



# SOIL WEB

# Garden

EST. TIME 45 minutes SEASON fall 

GRADE 1 | LESSON #5

## ? ESSENTIAL QUESTION(S)

- What lives in the soil and how do they work together (like a web) to help our garden?

## MATERIALS

- Fungus and Invertebrates from the garden
- Chart paper, Easel, Markers
- Magnifying tools (1 per every 2 students)
- A Log's Life* by Wendy Pfeffer
- Journals (1 per student)
- Clipboards (1 per student)
- Pencils, Colored Pencils, Handheld Sharpeners (enough for all students)

## Abc VOCABULARY

- Decomposing, decomposers, decomposition
- Fungus
- Bacteria
- Invertebrates

## ASSESSMENT

- Observational checklist

## PREPARATION (15 MINUTES)

To prepare for this lesson, gather all materials and check for rotting things in the compost pile or around the garden to point students to during their exploration. Also, read *A Log's Life* by Wendy Pfeffer to develop comprehension questions for read aloud.

## TEACHER BACKGROUND

The process of decomposition can be hard for students to see in a single observation, but with a close look, evidence can be found; particularly when students are introduced to specific types of decomposers and know exactly what they are looking for. This lesson introduces 3 types of decomposers: fungus (mold, mildew, mushrooms), bacteria (microscopic), invertebrates (beetles, slugs, ants, worms, spiders). These decomposers work together to form a soil web.

## LESSON DESCRIPTION

In this lesson, students will explore the idea that not everything in the garden is growing, some things are breaking down to let others grow. They will sing a song introducing the lesson vocabulary before searching for evidence of decomposition or decomposers in the garden. The idea of decomposers is extended to the "Garden FBI: Fungus Invertebrates Bacteria" through a song and book. Then students will look for evidence of these organisms breaking things down so others can grow.



Use the lesson template to create your own and share with us!

## LEARNING OBJECTIVES

**Content Learning Objectives**

**GFS.1.2** Describe a soil web. Identify fungi, bacteria, and invertebrates.

**Life Skills Learning Objectives**

**PLS.2** Students are able to express empathy and caring for themselves, others, and the environment.

**CLS.2** Students cooperate and communicate well with each other.

## ACADEMIC STANDARD CONNECTIONS

**NGSS Science and Engineering Practice:** Engaging in Argument from Evidence

**CCSS.ELA-Literacy.SL.1.1** Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

CULTIVATE CURIOSITY (5 MINUTES) *engage*

1. Lead students to a comfortable sitting position in a central gathering area in the outdoor classroom space (in a circle, if possible).
2. Welcome students to the garden and provide them with a few minutes to silently observe from their seated position (using only their eyes and ears), what has stayed the same and what has changed since their last visit. Challenge students to consider what they believe is growing and what they believe maybe breaking down. After a few moments, discuss together.
3. Introduce the words **decomposing**, **decomposers** and **decomposition** through an activity such as singing the song "Decomposition" by the Banana Slug String Band.



See “Teaching Strategies” in Appendix section for information on how to manage transitions between whole and small groups effectively.

ROOT AROUND (10 MINUTES) *explore*


1. Explain to students that they will have time to explore the garden with a partner and they will use magnifying tools to look for evidence of things that are “dying to let another grow” (decomposing) and for evidence of the animals or other living things that are doing the “munch munch munch” (decomposers). Ask them for ideas of where they might have success, such as on rotting things and/or in the compost pile. Remind students of their boundaries and their callback signal to let them know to return to the whole group gathering space.
2. Pair up students and distribute magnifying tools then release students from the whole group gathering space.
3. As students explore the garden area, verbally acknowledge behaviors that reflect the life skills learning objectives, such as sharing fairly or treating creatures gently. Also, reinforce understandings of decomposers and decomposition through discussion with small groups.
4. Provide the call back signal for each student to return to the whole group gathering space.

GROW UNDERSTANDING (15 MINUTES) *explain*

1. In the whole group, discuss some of the evidence students found of decomposers and decomposition.
2. Explain to students that the main decomposers are called the “Garden FBI: **Fungus, Bacteria, and Invertebrates.**” Discuss how they all work together, interacting in a soil food web.
3. Read the book *A Log’s Life* to learn even more about the garden FBI. Ask students to raise their hand when they see any of the garden FBI during the read aloud, and add them to a chart.

F - FUNGUS	B - BACTERIA	I - INVERTEBRATES
<ul style="list-style-type: none"> <li>• Toadstools</li> <li>• Mildew</li> <li>• Molds</li> <li>• Mushrooms</li> </ul>	<p>(Explain to students that bacteria is microscopic and can not be seen and was not mentioned in the text, but an important worker in the process of decomposition)</p>	<ul style="list-style-type: none"> <li>• Beetles</li> <li>• Slugs</li> <li>• Snails</li> <li>• Ants</li> <li>• Spiders</li> <li>• Millipedes</li> <li>• Termites</li> <li>• Pill Bugs</li> <li>• Earthworms</li> </ul>

OBSERVE THE FRUITS (10 MINUTES) *elaborate*

1. Explain to students that they will have time to explore the garden with their partner again to look more closely for the garden FBI. Remind students of their boundaries and their callback signal to let them know to return to the whole group gathering space.
2.  As students explore the garden, acknowledge observed behaviors that align with the life skills learning objectives, such as caring for the environment. Also, use the observational checklist to assess students' current development of the life skills.
3. Provide the call back signal for each student to return to the whole group gathering space to collect their journals and coloring supplies. Cue students to transition from whole group listening to completing their tasks.
4. Read to students the following prompt to complete in their journal:

**Prompt:**

Draw a picture of at least 3 members of the garden FBI. Show what they look like, what they are doing, and where they are doing it.

REFLECT (5 MINUTES) *evaluate*

1. Recognize specific students' behaviors that aligned with being the best for themselves, their communities, and their environment. Specifically, ask students to reflect on how they showed care for the environment.
2. Review with students:
  - What lives in the soil?
  - How do they work together like a web to help our garden?
3. Sing the same song from the beginning of class as students line up to be dismissed.



## ADAPTING FOR INDOORS

In the case of inclement weather, the Cultivate Curiosity and Grow Understanding sections of this lesson can occur inside the classroom. The observations in the Root Around and Observe the Fruits sections should take place in the garden area on the next garden day that the weather allows.

## CONNECTIONS TO KITCHEN LESSONS

In **Kitchen Lesson #8: Eat-a-Pita Pizzas**, add mushrooms to the pizzas and highlight that mushrooms are fungi, and serve as decomposers.

## POSSIBLE EXTENSIONS

**Classroom:** Read aloud *Diary of a Worm* by Doreen Cronin

## ADDITIONAL RESOURCES

- *Life in a Rotten Log* by Malcolm Penny
- *Who Eats What?* By Patricia Lauber
- *Log Hotel* by Anne Schreiber
- Cornell Guide to Composting in Schools:  
<http://compost.css.cornell.edu/schools.html>
- Soil Food Web poster:  
<http://jessicagarden.net/wp-content/uploads//2011/02/soil-ffod-web.jpg>
- Compost Critters Field Guide (p. 15–17):  
<http://highfieldscomposting.org/news-resources/resource-library/do-the-rot-thing-a-teachers-guide-to-compost-activities>
- Soil Invertebrates:  
[http://ei.cornell.edu/teacher/pdf/D%26R/D%26R\\_Soil\\_Invert\\_ID.pdf](http://ei.cornell.edu/teacher/pdf/D%26R/D%26R_Soil_Invert_ID.pdf)
- Dirt, Secret in the Soil:  
[http://utah.agclassroom.org/files/uploads/estore/unit\\_dirt.pdf](http://utah.agclassroom.org/files/uploads/estore/unit_dirt.pdf)