

Sample Science and Literacy Task

Big Idea/ Topic (Science)

Roles of Producers, Consumers, and Decomposers

Reading/ Writing Skills

Reading Skill: Finding the Meaning of New Words

Writing Skill: Writing narrative texts

Standard Alignment

Science Standard:

S4L1. Obtain, evaluate, and communicate information about the roles of organisms and the flow of energy within an ecosystem.

- a. Develop a model to describe the roles of producers, consumers, and decomposers in a community.

ELA Standards:

ELAGSE4RI2: Determine the main idea of a text and explain how it is supported by key details; summarize the text.

ELAGSE4RI4: Determine the meaning of general academic language and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

ELAGSE4W3: Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences

ELAGSE4SL1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly

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Pre-Reading: Role in a Community

Activity 1: Making Connections

Materials: Chart paper (hung on the wall), [picture cards](#), tape, marker, sticky notes

In this activity, students will try to think of connections between aspects of the ecosystem using their prior knowledge. Provide each group of 3-4 students with picture cards. Have the students tape the picture cards onto chart paper. Challenge the groups to think of as many ways as they can that these pictures are connected to each other. When they think of a connection, they should draw a line between the two cards and describe the connection on a sticky note. They should stick the sticky note on the line. For example, they might draw a line between the mouse and the eagle and write on the sticky note that the eagle eats the mouse, or they might draw a line between the squirrel and the berry bush and write that the squirrel hides in the bush. Any connection made is acceptable for this activity. The sticky notes should remain on their chart. They will revisit the chart after reading.

Discussion: Have students share the connections they identify between the picture cards provided.

- What relationships did you find between the things in the pictures?
- Are there any patterns present when viewing the connections between animals and plants?
- How can this model help us to understand the relationship between living things in an ecosystem?

****NOTE:** The goal is for students to see the connections between the picture cards and construct explanations for the connections. This conversation and chart of connections will be needed for the post-reading activity.

Activity 2: Energy Flow Tag

Materials:

Clothespins- these will represent the energy from the sun.

Red stickers- for students who are playing the role of a consumer in the food chain.

Green stickers for students who are playing the role of a producer in the food chain

Blue stickers for students who are playing the role of a decomposer in the food chain.

[Role Cards](#) – these cards tell the students what organisms they are within the food chain.

An area outside or inside with enough room to move. See example set up.

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Sun

Energy Exchange Area

Start

Recycling Zone

The objective of the game is to model the flow of energy through the food chain.

1. Each student is given a role. *Please assign over half of your students as a producer or decomposer. (For example: Total class size of 30- 15 plants- tulips, acorns or berry bushes-, 5 decomposers- mushrooms-, 9 Mice, 1 Eagle or some variation of this using the role cards.)*
2. Once students have been given a role, they will need to place a sticker on their clothing in a visible spot. Red stickers are for consumers, green stickers are for producers, and blue stickers are for decomposers.
3. Students will read their role cards. These cards have important information about how much energy they need to collect during the game to survive.
4. Please review the safety rules for the game before starting. No grabbing the clothespins from each other, no pushing or shoving, make sure your shoes are tied, etc.
5. The teacher first starts by calling PLANTS (or Berries). Any student who is a plant needs to go to the spot that is designated as the sun or energy source. They can gather up to three clothespins.
6. After the plants have gathered their energy (up to 3 clothespins) they will go to the energy exchange area. The teacher will call out MICE. Mice will need to gather food from the plants by tagging the plants. When a plant is tagged by a mouse, they will need to give one of their clothespins to the mouse. The clothespin represents the energy that the mouse gets when it eats plants. Mice must gather at least two clothespins from plants in order to survive.
7. A plant is considered dead (out) if they only have one clothespin left. When an animal or plant doesn't have enough energy to survive, they will go to the designated recycling zone.
8. Mice that have two or more clothespins will stay in the energy exchange area.
9. Next, the teacher will call out EAGLES (Consumer). Eagles will need to gather food from the mice by tagging the mice. When a mouse is tagged, they will give the eagle all their clothespin

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except for one and go to the recycling zone. The clothespin represents the energy that eagles receive when they eat prey. An eagle needs at least 3 clothespins to survive.

10. A mouse is considered dead (out) if it gets tagged by an eagle. When an animal or plant doesn't have enough energy to survive, they will go to the designated recycling zone.

11. Eagles who have at least 3 clothespins will return to start.

12. The teacher will then call DECOMPOSE! All students who are in the recycling zone and students who play the role of decomposers will go to the energy exchange area.

Decomposers will gather energy by tagging a dead plant or animal. Students will give their remaining energy source (clothespin) to the decomposer and go to start.

The teacher will continue the process until two organisms remain. Have the students discuss the organisms that survived and why?

- Let's think about the last two organisms alive. Why has this occurred this way?

The teacher should state, "Last organism, your food has become scarce. If you do not have any food left in this community, you must move to a different community or perish." Decomposers, left standing, should collect the pins from the final organism.

The teacher should let the students know they just used a model to simulate the flow of energy in food chains. Discuss with students the strengths and limitations of the model. Some questions to assist students in discussing the strengths and limitations of the model are:

What about the model simulated what happens in food changes in nature?

What about the model does not simulate what happens in food chains in nature?

Then return to the classroom and discuss:

1. Where did the energy start out?
2. What path did the energy clips take during the game?
3. What happened if an organism didn't get enough energy?
4. Which role had the most organisms to get energy from?
5. This game is a model. Models usually represent some parts of life well but don't represent other parts accurately. How is this game similar to what happens in real life?
6. How is this game different from what really happens? *(For this question, include obvious answers like "energy isn't a clothespin," but also push the conversation to consider things like other organisms present in an ecosystem and the idea that the bushes and mice would reproduce and not just die out.)*



Reading: “Just Role with It”

(Introduce the Reading) Tell students that they are going to read an [article](#) that provides more information on how energy passes through a community, similar to the game they just played.

Reading Skill: Finding the meaning of new words

Notice the text discusses the roles of producers, consumers, and decomposers in a community following the day of a rabbit. These paragraphs provide good opportunities for students to identify the main idea and supporting details and recognize meanings of new vocabulary through context clues. As students read the text, they should complete the [Finding the meaning of new words graphic organizer](#).

Reading Skill: Finding the Meaning of New Words

In science texts, the definition of a new word is usually given just before or after the first time the word is used. Students will encounter the words producer, consumer, and decomposer in this text. Before giving them the text, put this sentence on the board:

All of the living and nonliving things in an area are called an ecosystem.

Ask students to tell you the meaning of the word “ecosystem” based on that sentence. Then point out that the word “called” is a clue that the sentence is telling them a definition. Tell them that there are several clues that can signal a definition, including the words *called*, *known as*, or *which means*. The meaning may also be given by the word “or” if it comes after a comma.

As students read, they should be looking for the meaning of the new words in the text and how those words are signaled. After the first read, have them reread the text using the graphic organizer to identify the meanings of the words and what clues show that a definition is being given.

Post-Reading: Visualize the Text and Make Connections

Writing Skill: Writing narrative texts

Activity 1: Review and/or revise the model

Have students return to the model they made in activity 1. Have students revisit the connections they made and think about what they have learned.

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Ask students:

- Would you change your model now that you have more information? Why or why not?
- Can you identify the organisms in the model from activity 1 that are producers, consumers, or decomposers?
- How does energy flow through an ecosystem or community?

Activity 2: The Narrative

Have students choose an organism and then write a narrative about that organism's life. The organism can be a producer, consumer, or decomposer. Students should think about the following questions as they prepare to write:

- What organism do you want to write about?
- What are the roles of producers, consumers, and decomposers in a community?
- What organisms might your chosen organism interact with in their community?
- What organisms could represent the producer, consumer, and decomposer in the narrative?

Writing Prompt: Using the information provided in the pre-reading activity and text, write a narrative choosing one animal and the experiences it has in a day. Be sure to include descriptive details and a clear sequence of events to include a beginning, middle, and end. In the writing, include the relationship of the sun's energy, producer, and decomposer and explain their role in the community.

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Print Ready Student Sheets

Role cards: Cut out the following organisms to function as role cards to give students information about what organisms they are within the food chain.

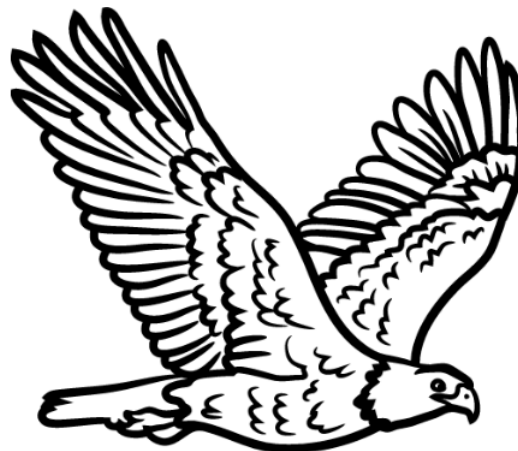
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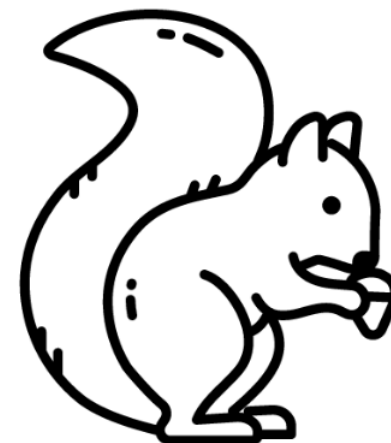




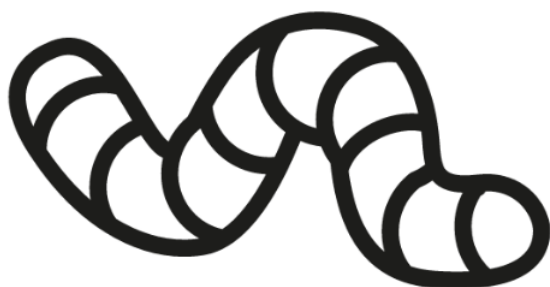
Mice



Eagle



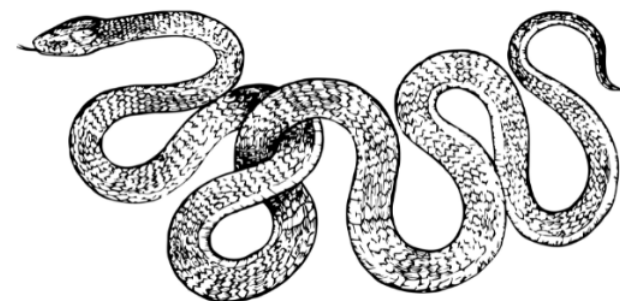
Squirrel



Earth Worm



Gopher



Snake

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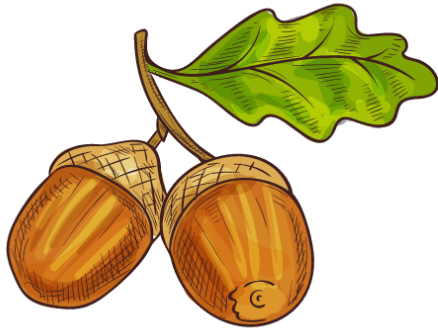
Tulip



Berry Bush



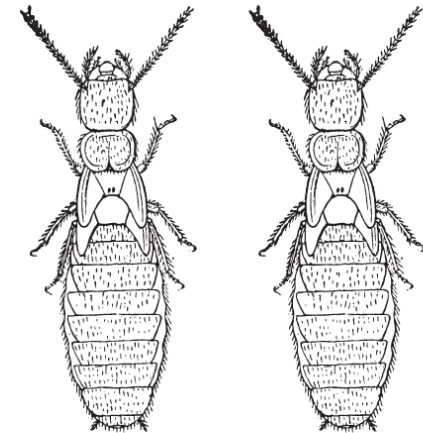
Sun



Acorn



Mushroom



Termite

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Finding the Meaning of New Words

Directions: Read the article and fill in the following chart to find the meaning of new words.

	Producer	Consumer	Decomposer
What is the meaning of the word?			
What was the clue or signal in the text that helped you find the definition?			
Give an example of this type of organism from the text.			

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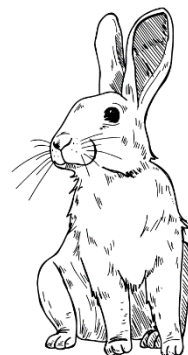


Some Bunny's Day



Early one spring morning, the sun shines brightly, the flowers bloom and stretch toward the sun, and a rabbit leaves its burrow in search of food. Why does the rabbit need food? Food gives the rabbit energy, and all living things need energy to live and grow. In fact, scientists sometimes sort organisms by how they get the energy they need.

Strawberries have lots of energy, but the strawberry fields are not close by. The rabbit has to be careful as it travels. It races across a dry field and through a canopy of trees. It wants to find a meal, not become one!



The sun shines on the grass and the strawberry plants. Plants use the sun's energy to produce sugars for food. This is why scientists call plants **producers**. The sugar that the producers make will help the plants live and grow. But those sugars can also provide energy for animals, like the rabbit entering the strawberry fields.

The rabbit crouches in the tall grass, sizing up the bright and tender strawberries. The rabbit begins to consume all the berries its stomach can hold. The rabbit is a **consumer**, which means an organism that eats other living things for energy.



As the rabbit dines on the producers in the field, a fox appears. The fox is also a consumer. However, the fox eats animals, not plants.

The rabbit spots the fox and races for cover. During the chase, the bunny passes a dead tree covered with mushrooms. The mushrooms have another role in the community. They act as **decomposers**, or organisms that break down dead plants and animals. Decomposers recycle nutrients into the soil and earth. The bunny keeps hopping. It doesn't want to be the next dead organism.



As the rabbit draws closer to its burrow, the fox is distracted by the sound of mice. Pounce! The mice do not survive, but the fox has gained energy.

The rabbit slips into its burrow, unharmed. The strawberries were good, but the rabbit used a lot of its energy racing home. Next time, it will search for food a little closer.

Energy moves through every ecosystem. Producers, consumers, and decomposers rely on each other for energy. Plants, the producers, use the sun's energy to make their food. Then, consumers eat the producers and the energy passes on. One group of consumers, including rabbits, eat producers. Another group, including foxes, eat other consumers. Eventually, both the producers and the consumers die. Then the decomposers, such as mushrooms and bacteria, break down the remains to get any leftover energy.

