Lesson 1.6
The Role of Food in an Ecosystem
Lesson Overview

Students build on what they have been learning and apply it to thinking about matter as it flows through an ecosystem. First, the teacher guides students to answer the Investigation Question: *How do animals grow?* by making an evidence-based argument. Students then work with the digital Ecosystem Modeling Tool to show how they think matter flows through an ecosystem. Next, students engage in a reflective writing activity during which they apply their understanding of how animals grow to the Costa Rican rain forest project area. This activity serves as a Critical Juncture through which students demonstrate their understanding of chapter content thus far. This Critical Juncture Assessment will reveal students’ readiness to move on to the next section of Chapter 1 by determining whether they have gained a foundational understanding of how organisms grow and how they get and use the molecules required for growth and energy. Students then read the second half of *Matter Makes It All Up* and are introduced to food webs as a way that ecologists show what eats what in an ecosystem. After reading, students use the Shared Listening routine to reflect on what they have read about food webs.

**Anchor Phenomenon:** The jaguars, sloths, and cecropia trees in a reforested section of a Costa Rican rain forest are not growing and thriving.

**Students learn:**

- A system is a group of parts that work together. Each part in the system plays a role.
- An ecosystem is a system.
- There are many ways that organisms in an ecosystem get their food molecules—organisms eat a variety of things.
- A food web is a diagram that ecologists make to show what eats what in an ecosystem.
Partner Reading

Students read the rest of *Matter Makes It All Up* and then use the Shared Listening routine to reflect on what they read about food webs.

Instructional Guide

1. **Introduce a new Investigation Question.**
   - We know that animals eat to get the food molecules they need. Where do those food molecules come from?

2. **Set purpose for reading.**
   - You will read pages 12–19 of *Matter Makes It All Up*. As you read about what eats what in different ecosystems, think about where all the food molecules for that ecosystem come from.

3. **Designate partners and distribute books.**

4. **Partners read pages 12–19.** Circulate as students read and provide support as needed.

5. **Discuss the food web on page 17.** Regain the class’s attention. Have students turn to page 17 in their books.
   - Let’s take a closer look at this food web from the Everglades Swamp ecosystem.

Point out how this food web includes organisms of a variety of sizes and species from microbes to plants to animals. Ask students to take a close look at the food web and think again about where the food molecules in the ecosystem came from.
6. **Introduce Shared Listening routine.** Explain that students will use a routine called Shared Listening to further discuss the results of their investigations. Add that during this routine, they will have a chance to talk and listen to a classmate. Describe the routine, step by step.

- Teacher poses a question.
- Partner A shares for one minute while Partner B listens.
- Partner B restates what they heard Partner A say. Partner A can correct misstatements, if necessary, but not add any new information.
- A few students share with the class.
- Partners switch roles for a second question. (Partner B will share, and Partner A will listen and then restate Partner B’s ideas.)

7. **Assign pairs for Shared Listening.**

8. **Conduct Shared Listening.**

- **Project Shared Listening Question 1.** Read aloud the first question.

### Shared Listening Question 1

Start with the algae and follow the arrows up to the alligator. What eats what in this ecosystem?

Give pairs a minute to discuss the first question. When you give the signal, Partner B should restate Partner A’s answer.
• Project Shared Listening Question 2. Read aloud the second question.

**Shared Listening Question 2**

Start with the algae again, but this time, find a different way up to the alligator. What eats what in this ecosystem?

Start with the algae again, but this time, find a different way up to the alligator. What eats what in this ecosystem?

Give students a minute to discuss the second question. When you give the signal, Partner A should restate Partner B’s answer.

9. Call on a few students to share ideas about both questions. Emphasize that a food web shows many ways that organisms get food molecules.

10. Pose a new question.

Where does the alligator get its food molecules?

[Through many other organisms that eat one another.]

There are many ways that organisms in an ecosystem get their molecules. Raccoons might eat frogs, carp, or crayfish. An alligator might eat a great blue heron or a raccoon.

Point out that students themselves get their molecules from different foods as well.

11. Collect books and Investigation Notebooks. You will review students’ writing at the end of the day.

12. Preview the next lesson. Explain that students will have the opportunity to make models of ecosystems that will help them explore where food molecules in an ecosystem come from.
Teacher Support

Background

Discourse Routine: Shared Listening
This is the first of several times that students will use the Shared Listening discourse routine. Shared Listening helps students activate prior knowledge and discuss science ideas. It also helps students practice active listening skills. This routine is especially helpful for English learners as it allows students to hear models of language from their peers before sharing with the whole class. It also provides an opportunity to informally assess students’ understanding of the concepts as well as where additional supports are needed. In this lesson, students use the Shared Listening routine to examine a food web closely and to draw the conclusion that there are many kinds of eating relationships within one ecosystem.
Partner Reading

Students read the rest of *Matter Makes It All Up* and then use the Shared Listening routine to reflect on what they read about food webs.

**Instructional Guide**

1. **Introduce a new Investigation Question.**
   - Sabemos que los animales comen para obtener las moléculas del alimento que necesitan. ¿De dónde vienen esas moléculas del alimento?
   - Read the next Investigation Question aloud.
   - ¿De dónde vienen las moléculas del alimento en un ecosistema?

2. **Set purpose for reading.**
   - Leerán las páginas 12 a 19 de *La materia constituye todo*. Mientras leen sobre qué come qué en diferentes ecosistemas, piensen de dónde vienen todas las moléculas del alimento para ese ecosistema.

3. **Designate partners and distribute books.**

4. **Partners read pages 12–19.** Circulate as students read and provide support as needed.

5. **Discuss the food web on page 17.** Regain the class’s attention. Have students turn to page 17 in their books.
   - Examinemos más de cerca esta red alimentaria del ecosistema del pantano de los Everglades.
   - Point out how this food web includes organisms of a variety of sizes and species from microbes to plants to animals. Ask students to take a close look at the food web and think again about where the food molecules in the ecosystem came from.
6. **Introduce Shared Listening routine.** Explain that students will use a routine called Shared Listening to further discuss the results of their investigations. Add that during this routine, they will have a chance to talk and listen to a classmate. Describe the routine, step by step.

   - Teacher poses a question.
   - Partner A shares for one minute while Partner B listens.
   - Partner B restates what they heard Partner A say. Partner A can correct misstatements, if necessary, but not add any new information.
   - A few students share with the class.
   - Partners switch roles for a second question. (Partner B will share, and Partner A will listen and then restate Partner B’s ideas.)

7. **Assign pairs for Shared Listening.**

8. **Conduct Shared Listening.**

   - **Project Shared Listening Question 1.** Read aloud the first question.

   **Pregunta 1 de escucha compartida**

   Comiencen con las algas y sigan las flechas hacia arriba hasta el caimán. ¿Qué come qué en este ecosistema?

   Comiencen con las algas y sigan las flechas hacia arriba hasta el caimán. ¿Qué come qué en este ecosistema?

Give pairs a minute to discuss the first question. When you give the signal, Partner B should restate Partner A’s answer.
· Project Shared Listening Question 2. Read aloud the second question.

**Pregunta 2 de escucha compartida**

Comiencen con las algas de nuevo, pero esta vez, busquen un camino diferente hacia arriba hasta el caimán. ¿Qué come qué en este ecosistema?

Give students a minute to discuss the second question. When you give the signal, Partner A should restate Partner B’s answer.

9. Call on a few students to share ideas about both questions. Emphasize that a food web shows many ways that organisms get food molecules.

10. Pose a new question.

¿De dónde obtiene el caimán sus moléculas del alimento? [A través de muchos otros organismos que comen uno al otro].

Hay muchas maneras en que los organismos en un ecosistema obtienen sus moléculas. Los mapaches podrían comer ranas, carpas o cangrejos de río. Un caimán podría comer una gran garza azul o un mapache.

Point out that students themselves get their molecules from different foods as well.

11. Collect books and Investigation Notebooks. You will review students’ writing at the end of the day.

12. Preview the next lesson. Explain that students will have the opportunity to make models of ecosystems that will help them explore where food molecules in an ecosystem come from.
Teacher Support

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