

Day 3 What do roly-polys need?			
<b>Literacy Strategy:</b> Monitoring Comprehension		<b>Science Concept:</b> Living things have needs that must be met to live, grow, and survive.	
<b>Reading TEKS:</b> (1)(b)(6)(I)	<b>CCSS:</b> RI.1.4, RI.1.5, RI.1.6	<b>NGSS:</b> 1-LS1-1, 1-LS3-1	<b>Science TEKS:</b> 1(9)(A), 1(10)(A)
<b>Materials for Mini-lessons on Science-based Disciplinary Literacies (referred to as Mini-lesson):</b> Monitoring Comprehension anchor chart, text for modeling strategy, inquiry chart			
<b>Materials for Science Inquiry Circles:</b> Team inquiry charts, pencils, non-fiction (informational ) texts (go to project website)			
<b>Materials for Science Investigation:</b> See lesson			
<b>Content Vocabulary:</b> <b>Organisms</b> – living things that are able to carry on the functions (actions) needed to live, grow, and survive. <b>Needs-</b> the things essential for survival <b>Energy</b> – required by organisms on Earth to move, grow, and sustain themselves. Food provides energy and other raw materials necessary for life.			
<b>Science and Literacy Connection:</b> Scientists, like strategic readers, use all kinds of information to make sure that they understand or can make sense of what they are observing or researching.			

### Mini Lesson — 15 minutes

#### OVERVIEW

Scientists always pay close attention to the world around them. When making observations of organisms in nature, they may monitor changes in the organisms and the environments they live in. Scientists also monitor their comprehension about what they are reading when they are conducting research

Today, the teacher will explain what it means to *monitor comprehension* as students are reading. An anchor chart and two pre-selected short passages from a text will be used to model the strategy. The teacher should choose an easy and then a more difficult passage to read. Any text can be used.

This Mini-Lesson teaches children how to monitor comprehension while they are reading.

#### PROCEDURE

##### **Declarative Knowledge (Tell them what the strategy is that they are learning)**

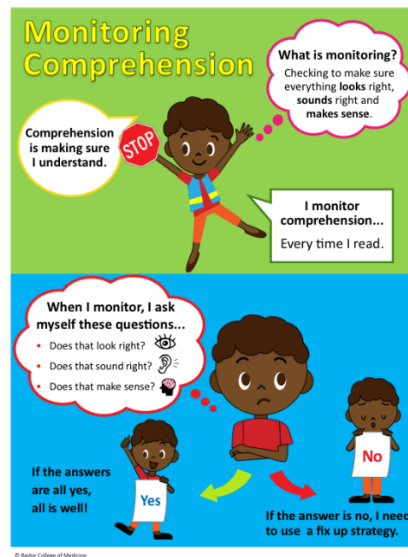
1. Say something like, “Our strategy today is called monitoring comprehension. Monitoring means I will listen to myself as I read to be sure everything looks right, sounds right, and makes sense. I have to be in charge of my own reading.”

##### **Conditional Knowledge (Tell them when and why you know to use the strategy)**

2. Say something like, “I monitor my comprehension every time I read. Sometimes a text is easy, so I don’t notice my monitoring. I may notice it more when a text is hard. As a strategic reader, I monitor as I read because reading is supposed to make sense. This strategy will help me be aware of what I’m thinking as I read because it makes me pay close attention.”

### Procedural Knowledge (Tell them the steps to using the strategy)

3. While you model the strategy, you might want to say something like this to the readers: “While I am reading, I ask myself three questions”
  - Does that look right?
  - Does that sound right?
  - Does that make sense?
- If the answers to these questions are yes, then all is well. If the answer is “no,” then I have to use a fix-up strategy. (Comprehension fix-up mini lesson will be tomorrow).
- When I am finished reading, I will ask myself, “What did I learn?” If I can answer this, all is well. If I cannot, then I should use a comprehension fix-up strategy.



### Practice in text (print, video, or interview)

Post the large “Monitoring Comprehension” anchor chart in your classroom for easy reference. Encourage scientists to use the strategy in their Inquiry Circles.

## Science Inquiry Circles — 30 minutes

### OVERVIEW

Today the teacher will assign each team one question to research. They will record their information on the team inquiry charts. Informational texts or videos have been pre-selected for all the organisms to be researched. The teacher will select the appropriate ones for today’s research and work with the class on this first inquiry circle to model how to listen for and find answers to their questions. The process today may move slowly, but it is important for establishing how the research should be done.

Resources provided include audio books and videos to address all reading abilities.

## PROCEDURE

**Each statement below contains suggested wording for the lesson in quotations and teacher actions in parenthesis:**

### Before Inquiry Circles

1. "It is time to get into our inquiry circles. I will remind you which science team you will be working in. (Read team designations.)"
2. "Remember that each team member has a role or a job within your team."
3. "Today we will begin to look for answers to the questions on your Inquiry Chart. Each team will have one question to find the answer to as you read or watch the assigned video." (Assign each team a question.) "Remember to work as a team, helping each other listen for the answers to your questions."

### During Inquiry Circles (20 minutes)

- We have anchor charts to help guide your thinking. Do not forget to use them while in groups. (Refer to the "Language of a Scientist" anchor chart and the daily anchor chart. Remind students that they can use all the reading strategies taught, not just the one for that day.)
- My role is to help guide the inquiry circle groups, but I expect you to work as a scientific team to solve your problems together.
- Do not forget to answer your research questions and record it on the inquiry chart. It is important to record your sources on the inquiry chart as you complete it. (Be sure to explicitly explain how students should use the chart if you have not already done that).
- 4. Now read your books as a group or listen to the audio file. If you hear the answer to your question, raise your hand and I will pause as you write the answer on your chart. Remember each team has a different question and the Data Scientist only has to write down the answer to that one.
- 5. "As I read or you watch the video, if something doesn't make sense, stop. Remember that we are learning how to *monitor our comprehension*."

(While groups are working together, walk around the room to facilitate as needed.)

### After Inquiry Circles (5 minutes)

- As we are concluding our inquiry circle groups for today, each group will have a chance to share what they accomplished and learned.
- The Lab Director should lead the discussion with their inquiry circle group about today's results. For example, what did you learn about your animal? Which reading strategies did you use? What problems did you encounter? How did you resolve those problems?
- The Data Scientist will now share with the entire class either something the group learned about their animal, which reading strategy(ies) were used, or how the group solved a problem.

## Science Investigation — 30 -45 minutes

### OVERVIEW

Students learn basic facts about “roly-polys” - pill bugs, including what they need for survival.

### GUIDING QUESTIONS

What is a pill bug? What are the basic needs of pill bugs? Why do pill bugs roll themselves up?

### BACKGROUND INFORMATION

All organisms have basic needs that must be provided for survival. These include water, air, a place to live, and a source of energy.

Scientists group, or classify, organisms based on information collected about them through observations and investigations.

### SAFETY

Remind students of Rules for Observation of roly-polys.

### MATERIALS

- Post the question list about roly-polys where it can be seen.
- PILL BUG Flip book (PowerPoint of images)
- gloves

### SET UP

#### Before the Class:

- Print images from PILL BUG PowerPoint
- Punch holes at the top of images and secure with book rings to create a flip book.
- Alternatively, the PowerPoint can be projected.

### DAILY OBSERVATIONS

Students have the opportunity to observe the pill bug habitat as a team for general observations.

### PROCEDURE

#### Engage

1. Gather the students in a circle on the floor.
2. Ask, “Who has a nickname? A fun name that your parents or brothers and sisters might give you, like “blue eyes” or “little bits”?”
3. Have a couple of volunteers share their nicknames and if they can, explain how they got that nickname.
4. After a brief discussion, reveal that “roly-poly” is really a nickname for the little *pill bugs* in the habitat. (project or show **image 2**-pill bug)

#### Explore

5. Ask them why they think they are called “roly- polys” (because they roll into a ball when disturbed or touched) (**image 3**- roly-poly balled up)
6. Bring gloves and the habitat to the circle. Remind students about safety rules for observing and holding the pill bugs. Then, scoop out a pill bug or two with a spoon. Place them in your gloved

hand or in a volunteer hand (You will likely have many volunteers!- make sure they have a gloved hand and caution them to be gentle with them).

7. Have the class observe how they have balled up! Ask, "Why do you think they do that?" Accept all responses.
8. After a discussion, let them know that this is how they protect themselves. While they are still looking at the image, ask "Why do you think they are called "pill" bugs?" (because they look like pills when they are balled up).
9. After the class has had a chance to hold/observe the pill bugs, return them gently to the habitat.
10. Continue the discussion by telling the class that roly-polys or pill bugs are not really bugs or insects at all! They are part of a group of animals called crustaceans, related to shrimp and crayfish! (**images 4-5**). But they cannot live in water.
11. Ask, "Where do you think roly-polys live?". "Where have you seen them or found them before? (Under a rock, under leaves?) Accept all responses.
12. Ask: "Where in our habitat can we find them?" (Under things?) "What can that tell us about the roly-polys?" (They like the dark?)
13. Have someone touch the soil- is it moist? Do you think they like a place that is more wet instead of dry? Share the fact that like their cousins who live in water, they breathe through gill-like structures instead of lungs. Explain that gills are special organs that help some animals breathe in oxygen, just like our lungs do! However, even though pill bugs need the moist environments to breathe, they cannot live *in* water.

#### **Explain**

14. Explain to the class that like other *organisms* or living things, roly-polys have needs. Their need for a place to live and air to breathe have already been discussed. What else do they need to survive? Accept responses.
15. Students will likely say that they need food. If so, ask "Why is food important for all living things?" "Why do we (people) need to eat?" Accept all responses. (If its' not brought up, explain that food is the source of energy. We need energy to do everything!)
16. Share that tomorrow you will talk about food and energy for pill bugs.
17. Point to the posted question list and ask the class if they have any new questions to add to it. Then, ask, "Should we add the pill bugs to our inquiry chart?" Listen to their rationale - they will likely say yes; at which point you can add the pill bug to the chart. (Add only the name for now. More information will be added as it is discovered.)

#### **Elaborate**

18. Before science ends, announce to the class that you have still another name for the roly-polys to share! This one is the *scientific name* that scientist gave it so that no matter where or who you are, everyone in the world knows what this organism is.
19. Warn them that it is a very long name but that you will show them a fun way to remember it.
20. Say that the name is Armadillidium vulgare (Arma -dilli- di-um vul- gay).
21. Explain that when they hear you say "Arma -dilla- di -um" they are to scrunch up or roll up into a ball; when you say "vul-gay" they are to straighten up!
22. Do this several times with them, encouraging students to chant with you. They will remember this! Repeat this activity often throughout the unit!

**NOTE:** The chant is fun! It could also be used as a call and response during the unit to get everyone's attention:

#### **Version 1:**

**Teacher:** "What's the Pill Bug's Scientific Name?"

**Students:** Armadillidium vulgare! (then silent)

**Version 2:**

**Teacher:** Armadillidium

**Students:** vulgare! (then silent) (Both can be done with or without the motions)

**Evaluate**

23. Did students communicate prior knowledge about pill bugs?
24. Did they communicate their own ideas about the needs of pill bugs?
25. Did they raise new questions about the pill bugs?

**Expanded Standards**

**Reading TEKS:** (1)(b)(6)(I) Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to: (I) monitor comprehension and make adjustments such as re-reading, using background knowledge, checking for visual cues, and asking questions when understanding breaks down.

**CCSS:** (RI.1.4) Ask and answer questions to help determine or clarify the meaning of words and phrases in a text. (RI.1.5) Know and use various text features (e.g., headings, tables of contents, glossaries, electronic menus, icons) to locate key facts or information in a text. (RI.1.6) Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.

**NGSS:** 1-LS1-1 Disciplinary Core Ideas- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. 1-LS3-1 Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

**Science TEKS:** 1(9) Organisms and environments. The student knows that the living environment is composed of relationships between organisms and the life cycles that occur. The student is expected to: (A) sort and classify living and nonliving things based upon whether or not they have basic needs and produce offspring. 1(10) Organisms and environments. The student knows that organisms resemble their parents and have structures and processes that help them survive within their environments. The student is expected to: (A) investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats