

Day 15
Analyzing the Data

Reading Strategy: Synthesizing Mini Lesson Practice

Science Concept: When an investigation is complete, scientists examine the details of their data carefully, looking for information that will help them explain the results.

Reading TEKS: 3.6H

ELPS: Reading 2-12, 19 TAC 74.4(c)(4)

Science TEKS: 3b2B, 3b2D 3b4

Materials for Reading Mini-lesson: Chart paper, markers, pond ecosystem inquiry chart, yesterday's anchor chart

Materials for Inquiry Circle Groups: Group inquiry charts, pencils, variety of nonfiction texts for each group, access to websites and online books

Materials for Science Whole Group Lesson: See lesson.

Content Vocabulary:

Claim – a statement that says something is true based on observations or an opinion

Evidence – data collected from the investigation that can be used to support explanations and answers

Data- facts or information collected during an investigation; EX: images, measurements, or words

Reasoning- thinking about and explaining *how* the evidence supports a claim

Analyze- to carefully examine details or specific information

Science and Literacy Connection: Scientists synthesize all of the information that comes from research and investigations to produce evidence that supports their claims and explains their work.

For an expanded version of the Standards listed above, see page ____.

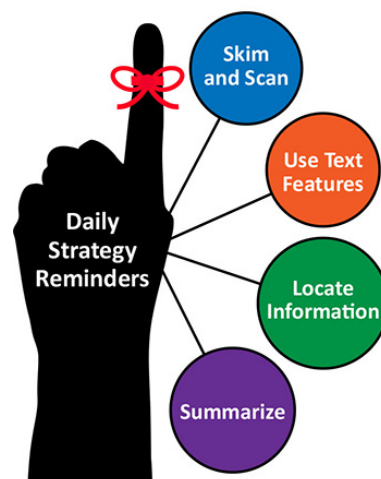
Reading Mini-lesson — 15 minutes

OVERVIEW

For the three days dedicated to synthesis, it is suggested that you start with a whole group synthesis statement about pond ecosystems, followed by inquiry circle groups creating their own synthesis statement. Last, facilitate a whole group discussion around all of the ecosystems to create a synthesis statement for the class.

Explain the strategy:

- **Tell what the strategy is (declarative knowledge)**
 - Say something like, "Today we will continue to practice synthesizing the topic (pond ecosystems) we have researched as each inquiry circle group makes their own synthesis statement about their topic. Remember, synthesizing is combining information across our sources to create our own, new information." *Refer to the anchor chart previously made with the class and the synthesis statement written yesterday.*



- **Tell when and why to use the strategy (conditional knowledge)**
 - Say something like, “Yesterday, we talked about how I synthesize because it helps me construct a deeper and broader meaning about my topic across resources. As a strategic reader, I synthesize when I find information from different books, online resources, experts, and videos.”
- **Tell how to employ the strategy (procedural knowledge)**
 - For this section in the mini-lesson, the teacher may choose to model the strategy again for the class or continue with yesterday’s synthesis of pond ecosystems if needed.
 - Teachers are encouraged to share examples of students using this strategy from the day before. Say something like, “Mohamed’s group did a great job yesterday writing a synthesis statement. I was so impressed when they ____.” Teachers are also encouraged to invite the groups to share with their peers (you may need to scaffold this and prepare the students for sharing beforehand.)

If you choose to model this strategy again, you might want to say something like:

 - The first thing I will do is look at my inquiry chart and think what was important from each source. I’ll do that as I consider each of my research questions.
 - Then I will compare and contrast the important information from each of the sources.
 - Now, I need to think about what I know about this important information and if I can add something from my own schema that the authors did not mention.

Remember that the concepts this unit has focused on are:

- *Organisms rely on the living and nonliving things in their environments.*
- *Animals get energy from the food they eat and pass along that energy when they are eaten.*
- *A change in one part of an ecosystem affects all of the other parts of the ecosystem.*

The synthesis statement each inquiry circle group will write during this mini lesson should incorporate all of these concepts. You’ll need each inquiry group’s synthesis statement for the next lesson.

Practice in text (print, video, or interview)

Post the anchor chart in your classroom so students can refer to it while in their inquiry circles. Encourage scientists to use the strategy during in their Inquiry Circles.

Inquiry Circle Groups — 30 minutes

OVERVIEW

Scientists work in teams when conducting research and investigations. Each day of this unit, students will work in inquiry circle groups while embodying the role of a scientist. They will do so by taking on roles of scientists in research by speaking like a scientist, reading like a scientist, and writing like a scientist.

PROCEDURE

Before Inquiry Circle Groups — 5 minutes

You might want to say something like this to the readers:

- It is time to get into our inquiry circle groups. You will be with the same research team as yesterday.
- When we research ecosystems, we will practice our roles as scientists. We will do this because scientists have a special way in which they observe the world, read scientific texts, and write reports. There is no better way to learn about science than to become a scientist!

During Inquiry Circle Groups — 20 minutes

You might want to say something like this to the readers:

- We have anchor charts to help guide your thinking. Do not forget to use them while in groups. (Refer to the “Inquiry Tool Box” 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.)

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

After Inquiry Circle Groups — 5 minutes

You might want to say something like this to the readers:

- 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 ecosystem? 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 ecosystem, which reading strategy(ies) were used, or how the group solved a problem.

Science Whole Group Lesson — 30-45 minutes

OVERVIEW

Today students make final observations on their investigations. Then they begin the process of developing a claim and organizing data to determine if the evidence supports their claim.

GUIDING QUESTIONS

What claim or statement can I make about my investigation? What data have I collected during my investigation? How does my data provide the evidence to support my claim?

BACKGROUND INFORMATION

When an investigation is complete, a scientist organizes the data generated to make it easier to understand, discuss, and share. It also helps them to decide what their next steps should be.

Analyzing, or taking a careful look, at the information, helps them look for patterns or connections they can use as evidence to support their claims or hypothesis.

SAFETY

Remind students to follow safety rules for making observations on their sample.

MATERIALS

- Student Data logs /Science notebooks
- Blank Claim chart docx.

DAILY OBSERVATIONS

Today will mark the final day of making observations and documenting information!

PROCEDURE

Engage

1. Announce to the class that this is the last day for making observations on their investigations and that they have 5 minutes to complete this.
2. Equipment Directors should carry both bottles of the algae to their team table.
3. Team Data Scientists should make sure that the team writes down their final observations and that all the days of the investigation are accounted for.

Explore

4. Remind the class about the previous discussion on claims, scientific evidence, and reasoning.
5. Today the Lab Directors will lead the discussion in their teams as they analyze (look carefully) at all of the data they have gathered (measurements, pictures, etc.)
6. Then they will decide what claim they will make about their investigation. (Teacher may read aloud her claim again to model.)
7. Equipment Directors should pick up a Claims Chart from the teacher.
8. Tell them that before they begin to enter information into their claim chart, they should have a good discussion between the team members regarding possible claims, data they can use as evidence, and **how** the evidence supports their claim.
9. When they are ready, they can begin to enter information into the Claims chart.
10. Let them know that you will be moving between teams to address any questions they may have and that they have 15-20 minutes to complete the activity.

Explain

11. When time is up, gather the attention of the class. Offer any feedback you may have as a result of observing them work.
12. Ask for 1-2 volunteers to share their claims and one piece of evidence they believe supports it. (NOTE: *Time constraints may prevent lengthy discussions about individual claims, but that is up to the discretion of the teacher. This discussion could be continued in the next class time.*)
13. Follow up by asking **how** the evidence supports their claim.
14. Ask Equipment Directors to collect the Claims Charts so that you can review them later.

Elaborate

15. Commend the students for their work in collecting data and organizing it on the Claims Chart.
16. Say that the next step will be to decide how to present their findings at a “science meeting” which they will learn about next!

Evaluate

17. Reading through the Claims Charts, did students develop a *reasonable* claim?
18. Was the evidence they used to support their claim valid? Did it come directly from their observations/investigation?

19. Were they able to reason out their how evidence supports their claim?
20. Are students using scientific language in their writing and oral responses?

Expanded Standards

Reading TEKS: 3.6H 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: (H) synthesize information to create new understanding

ELPS: Student Expectations for Reading 2-12, 19 TAC 74.4(c)(4) The student is expected to: (K) demonstrate English comprehension and expand reading skills by employing analytical skills such as evaluating written information and performing critical analyses commensurate with content area and grade-level needs.

Science TEKS: 3b2B: The student is expected to collect and record data by observing and measuring using the metric system and recognize differences between observed and measured data. 3b2D: The student is expected to analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations. 3b4: The student is expected to collect, record, and analyze information using tools, including cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, magnets, collecting nets, notebooks, and Sun, Earth, and Moon system models; timing devices; and materials to support observation of habitats of organisms such as terrariums and aquariums.