

Day 3: What Do Roly-polies Need?



Mini-Lesson

Children learn how to monitor comprehension while reading as they create an anchor chart with the teacher.



Inquiry Circles

Children learn how to find answers to questions and record them on the Inquiry Chart.



Guided Science Investigation

Children learn that roly-polies (pill bugs) need a habitat, food, air, and water to survive.

Literacy Strategy: practice monitoring comprehension

Reading TEKS

ELA.1.6I

CCSS

RI.1.4, RI.1.5, RI.1.6

Science Concept: living things have needs that must be met to live, grow, and survive.

Science TEKS

2018–19: 1.10A

2024–25: 1.13A

NGSS

1-LS1-1, 1-LS3-1

Science and Literacy Connection: scientists, like strategic readers, use all kinds of information to make sure they understand or can make sense of what they are observing or reading.

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 learners are reading. An anchor chart and two pre-selected passages will be used to model the strategy.

Note: You are encouraged to create a “Monitoring Comprehension” anchor chart with your learners as you move through the lesson, using the provided anchor chart as a model. Post it for easy reference. When completed and remind learners to use the strategy during inquiry circles.

The teacher will need to pre-select two short passages from the Exploratory Texts and Media spreadsheet. The teacher should choose an easy and then a more difficult passage to read. The text should be related to roly-polies.

MATERIALS

Teacher needs:

- chart paper
- marker(s)
- “Monitoring Comprehension” anchor chart as a model
- exploratory text about roly-polies to model the strategy

PROCEDURE

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

EXPLAIN THE STRATEGY

Tell what the strategy is (declarative knowledge)

1. *Our strategy today is called “monitoring comprehension.” Monitoring means that 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.*

Tell when and why to use the strategy (conditional knowledge)

1. *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.*

Tell how to use the strategy (procedural knowledge)

1. While you model the strategy using the pre-selected texts, you may want to purposely make an error so you can model monitoring. For example, you may read a word incorrectly so you can model to your learners that the word you said does not make sense and you will need a fix up strategy. [Comprehension fix-up strategies mini-lesson will be tomorrow.]
2. *While I am reading, I ask myself three questions:*
 - *Does that look right?*
 - *Does that sound right?*
 - *Does that make sense?*

If the answer to these questions is “yes,” then all is well. If the answer is “no,” then I have to use a fix-up strategy.

3. *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, which we will go over tomorrow.*

Science Inquiry Circles (30 minutes)

OVERVIEW

Prior to starting the inquiry circle work, be sure to have texts and technology available for your learners. Informational texts and videos are provided for all of the outdoor organisms; these can be found in the “Exploratory Texts and Media” spreadsheet (in the “Before the Unit Begins” section). These texts and videos are suggestions, and you may use other resources. You may need to provide learners with specific instructions on how to access websites within your school district or you may want to create a click sheet of approved websites for learners to be distributed in your learning management system (Google Classroom, Schoology, etc.). The teacher may choose to create a Nearpod with books and videos for each team or use a similar tool for organizing resources. As teams begin working, you may have some teams working online while others are working with traditional texts. This will depend on your availability to technology and texts.

Today the teacher will assign each team one question to examine. The teacher will select the appropriate resources for today’s question and work with the class on this first inquiry circle to model how to listen for and find answers to their questions. They will record their information on their team Inquiry Charts.

The process today may move slowly, but it is important for establishing how inquiry should be done. Resources provided include audio books and videos to address all reading abilities.

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:

- “Inquiry Toolbox” anchor chart
- “Monitoring Comprehension” anchor chart made in class
- class Inquiry Chart about roly-polies
- exploratory text about roly-polies to model the strategy

PROCEDURE

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

Before Inquiry Circles

1. *Scientists work in teams when conducting inquiry and investigations. Today, we will work in inquiry circles as a team to investigate different questions about our chosen organisms. It is time to get into our inquiry circles. I will remind you which inquiry team you will be working in.*
2. *You will be with the same team as yesterday, but we will rotate the scientific roles. Remember that each team member has a role or a job within your team.* (Assign roles at your discretion and have the Equipment Directors gather the inquiry chart for their team).

3. *Yesterday we became familiar with the Inquiry Chart and the inquiry questions. We also recorded what we already know about our chosen organisms. 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 explore the texts and other web resources. (Review the question at the top of the anchor chart that you want the learners to start with today. Be sure they all understand what the questions are asking.)*
4. *We are going to practice as a whole team before you do this in your inquiry circles. (Using a text about roly-polies, preferably the same text used during the reading mini-lesson, model reading the text and finding the answer to the first question. Be sure to explicitly show learners which square to write in for their first question using their first resource. **You may also want to take the time to show them how to record the name of the book, eBook, video, or website they are using.**)*
5. *Now that you have seen how I looked up the answer to a question and recorded it on the Inquiry Chart, you will do the same. Remember to work as a team, helping each other listen for the answers to your question. (Display the class Inquiry Chart about roly-polies in a location the learners can see to use as an example.)*

During Inquiry Circles (20 minutes)

1. *Today and for the next few days you will be investigating your organism using books and web resources. Remember, we have anchor charts to help guide your thinking. Do not forget to use them while in teams. (Refer to the “Inquiry Toolbox” and “Monitoring Comprehension” anchor charts. Remind learners that, each day, they will practice the literacy mini-lesson during this inquiry circle time. Once you have taught several mini-lessons, they can use any of the reading strategies taught, not just the one for that day.)*
2. *Do not forget to answer your research question and record it on the Inquiry Chart. It is also important to record your sources on the Inquiry Chart as you complete it. (Point out where sources are located on the Inquiry Chart and how one source may answer multiple questions. Remind your learners to record the title and author for texts and the URL for websites.)*
3. *Now explore your books, websites, or videos as a team. If you read or hear the answer to your question, stop so that today’s Data Scientist (or the team member who will be doing the writing) can record the answer in the correct spot on the Inquiry Chart. You can use the class Inquiry Chart about roly-polies as a model to remember where to record your findings. (Be sure to model for learners where to record their answers to specific questions and where to record the source for these answers. Explicitly show them how the Inquiry Chart will organize their progress.)*
4. *As you read, if something doesn’t make sense, stop. Remember that we are learning how to **monitor our comprehension.***
5. *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 are concluding our inquiry circles for today, teams will have a chance to share what they accomplished and learned.*
2. *The Lab Director should lead the discussion with their inquiry circle team about today’s results. For example, what did the team learn about its outdoor organism? Did team members monitor*

their comprehension while reading? What problems did the team encounter? How did the team resolve those problems? (While teams are working, walk around the room and assist learners as needed.)

3. *The Data Scientist will now share with the entire class either something the team learned about their outdoor organism, an example of how they monitored their comprehension, or how the team solved a problem.*
4. After all learners have shared, thank them for their hard work, and point out any excellent behaviors that you observed. If you saw an outstanding example of using a reading strategy or collaborative work, explicitly point it out. If you notice any problems in the teams during the lessons, take a moment to point them out, and explain your expectations for all future inquiry circles. Collect all inquiry charts or have learners put them in their normal classroom place for ongoing work so they can easily access them.

Guided Science Investigation (30–45 minutes)

OVERVIEW

Children learn that roly-polies (pill bugs) need a habitat, food, and water to survive.

GUIDING QUESTIONS

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

BACKGROUND INFORMATION FOR THE TEACHER

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 learners of the rules for observing pill bugs.

MATERIALS

Each team member needs:

- gloves for handling the pill bugs

Teacher needs:

- “What we want to know about pill bugs” class list
- “Pill Bug Flipbook” PPT
- gloves
- class pill bug habitat

SETUP

Before the class:

- Post the “What We Want to Know about Roly-polies” list generated on Day 2 where it can be seen by the class.
- Print images from “Pill Bug Flipbook” PowerPoint.

- Punch holes at the top of images and secure with book rings to create a flipbook.
- Alternatively, the PowerPoint can be projected.

DAILY OBSERVATIONS

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

PROCEDURE

Engage

1. Gather the learners in a circle on the floor.
2. Ask, *Who has a nickname or a fun name that your parents or brothers and sisters might have given 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. Share or project **image 2** (pill bug).

Explore

1. Ask, *How did pill bugs get the nickname “roly-polies?”* (Because they roll into a ball when disturbed or touched.) Share or project **image 3** (balled-up roly-poly).
2. Bring gloves and the habitat to the circle. Remind learners about safety rules for observing and holding pill bugs. Then, scoop out a pill bug or two with a spoon. Place them in your gloved hand or in a volunteer’s hand. You will likely have many volunteers—make sure they have a gloved hand and caution them to be gentle with the pill bugs.
3. After observing, ask, *What did the roly-polies do?* Accept all responses.
4. After discussion, explain that roly-polies protect themselves by rolling up. Ask learners to look again at **image 3**. Ask, *Now, why do you think they are called “pill” bugs?* (Because they look like pills when they are balled up.)
5. After the class has had a chance to hold/observe the pill bugs, gently return the pill bugs to the habitat.
6. Continue the discussion by telling the class that 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! However, they cannot live in water. Share **images 4** and **5**.
7. Ask, *Where do you think roly-polies live? Where have you seen them or found them before?* (Under a rock? Under leaves?) Accept all responses.
8. Ask, *Where in our habitat can we find them? (Under things?) What can that tell us about the roly-polies?* (They like the dark?)
9. Have one of the children touch the soil. Ask, *Is the soil moist? Do you think pill bugs like a place that is more wet instead of dry?* Share the fact that like their relatives (shrimp and crayfish) who live in water, roly-polies breathe through gill-like structures instead of lungs. Add that fish also breathe through gills. 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 environment to breathe, they cannot live *in* water. Add that pill bugs get the water they need from food and the moist air in their environment.

Explain

1. Explain, *All organisms, which are living things, have **needs**. Pill bugs also have needs, such as a place to live, air to breathe and water. What else do they need to survive?* Accept responses.

2. Children will likely say that they need food. Ask, *Why is food important for all living things? Why do we (people) need to eat?* Accept all responses. (If it's not brought up, explain that living things get the energy they need from the food they eat. We need energy to do everything- to move, grow and survive!)
3. Share that tomorrow you will talk about food and energy for pill bugs.
4. Point to the "What We Want to Know about Pill Bugs" list and ask the class if they have any new questions to add to it.

Elaborate

1. Before the activity ends, announce to the class that you have still **another name** for the roly-polies to share! This one is the *scientific name* that scientists gave it so that no matter where or who you are, everyone in the world knows what this organism is.
2. Warn them that it is a very long name but that you will show them a fun way to remember it.
3. Say that the name is *Armadillidium vulgare*: arma- dilli- di-um vul-gay.
4. Explain that when they hear you say "Arma -dilli- di -um" they are to scrunch up or roll up into a ball, and when you say "vul-gay" they are to straighten up.
5. Do this several times with them, encouraging learners 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?

Learners: *Armadillidium vulgare!* (then silent)

Version 2

Teacher: *Armadillidium*

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

Evaluate

1. Did learners communicate prior knowledge about pill bugs?
2. Did they communicate their own ideas about the needs of pill bugs?
3. Did they raise new questions about the pill bugs?

Science Language

- **Organisms** are living things that are able to carry out the activities needed to live, grow, and survive.
- Organisms have **needs** for surviving, such as water, energy, air, and a place to live.
- Living things get **energy** from the food they eat to help them move, grow, and survive.

Expanded Standards

Reading TEKS

ELA.1.6I: 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

2018–19: 1.10A: investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats.

2024–25: 1.13A: identify the external structures of different animals and compare how those structures help different animals live, move, and meet basic needs for survival.