

DAY 5: WHAT IS A LIFE CYCLE? (PART 2)



MINI-LESSON

Children review and practice the reading strategies previously introduced.

SCIENCE INQUIRY CIRCLES

Teams continue to research questions about their animals and record the information on their team Inquiry Charts.



GUIDED SCIENCE INVESTIGATIONS

Children review the life cycle of a frog and compare a frog's life cycle to those of other animals.



ABBREVIATED STANDARDS

- Reading TEKS: 2(b)(6)(F)
- CCSS: SL.2.2, W.2.7, W.2.8
- NGSS: 3-LS1-1
- Science TEKS: 2.(1)(B)(F)(G), 2.13(D), 2.5(G)

Day 5: What Is a Life Cycle? (Part 2)

Literacy Strategy: Drawing conclusions from text (practice day).

Science Concept: Animals go through a series of changes throughout their life cycles.

Science and Literacy Connection: Collecting data and making sense of it allows scientists to draw conclusions; readers combine information from a text or video with what they already know to draw conclusions.

Mini-Lesson (15 minutes)

OVERVIEW

Today's mini-lesson should be used to review and practice the reading strategies already used. Teachers are encouraged to use this time to best meet the needs of their learners. Teachers can determine if the mini-lesson will be facilitated with the whole class or with a particular inquiry circle that needs additional support. If you are working with a specific team, we suggest your other learners spend additional time working in inquiry circles.

Science Inquiry Circles (30 minutes)

OVERVIEW

Today, inquiry circles will continue research on questions about their animals.

MATERIALS

Each team needs:

- team Inquiry Chart
- pencils
- selected informational texts/media

Teacher needs:

- "Animal Resources" spreadsheet for ideas

PROCEDURE

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

Before Inquiry Circles

1. *It is time to get into our inquiry circles. (Have the Equipment Directors gather the Inquiry Chart for their team.) Today we will continue to look for answers to the questions on your Inquiry Charts. The more we know about a topic, the better we will understand the results in our scientific investigations.*

During Inquiry Circles (20 minutes)

1. *While working in your teams, you may refer to the anchor charts we've used to help guide your thinking. (Point to the posted anchor charts and remind learners that they can use all the reading strategies taught, not just the one for that day.)*
2. *The Lead Scientists will guide all research for the day by picking which questions will be answered. The Data Scientists will record all source information and the answers to your research questions on the team Inquiry Chart. The Lab Directors and the Equipment Directors must help find the answers to the questions online and in texts.*
3. *My role is to assist you during the inquiry circles, but I expect you to work as a scientific 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 what they accomplished and learned.*
2. *The Lab Directors should lead the discussion with their inquiry circles about today's results. For example, Did your team use "drawing conclusions" or any other reading strategy? What did your team learn about its animal? Did your team encounter any problems? How did your team resolve those problems?*
3. *(After you have allowed the teams to gather their thoughts, have the Data Scientists share with the class. Try to encourage teams to share a variety of things—you do not want just facts about animals, just reading strategies, or just cooperative learning strategies.)*
4. *(When all teams have shared, thank them for their hard work, and point out any excellent behaviors that you observed. If you noticed any problems in the teams, take a moment to point them out and explain your expectations for all future inquiry circles.*
5. *(Collect all inquiry charts or have the Equipment Directors put them in their normal classroom place for ongoing work so learners can easily access them.)*

Guided Science Investigation (30–45 minutes)

OVERVIEW

Children will review the life cycle of a frog and summarize their learning in a graphic organizer. They will compare the life cycle of a frog to those of other animals.

GUIDING QUESTIONS

What are the different stages in the life cycle of a frog? In what ways are young frogs different from their parents.

BACKGROUND INFORMATION FOR THE TEACHER

Today children review what they have learned about the life cycle of a frog by re-enacting the stages using the life cycle hats they created in the last class. Then, they will use their new knowledge to create a graphic organizer that can be used to compare the life cycles of other animals.

It is important to emphasize to children that the life cycles of animals are not all the same, some are unique. Their work in the inquiry circles will help them to make sense of this concept.

MATERIALS

Each team member needs:

- “A Frog’s Life” graphic organizer
- spinner template
- 1 sheet of construction paper
- spinner template
- brass fastener
- scissors
- colored pencils
- Butterfly Investigation Journal

Each team needs:

- 1 complete set of “Frog Life Cycle Stages” hatbands

Teacher needs:

- “A Frog’s Life” graphic organizer
- “Spinner Template” page
- “Frog Life Cycle Stages” hatbands

SETUP

- Print copies of the “A Frog’s Life” graphic organizer (1 per team member).
- Print copies of the “Spinner Template” page on cardstock (1 per team member).

SAFETY

- Remind teams daily to be gentle with the growth habitats during handling to prevent disturbing the larvae, especially once the chrysalis forms. **Ideally, the growth habitats should be placed where teams can do daily observations without moving them.**
- Please follow all district and school science laboratory safety procedures.
- It is good laboratory practice to have teams wash hands before and after any laboratory activity.

DAILY OBSERVATIONS

Give learners time to observe their caterpillars (whether they are in the larva, pupa, or adult stage), take measurements of the larvae (if applicable), and record their observations in their Butterfly Investigation Journals. Facilitate team discussions by asking questions, such as *What did you notice? What has changed since the last time you observed your caterpillars?*

PROCEDURE

Engage

1. Begin with, *Let's see what you remember about the life cycle of a frog.* Distribute 1 set of the "Frog Life Cycle Stages" hatband to each team. *You have 3–4 minutes to reenact a frog's life cycle using the hatbands.*
2. When time is up, let learners know that they will now use their new knowledge in a different way.

Explore

1. Ask the Equipment Directors to distribute copies of the "A Frog's Life" graphic organizer to their teams (1 per team member).
2. Explain that learners will now record what they have learned about the life cycle of a frog. They will do this by drawing and naming the different stages based on the role-play activity from the previous day and the review just completed.
3. Review the graphic organizer together and discuss any questions learners may have. Point out that a list of the stages is included at the top of the page to help them as they are working.
4. As the children work, check to be sure that they are placing, naming, and illustrating the life cycle appropriately. Offer guidance as needed.
5. When the graphic organizer is completed, give each team member a spinner template, scissors, 1 sheet of construction paper, and a brass fastener. Learners should trace the template onto the construction paper and cut along their tracing.
6. Model how to attach the construction paper spinner piece to the graphic organizer by carefully poking a brass fastener through the graphic organizer and the construction paper.

Explain

1. Learners can now use the interactive graphic organizer to describe the changes that take place throughout the life cycle of a frog.
2. Have children turn and talk to a partner to explain a frog's life cycle using the graphic organizer.

Elaborate

1. Using the graphic organizer, instruct learners to rotate the spinner to land on a stage in the frog's life cycle. They can quiz themselves and each other by describing and naming what happened before the stage and what will happen after.
2. In the coming days, as learners investigate the changes in their caterpillars, encourage them to refer to this graphic organizer to make comparisons.

Evaluate

1. Lead a discussion to evaluate learning.
 - How does a young frog/baby frog resemble its parents? How does it not?
 - How does this compare with some of the other animals we saw earlier when we looked at the baby photos?
 - What we created here is a model of the life cycle of a frog. How would you describe a life cycle?
 - How does the life cycle of a frog compare to the life cycle of an animal you are investigating in your inquiry circles?

Science Language

- A **larva** is the wingless, often wormlike form in the life cycle of a newly hatched insect (larva is singular, larvae is plural).
- A **caterpillar** is the larval stage in the life cycle of a butterfly.
- When a caterpillar is transformed into a **butterfly**, it has reached the adult stage in its life cycle.
- When animals or insects go through a dramatic change in a life cycle, it is called **metamorphosis**.

Expanded Standards

Reading TEKS

2(b)(6) 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: **(F)** make inferences and use evidence to support understanding.

CCSS

SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media; **W.2.7** Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations); **W.2.8** Recall information from experiences or gather information from provided resources to answer a question.

NGSS

3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death.

Science TEKS

2.1 Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. **(B)** use scientific practices to plan and conduct simple descriptive investigations and use engineering practices to design solutions to problems; **(F)** record and organize data using pictures, numbers, words, symbols, and simple graphs; **(G)** develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem. **2.13** Organisms and environments. The student knows that organisms have structures and undergo processes that help them interact and survive within their environments. The student is expected to: **(D)** investigate and describe some of the unique life cycles of animals where young animals do not resemble their parents, including butterflies and frogs. **2.5** Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to: **(G)** describe how factors or conditions can cause objects, organisms, and systems to either change or stay the same.