

Matter Cycles-Sum It Up

Lesson Concept Matter cycles in food chains.

Link In the last lesson, the student learned microbes can be beneficial or harmful. As decomposers, they are beneficial. In this lesson, students review the concept that matter cycles in a food chain. In the next lesson, students will learn a food web is an interrelated group of food chains in a community.

Time 45 minutes

Materials Whole Class

8 copies of “The Matter (Nutrient) Cycle Skit”

Props for the skit are optional:

1 Megaphone (or traffic cone) for Narrator 1

1 Large leaf (or large piece of construction paper) for caterpillar

1 Cowboy hat for Decomposer Fungus

1 Microscope

Individual

Sun/apple diagram

Advance preparation

1. Copy 8 skits.
2. Duplicate and cut the sun/apple diagram so that each student has a copy.
3. Gather props for play if available.

Teacher Note: This play was adapted from Adapted from “The Energy Pyramid and Nutrient Cycle Skit” by Lauri Dahlin. It was edited to emphasize that matter cycles in food chains.

Procedure:

Engage (10 minutes) *Living things get nutrients through a food chain.*

1. Ask students in a think-pair-share what occurs in a food chain and why food chains are important.
2. Ask several partners to share, making sure that the discussion incorporates the following ideas:
 - food chains describe who eats whom
 - food chains recycle matter

- food chains provide nutrients for others in the chain.
3. Tell the class, “Today, we will do a readers theater to review the idea of how these nutrient (matter) cycle in the food chain.”

Explore (15 minutes) Matter cycles through a food chain.

4. Select 8 “on grade level” or “above grade level” readers.

Teacher note: If you would like to select students who are not at grade level, give them the opportunity to read the play on their own the day before.

5. Distribute a copy of the skit to each of the 8 selected students. As you do so, assign roles from the list of characters.
6. Follow the directions in the play and have the children do a readers’ theatre.

Explain (10 minutes) Matter cycles through a food chain.

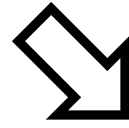
7. Write the statement “Matter cycles through a food chain,” on the board. In partners ask students to use the play to explain what this statement means.
8. Ask partners to share their ideas, helping them understand that the matter in the plant (producer) becomes the matter in the animals (consumers), becomes the matter that is broken down(decomposers) to be once again consumed by the plant.

Extend (5 minutes) All components of the food chain are important.

9. Ask the students which of the cast members (not including the narrators) was the most important in the food chain. The sun? The producers? The consumers? The decomposers? Have them discuss this at group tables.
10. Facilitate a discussion with the class as a whole, noting that all of them are important for matter to cycle. If any parts are removed, the cycle is broken.

Evaluate (10 minutes) Matter cycles through a food chain.

11. Distribute 5x7 cards with the imprint of an apple and the sun on them.
12. Ask students to diagram the series of changes in a food chain an apple may go through. Their description must include an example of a producer, consumer, and decomposer. It must also start at the beginning and show the entire cycle in simple terms as if they were going to share this with their little buddy.
13. Matter cycles through food chains, which means that all of the matter on Earth has been around since the beginning in different forms. This means you are breathing the same air that dinosaurs breathed and drinking water that George Washington drank. What amazes you about this idea?



MATTER (NUTRIENT) CYCLES PLAY

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Cast:

The Sun

Narrator 1

Producer Cocoa Tree

Herbivore Caterpillar

Consumer Bat

Narrator 2

Decomposer Fungus Mushroom

Decomposer Bacteria

Narrator 1 is on stage.

Narrator 1: Welcome to the Tropical Rainforest of Panama! Did you know that **Plants** are **Producers**?

The Sun walks by with a megaphone yelling: “Lights, Camera, Action!”

Narrator 1: No, no, no, not the kind that makes movies, but the kind that make their own food. They make their food by taking in energy from **the Sun**.

The Sun walks by beaming and making muscle with his/her arm.

Narrator 1 continues: Green plants also take in nutrients, carbon dioxide, and water to produce their own food! They use most of the food they make for themselves, but they do pass along a small amount to consumers. What’s a consumer you ask? Well, you should know that all **animals** are **consumers**. Poor consumers, they can’t make their own food like producers.

Producer walks across the stage shaking his head and saying: Boo hoo hoo, poor Consumers.

Narrator 1: Not so fast, Producer. Consumers get their energy and nutrients from food that already exists. They can’t make their own food, but they can get some of your energy by **EATING YOU!!!!** That’s right, Producer, nutrients and energy pass from you to consumers when they eat you!!!! The consumers that eat producers are called **first level consumers**. It’s kind of like going up to the 1st floor of a tall pyramid. You producers are on the ground floor so to speak, but you do play a very important role.

Producer to Narrator 1: If I’m so important, why don’t you introduce me? Never mind, I’ll introduce myself. Hi, I’m the Coca Tree. I’m from the Tropical Rainforest of Panama. I get my energy from **The Sun** and from the nutrients and water my roots soak up.

The Sun walks by beaming and flexing his/her muscles again.

Producer to Narrator 1: I also take Carbon Dioxide from the air. I use these things to make my own food! This process is called **photosynthesis!** Oh no, what's that crawling on my leaf? Oh, oh, it's a pesky consumer!

Caterpillar walks on stage carrying a large leaf, which it takes a bite out of from time to time as it talks.

Caterpillar: Hi, I'm a caterpillar. I only eat plants so I'm called an **herbivore**. I munch on the leaves of the cocoa tree. Boy, do they taste good! I just love producers like the cocoa tree! Although I'm an insect, some mammals are also herbivores. What's that up there? I've got to hide under this leaf because flying above me is another consumer, but this one eats insects! It's a **secondary consumer** because it eats another consumer (little old ME!!!!).

Bat speaks with a vampire accent: Watch out, I'm a bat. I like to eat herbivores like the caterpillar. I get my nutrients and energy from eating the caterpillar. I live in the tropical rainforest too. I just love hanging upside down from the trees when I sleep, but I especially love swooping up juicy caterpillars!

The bat flies off the stage as Narrator 2 enters with Decomposer Fungus

Narrator 2: Eat, eat, eat that's all those consumers do! However, if there were only producers and consumers, life would get very messy and stinky. What do I mean? Well, let me introduce you to **Decomposer Fungus**.

Decomposer Fungus Mushroom with a cowboy accent: Howdy partner. I'm kind of fungus, **Mushroom's** my name. Fungi (there are a lot of us you know) are called **decomposers** because we eat anything that is dead: dead plants, dead animals, and something called frass. Yup, I know it sounds gross, but frass is dead animal waste. Yup, we eat that and yum, we also eat poop! Well, maybe our food isn't for everyone, but without us, the Food Chain would be broken. There would not be any nutrients for plants. Not only would plants not have the nutrients they need to grow, but pretty soon, the world would fill up with dead plants, bodies, and poop! Would you like that? I reckon you wouldn't.

There are lots of kinds of fungi, you probably know my cousin, **Decomposer Mold**. **Mold** grows on your food when it has been sitting around too long. However, I'm not the only decomposer around here, but you might need a microscope to see my partner **Decomposer Bacteria**.

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Decomposer pretends to look into a microscope as Bacteria rolls on stage.

Bacteria: Why, you are down right kind to mention me, Decomposer Fungus. Because I am **microscopic**, I am often forgotten. You know the saying, **Out of sight, out of mind!**

Bacteria turns to the audience to speak: Now you thought **you** invented **recycling**, but partner let me tell you, my fellow decomposers and I have been recycling long before you were born! We **recycle nutrients** from dead plant and animal matter and return them to the soil so those pretty little green producers can reuse them to make their food. I might be small, but I'm mighty.

All cast members join the others on stage.

Narrator 2: Well, as you can see nutrients travel through the food chain in a never-ending cycle. It takes the energy from **The Sun** to get the ball rolling. Then nutrients and energy will pass from the producers to the first level consumers, second level consumers, etc. kind of like going up an elevator. Then the decomposers return the nutrients back to the producers. Don't forget, none of this would be possible without energy from **The Sun!**

The Sun walks by beaming and clasping his/her hands above his/her head like a champion fighter. Then the Sun takes a bow and encourages the other cast members to bow.

The End

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