did it get before you could no longer see it?
- Now hold the tube up to one eye. Do not move your head. How far does the pencil get before you can no longer see it this time?

- Hold the tube up to one eye again, but this time turn your head to follow the movement of the pencil. How far does the pencil move before it can't be seen this time?

Discussion:

Holding the tube over your eye and turning your head to follow the pencil is a model of the eyesight of an owl. Following the pencil with no tube is a model of human eyesight. Discuss with your partner or write in your science log about how the eyesight of a human and the eyesight of an owl differ.

The Explanation:

Owls have two eyes just like us, but the way they see is different. Owls can only see straight ahead. This is why they need such flexible necks so they can turn their heads to see in every direction. An owl cannot move his eyes like we can. So when he wants to look in different directions he has to move his head. We can see to the side without moving our heads because we have peripheral vision. What we see with both of our eyes open is called field of view. We have a wider field of view than an owl does. When you held the tube up to your eye it narrowed your field of vision. This is how owls see all the time.