


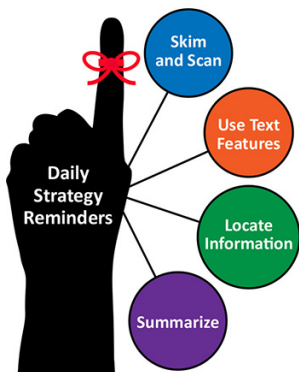


## Day 10: Nature’s Recyclers: Decomposers

-  **Mini-Lesson** Today is a time to practice previously taught reading strategies as needed.
-  **Inquiry Circles** As they near the end of their research with many questions answered, teams determine what other work needs to be done on their Inquiry Charts.
-  **Guided Science Investigation** Teams learn about decomposers and decomposition as they sift through leaf litter.

<b>Literacy Strategy:</b> identifying the main idea of a text.	<b>Reading TEKS</b> ELA.1.6G	<b>CCSS</b> RI.1.2
<b>Science Concept:</b> Decomposers have a very important job in a food chain. As they break down decaying and dead organisms, they release important nutrients that are then returned to the earth to maintain food chains.	<b>Science TEKS</b> <b>2018–19:</b> 1.2C, 1.2D <b>2024–25:</b> 1.1E, 1.1F	<b>NGSS</b> 1-LS3-1
<b>Science and Literacy Connection:</b> When authors don’t tell us what the main idea of the text is, we must determine this for ourselves. During an investigation, we need to figure out what the most important information is from our observations.		

### Mini-Lesson (15 minutes)



#### OVERVIEW

Mini-lesson practice should be used as a time to practice the reading strategies previously taught in this unit. Teachers are encouraged to use this time to best meet the needs of their learners. Perhaps your class needs more time with the mini-lesson from the day before, or you may choose to circle back to mini-lessons from a week ago. The choice is yours; we just ask that you use this time to practice!

Teachers should determine if this mini-lesson will be facilitated with the whole team or a small team (i.e., a particular inquiry circle team) that needs

additional support. If you are working with a small team, we suggest that your other learners spend additional time within their inquiry circles.

## Science Inquiry Circles (30 minutes)

### OVERVIEW

Work continues in inquiry circles to find answers to questions or to add additional information from different resources. This is a good time to monitor progress.

### MATERIALS

#### Each team needs:

- pencils
- team Inquiry Chart
- exploratory texts/media (or a Nearpod or similar tool created by the teacher; see the “Exploratory Texts and Media” spreadsheet for ideas)

#### Teacher needs:

- class Inquiry Chart about pill bugs
- “Inquiry Toolbox” anchor chart
- exploratory text, website, or eBook about pill bugs to model the strategy (optional)

### PROCEDURE

Each *italicized statement* below contains suggested wording the teacher may use for the lesson; additional teacher actions or considerations are in parentheses.

#### Before Inquiry Circles

1. *It is time to get into our inquiry circles. You will be with the same team as yesterday.*
2. *We have answered many of our Inquiry Chart questions. Remember, we use our Inquiry Chart to determine what questions still need to be answered. Today we will answer more questions or add use a different book, website, or eBook to add information to a question we’ve already answered.* (You may either remind your learners about the mini-lesson this morning, model it again using an additional resource, or point out that one resource may answer multiple questions.)
3. *Now, inquiry teams will work together on their Inquiry Chart.* (Be sure to display the class Inquiry Chart about pill bugs as a model.)

#### During Inquiry Circles (20 minutes)

1. *As you continue to look for information, do not forget that it is important to record your resources on the Inquiry Chart as you complete it.* (Remind learners that the class Inquiry Chart about pill bugs is visible as a guide. Also, you may choose to be more explicit for your class and only allow them to answer one question at a time daily. Use your judgement on the level of guidance.)
2. *Remember, we have anchor charts to help guide your thinking. Do not forget to use them while in teams.* (Refer to the “Inquiry Toolbox” anchor chart and all of the mini-lesson anchor charts. Remind learners that they can use any of the reading strategies during inquiry circles.)

3. *My role is to help guide the inquiry circles, but I expect you to work as a team to solve your problems together. (While teams are working together, walk around the room to facilitate as needed.)*

### **After Inquiry Circles (10 minutes)**

1. *As we conclude our inquiry circles for today, each team will have a chance to share the questions they answered, as well as what they accomplished and what reading strategies they used.*
2. *The Lab Director will lead the discussion about today's results. Discuss what the team learned about its outdoor organism. Which reading strategy did the team use? How did it help the team? What other problems did the team encounter? How did the team resolve those problems? (While teams are working together, walk around the room to facilitate as needed.)*
3. *The Data Scientist will now share with the entire class either something the team learned about their outdoor organism, a reading strategy they used, or how the team solved a problem. (Encourage teams to share a variety of things—you do not want just facts about outdoor organisms, just mini-lesson reading strategies, or just cooperative learning strategies. If you saw a great example in action, encourage that team to share with the entire class.)*

## **Guided Science Investigation (30–45 minutes)**

### **OVERVIEW**

Learners examine garden litter to look for signs of decomposition.

### **GUIDING QUESTIONS**

What is decomposition? What does decomposition look like? How do decomposers break down living things?

### **BACKGROUND INFORMATION FOR THE TEACHER**

Decomposers have an important role in ecosystems. They are nature's recyclers, breaking down dead plants and animals and thereby releasing essential nutrients needed by producers. There are three types of decomposers: scavengers, detritivores, and saprophytes.

Scavengers, like buzzards, feed on dead animals (carrion) and plants. Detritivores such as pill bugs and earthworms feed on detritus—organic waste matter composed of decaying and dead organisms; they will also consume the feces of living organisms. Saprophytes, such as fungi and bacteria, do not consume decaying or dead organisms; instead, they break down matter through biochemical reactions.

Together, these decomposers all contribute to decomposition—the process by which organic substances are broken down into simpler matter, releasing energy and important nutrients such as carbon and nitrogen back into an ecosystem.

### **MATERIALS**

**Each team member needs:**

- pencil
- "Pill Bug Investigation" journal

**Each team needs:**

- 1 plate of garden litter
- 1 bag of materials (“See, Think, Wonder” handout, goggles, gloves, hand lenses, and craft sticks or plastic spoons)

**Teacher needs:**

- large paper plates (or trays)
- freshly collected garden leaf litter, rotten log, etc.
- [YouTube video on decomposers](#)
- [YouTube video of decomposing peach](#) (optional)
- hand lenses
- gloves
- goggles
- gallon-size ziplock bags
- craft sticks or plastic spoons
- “See, Think, Wonder” student handout
- [YouTube video of “A Log’s Life” story by Wendy Pfeffer](#)

**SAFETY**

- Learners should wear safety goggles and gloves as they sift through the garden litter.
- Remind the class that they are not to ingest any of the garden litter on the table!
- Ensure that learners wash their hands after they are finished with the activity (even if they were wearing gloves).
- Remind learners of the rules for observing pill bugs.

**SETUP****Before the class:**

- Collect enough garden litter for each team to have a plate (or tray) of it to observe. Look for leaves, vegetation, and pieces of decomposing wood in moist areas of a garden or yard.
- Place garden litter on a plate (1 per team) and set up an area for dispersal.
- Make copies of the “See, Think, Wonder” student handout (1 per learner).
- Place handouts, goggles, gloves, hand lenses, and craft sticks or plastic spoons in a large ziplock bag (1 bag per team, with enough materials for each child).

**DAILY OBSERVATIONS**

Today is the last day of observations! **Teacher: Take a photo of what the food looks like today in each mini-habitat! Learners may use the pictures from Day 6 and Day 10 in the culminating project.**

**PROCEDURE****Engage**

1. Organize the class into their teams at tables. Ask the Equipment Directors to collect one of the paper plates for their team along with a bag of materials (student handouts, goggles, gloves, hand lenses, and craft sticks or plastic spoons).
2. Once all the teams have their plates, announce, *Today you are going to make some observations on the material on your plates.* Explain that it all came from a garden or yard area.

3. Inform learners, *You will use the spoon (or craft stick) to move the materials around and the hand lenses to get a closer look!* **Remind learners NOT to put their noses close to the materials or put anything in their mouths!**
4. Ask, *What do predict you will find in the plate of garden litter?* Accept responses.
5. Let the children know how much time they have for observations. The teacher may decide how much time to allow. Tell learners, *Remember, you are working as scientists as you observe. And just like scientists, you will also be writing about your observations.*
6. Hold up the “See, Think, Wonder” student handout and point to the first writing prompt, “**I see...**” Explain that after a close look, they will write down what they see on the tray.
7. Read the next prompt, “**I think...**” Explain that here they will write about what they think has happened, or will happen, to the materials on the plate.
8. Read the last prompt, “**I wonder...**” Explain that this is the place to write a question about what they see or something they want to know more about.
9. Remind them that they are working as a team, so it’s okay to share ideas and discuss together! Ask, *Are there any questions before we begin?* Make clarifications as needed.

### Explore

1. As the children work, the teacher should move between the teams, offering help, if asked, in the form of open-ended questions or prompts. (*Can you describe what the materials look like? Where do they come from? What colors do you see? Is anything alive? How do you know?* etc.)
2. Listen to their discussions and reasoning as they explore the materials. Remind them of what they will need to write about on their student handout.
3. When time is up, ask everyone to make sure they have completed the student handout and returned all materials to the ziplock bag (except the handouts). Remind the Lab Directors to make sure everything is cleaned up and that the Equipment Director has returned everything to the materials area.

### Explain

1. Tell learners, *Now that we have cleaned up the area, I’d like the Data Scientists to share one important observation and/or question their team came up with.*
2. Acknowledge their responses and questions, but do not offer answers yet.
3. When everyone has reported, remind them of the story “A Log’s Life.” Ask, *What is happening to the tree in the story?* You may flip through the pages, beginning with the fallen tree and all the pages that show a gradual browning of the leaves.
4. Explain that just like the tree in the story, all plants and animals in nature go through life cycles of growing and dying.
5. (Teacher may use Science Language picture cards as visuals in this discussion about decomposition.) Explain that the good news is that we have special organisms that take care of the rotting materials in nature—they are the decomposers! Some decomposers called detritivores, such as worms and insects, eat the rotting materials, dead organisms, and waste material.  
Other decomposers, such as bacteria (which are too small to see without a microscope) and fungi (like mushrooms), break down the organisms into tiny particles that become part of the soil. As decomposers do their job, they release and recycle the nutrients (nourishment) that will allow new plants to grow. Remind them that this takes a long time, as it did with the tree in the story!

6. *So, nature has its own recyclers—the decomposers! In the same way we recycle materials to use again, decomposers recycle the nutrients and materials from dead or decaying organisms to use again in food chains.*
7. Ask, *Who remembers some of the organisms mentioned in the story that were feeding off of the decaying tree?* (Termites, millipedes, slugs, and pill bugs!)
8. Inform learners that the garden litter on the tray was likely being decomposed by the same types of organisms. Ask, *Did anyone notice any evidence of this? Were there any clues about who the decomposers were?* (Possible answers may include chewed leaves or snail trails.) Tell children, *Let's learn more about decomposers!*

### Elaborate

1. Watch the [video on decomposers](#) to end the lesson. You might also watch this optional [video of a decomposing peach](#) that can be fast-forwarded to show decomposition and fungal growth—a good way to explain another decomposer!
2. Teacher may ask the children to look for and describe any signs of decomposition in the food (or other materials) in the pill bug habitat the next time they make their observations.

### Evaluate

1. Based on their responses (verbal or written) did the learners make reasonable observations about the garden litter?
2. Did learners raise any new questions to explore about decomposers?
3. Did they communicate any prior knowledge about decomposers or decomposition?
4. Did they use any new science language in their communications, written or oral?

## Science Language

- A **food chain** describes the sequence of who eats whom that transfers energy between organisms.
- **Producers** make their own food from simple substances and energy from the Sun. Plants are producers.
- **Consumers** cannot make their own food. They get their energy from eating producers and other consumers.
- **Decomposers** eat or break apart dead plants and animals, recycling nutrients that plants need for growing.
- Living things use **energy** from food to help them move, grow, and survive.
- **Nutrients** are the nourishments and substances found in food that help organisms survive and grow.
- **Decay** is the process of rotting or **decomposition** that breaks down material when an organism dies.
- **Bacteria** are organisms so small they can only be seen through a microscope. Some are decomposers that break down dead organisms.
- **Fungi** are a group of decomposers that feed on decaying matter. Mushrooms are a type of fungi.

## Expanded Standards

### Reading TEKS

**ELA.1.6G:** evaluate details to determine what is most important with adult assistance.

### CCSS

**RI.1.2:** identify the main topic and retell key details of a text.

### NGSS

**1-LS3-1:** Science & Engineering Practices: make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.

### Science TEKS

**2018–19: 1.2C:** collect data and make observations using simple equipment such as hand lenses, primary balances, and non-standard measurement tools. **1.2D:** record and organize data using pictures, numbers, and words.

**2024–25: 1.1E** collect observations and measurements as evidence. **1.1F:** record and organize data using pictures, numbers, words, symbols, and simple graphs.