



Science Learning Packet

Grade 7:

Matter and Energy in Ecosystems,

Lesson 11

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.



Grade 7 Science Instructional Materials
Matter & Energy in Ecosystems Unit
Lesson 11 (Amplify Chapter 3, Lesson 3.3)

AmplifyScience



Matter and Energy in Ecosystems

Name _____

School _____

Class Period _____

Teacher _____

Hello Families,

We hope you and your family are well and safe during this time. During this unprecedented out-of-school time, the SPS middle school science team will be offering instructional opportunities for students that align with the district's adopted middle school science instructional materials.

This investigation packet is part of a series of district-aligned lessons for middle school **science developed by AmplifyScience** and adopted by SPS in 2019. While Amplify Science lessons are designed to be done in the classroom with peers, there are some activities that students can complete at home.

In this packet you will find activities to accompany the **lesson videos being aired this week through Seattle's Public television programming on [SPS TV](#) (local channel 26). The videos and packets are also posted to the, [SPS Science webpage](#) under their corresponding grade level.** These lesson videos, developed in collaboration between SPS teachers, Denver Public Schools teachers, and Amplify Science, feature teachers going through the information in the lessons. **The work in this packet is intended to be completed alongside the viewing of the video of the corresponding videos.**

Closed captioning for the videos is available many home languages if this helpful to your family.

- Click CC (bottom right of video)
- Click Setting (the gear next to CC)
- Click Subtitles/CC
- Click Auto-translate
- Choose your language

For students who have access to the internet and the following devices and browsers **may wish to log-in to their AmplifyScience account from home are welcome to do so.** Chrome and Safari are the recommended browsers to use for full functionality of the Amplify digital tools and features.



Sincerely,
Seattle Public Schools Science Department

Lesson 11 Matter and Energy in Ecosystems

In Chapter 2, you learned that the decomposer population in the biodome decreased. This meant that fewer organisms were doing cellular respiration. As a result, less carbon dioxide was given off, so the amount of carbon dioxide in the air decreased. If the carbon is no longer in the air (abiotic matter), where could it be?

Based on what you learned about carbon movement in ecosystems, which claim best answers the Chapter 3 Question? (check one)

What happened to the carbon that used to be in the air (abiotic matter) of the biodome?

Claim 1: The carbon that used to be in the air (abiotic matter) is no longer in the biodome, so total carbon decreased.

Claim 2: The carbon that used to be in the air (abiotic matter) is now in another part of the ecosystem, so total carbon stayed the same.

Briefly explain your claim choice.

Exploring in the Digital Model:

When the decomposer population decreased, the amount of carbon dioxide in the biodome went down. We know that the carbon that used to be in the air (abiotic matter) is now in another part of the ecosystem, because the total carbon stayed the same. But where is the carbon now? In order to plan their next biodome experiment, the Econauts need to know. Use the Sim to help you find the answer!

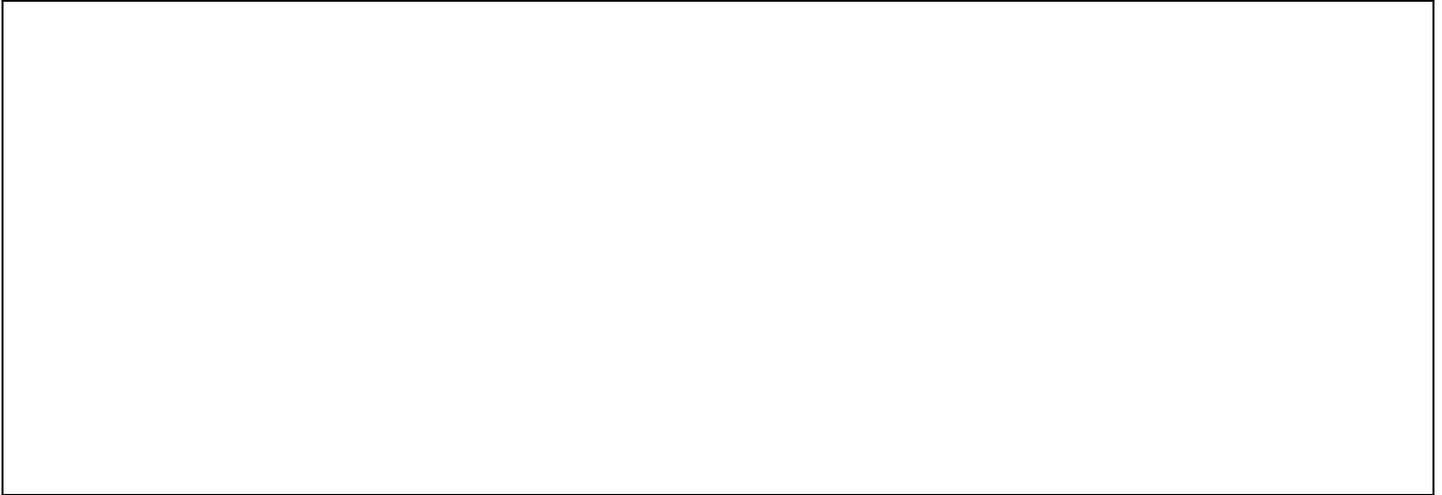
What happened to the carbon that used to be in the air (abiotic matter) of the biodome? Where did the carbon go? (Check one of the options to predict where the carbon went.)

- The carbon is now in the producers of the ecosystem.
- The carbon is now in the consumers of the ecosystem.
- The carbon is now in the decomposers of the ecosystem.
- The carbon is now in the dead matter of the ecosystem.

Use the Sim to test your prediction.

1. Open the Matter and Energy in Ecosystems Sim.
2. Press PLAY and run the Sim using the default settings for 20 time units.
3. Pause the Sim and kill all the decomposers.
4. Press PLAY to run the Sim for at least 100 more time units.
5. As the Sim runs, observe what happens to the carbon in the different parts of the ecosystem.
 - a. Where did the carbon that used to be in abiotic matter go? *Hint: Check Info view and look at how the amount of energy storage molecules changes in each part of the ecosystem or look at the graph and use the Graph Molecule preset.*

Sketch the graph you observed below:



Was your prediction correct?

Yes / No

In the space below, provide evidence from Info view or Graph view that shows what happened to the carbon that used to be in the abiotic part of the ecosystem.

As we saw in the Sim, when the **population of decomposers decreased, the amount of energy storage molecules in dead matter increased**. We still need to understand more about **why** the decomposer population was decreasing, read Dr. Corry's email below.

To: Student Ecologists
From: Dr. Bryan Corry
Subject: *The Biodome Files*

I've been reading through the *Biodome Files* to try and get a better sense of what went wrong in the biodome. You've been focusing a lot on decomposers in this chapter, so I left some notes in the files. I'd like you to look at these files again, and use my notes to help you think about what might have caused the decomposer population to decrease. With any luck, we might be able to come up with a good explanation for the biodome's failure.

Bryan
Dr. Bryan Corry, Head Ecologist
Biodome Investigation Team

Read through the Biodome Files and look for Dr. Corry's notes. Start by looking at the files where Dr. Corry left notes—Files 2 and 3. Look at the other files if you have time.

Review your annotations in the Biodome Files. **Based on your evidence, write a claim that can explain what caused the decomposer population to decrease.**

The decomposer population was decreasing because _____

I know this because in the *Biodome Files* I read that _____

