Science Learning Packet
Grade 7:
Matter and Energy in Ecosystems, Lesson 6

science learning activities for SPS students during the COVID-19 school closure.

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Due to the COVID-19 closure, teachers were asked to provide packets of home activities. This is not intended to take the place of regular classroom instruction but will help supplement student learning and provide opportunities for student learning while they are absent from school. Assignments are not required or graded. Because of the unprecedented nature of this health crisis and the District's swift closure, some home activities may not be accessible.

If you have difficulty accessing the material or have any questions, please contact your student's teacher.

Matter and Energy Lesson 2.1

At the end of the last lesson, you learned there was not enough carbon dioxide in the biodome's air, which led to a decrease in energy storage molecules inside the biodome.

What are some ideas you have about what might have caused the decrease in carbon dioxide? **Record some initial claims. You will have an opportunity to revise them after you learn more.**

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Show your ideas about which parts of an ecosystem give off carbon dioxide and which parts do not, sort the organisms into the categories you think they fit with:

- Soil Bacteria: decomposer
- Fallen Leaves: dead matter
- Elodea Plant: producer
- Mushroom: decomposer
- Snake: secondary consumer

Gives off carbon dioxide	Does not give off carbon dioxide

Snail and Elodea Experiment:

Investigation Question: Where does the carbon dioxide in abiotic matter come from?

Do producers give off or take in carbon dioxide? What about consumers? Can producers and consumers do both?

Gather evidence by watching the video of an experiment with a snail and some Elodea.

1. Record your predictions for which organisms will give off carbon dioxide in the table below.

2. Observe the color of the BTB solution in the video to figure out which organisms give off carbon
3. dioxide.

4. Record the results in the table below.

BTB Solution Experiment Key:

The color of BTB changes depending on how much carbon dioxide is added:

- blue = no carbon dioxide
- green = low carbon dioxide
- yellow = high carbon dioxide

Data:

	Prediction: Will the organism give off carbon dioxide during the experiment? (yes or no)	**Results:** Did the organism give off carbon dioxide during the experiment? (yes or no)
Snail (dark)		
***Elodea* plant (dark)**		

Do producers give off or take in carbon dioxide? Use evidence from the investigation:

_____

_____

_____

Do consumers give off or take in carbon dioxide? Use evidence from the investigation:

_____

_____

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Part 1: Reading A Feast for Decomposers

At the start of the lesson, you used the Sorting Tool to make predictions about which parts of an ecosystem give off carbon dioxide. In the video, you got evidence about whether producers and consumers give off carbon dioxide. Now, you will learn more about a third type of organism in ecosystems—decomposers.

Read the introduction of the article, A Feast for Decomposers, below and highlight any information that helps you determine whether decomposers give off carbon dioxide.

Active Reading Guidelines:

- Do a pre- scan of the text: *Are there any repeated words that you haven't seen before?*
- Highlight unit science words
- Underline sections that provide us with evidence to help us understand our investigative question
  - Investigation Question: Where does the carbon dioxide in abiotic matter come from?
- Circle new ideas or things you do not understand and annotate with questions and comments

A Feast for Decomposers

Chapter 1: Introduction

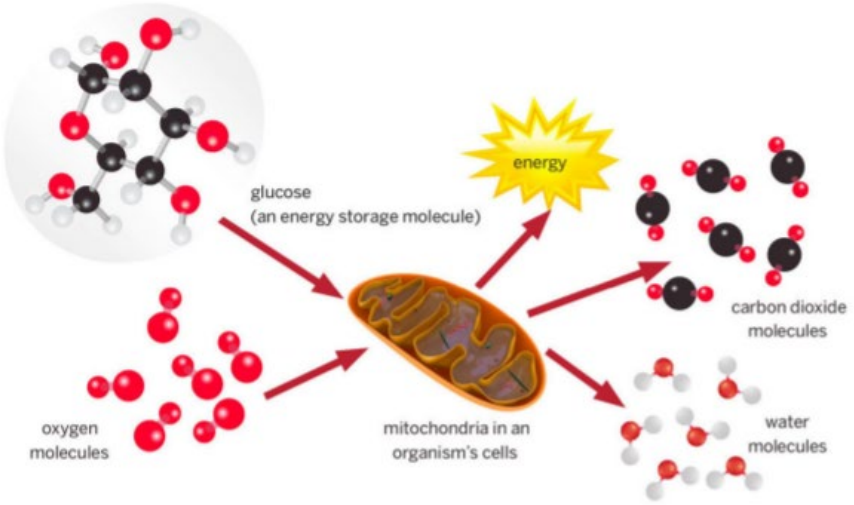
Imagine you're invited to a feast. When you get there, your host serves you droppings, dry brown leaves, bare bones, feathers, and a fallen tree. But you can't eat that! This is a feast for decomposers, not for humans. Decomposers are fungi, bacteria, worms, and other small organisms that specialize in breaking down dead matter.

Decomposers can break down things that nothing else can. Bones, droppings, and other dead matter may not seem like food, but they contain materials that decomposers can use for energy and growth. For example, dead matter contains energy storage molecules that many decomposers use for cellular

Droppings may not seem like food, but to decomposers, they make a good meal.

Decomposers can break down something as large as a fallen tree.

Cellular Respiration



In cell parts called the mitochondria, glucose (an energy storage molecule) plus oxygen combine to make carbon dioxide plus water, releasing energy. This process is called cellular respiration.

respiration. Cellular respiration is a process that many organisms, including humans, use to release energy in order to survive. During cellular respiration, oxygen and energy storage molecules combine, releasing energy and giving off carbon dioxide. Energy storage molecules contain carbon, an important component of living things. Through cellular respiration, decomposers are able to release carbon found in dead matter, making it available to the ecosystem. Without decomposers, this carbon would stay trapped in the dead matter. Decomposers don't just release carbon from dead matter, they also make other materials available to an ecosystem, such as nitrogen. Nitrogen is a critical nutrient for plant growth. Decomposers may be small, but they play an important role in any ecosystem. To learn more about decomposers, read one or more of the chapters that follow.

After reading the article and collecting evidence in the *Elodea* and snail video, choose which parts of the ecosystem that you think give off carbon dioxide to the air:

☐ decomposers

☐ producers

☐ consumers

☐ dead matter

☐ abiotic matter

Was your thinking the same or different than your ideas in the sorting tool on the first page?

The same

Different

New Science Words:

- **decomposer**: an organism that gets energy storage molecules (such as glucose) by breaking down dead matter