DAY 5 What Question Will You Investigate?		
Reading Strategy: Drawing Conclusions from Text.		**Science Concept:** A testable question must be answerable through an investigation or experiment; connected to a science concept; specific; and able to be answered with the time and materials allotted.
Reading TEKS: 3.6	**ELPS**: Reading 2-12, 19 TAC 74.4(c)(4)	**Science TEKS:** 3 (b) 2 A
Materials for Reading Mini Lesson: Chart paper, markers, pond ecosystem inquiry chart, pond ecosystem text to model strategy		
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: **Testable question –** a question that can be answered through a designed investigation or experiment **Scientific investigations –** a planned design or approach to find an answer to a question **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		
Science and Literacy Connection: Science consists of asking questions and planning investigations to search for answers then drawing conclusions from information given.		

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

Reading Mini-lesson — 15 minutes

OVERVIEW

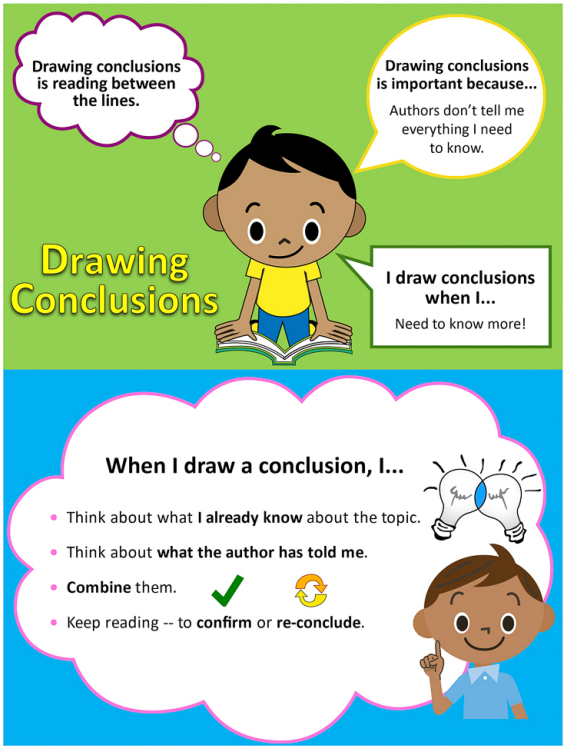
Often as readers research a topic, information may be implied or not clearly stated. As a result, you have to "read between the lines" to understand what the author may be saying or what the given information means. This is called drawing a conclusion.

In science, when conducting an investigation scientists look at data and think about what they already know. Then, at the end of an investigation they draw conclusions based on the new information they collected.

Explain the strategy below as follows.

- **Tell what the strategy is (declarative knowledge)**
  - Say something like, "Today we will practice drawing conclusions while we read about the topic (ecosystems). Drawing conclusions is a type of inference and is sometimes called 'reading between the lines'".

- **Tell when and why to use the strategy (conditional knowledge)**
  - Say something like, “Often, authors can’t possibly give me all the information I need to know while I am reading. It’s nearly impossible to write a text that contains every detail about a topic. The text would be too long! So, authors don’t always tell me everything I need to know. As a strategic reader, I have to ‘read between the lines’”.
- **Tell how to employ the strategy (procedural knowledge)**
  While you model the strategy, you might want to say something like this to the readers:
  - The first thing I will do is pay attention to the details the author *does* give me in the text. I can also do this while watching a video or interviewing an expert.
  - Next, I will think about what I already know about this topic and the intentions of the author.
  - Then, I will combine what I already know and the author’s intentions to draw a conclusion.
  - As I read, I will continue to confirm or revise my conclusion.



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

Using a "question wheel", students work in teams to determine if their questions are testable. Then they will begin a plan for their investigation using the model and guiding questions discussed in the previous class.

GUIDING QUESTIONS

What do I want to know? Is my question focused? Is my question testable?

BACKGROUND INFORMATION

In the previous lesson, students learned how to determine if a question is testable as the teacher led a discussion through a series of questions. Like scientists, students will formulate questions that they can investigate. Their questions should be answerable in a measurable way, and provide evidence that supports their explanations or answers.

SAFETY

Students will be using scissors to cut out the question wheels. Remind them of safe handling of scissors!

MATERIALS

- Science Notebooks
- Chart tablet with list of class questions

- Question Wheel (1 per student)
- Scissors
- Small brads
- Tape
- Guiding questions for designing investigation

SET UP

- Make copies of question wheel template on cardstock (one per student)
- Display all chart paper lists
- Set up a materials area (scissors, brads, tape, wheel template) accessible to students.

DAILY OBSERVATIONS

None at this time

PROCEDURE

Engage:

1. Bring the attention of the class to the chart papers. Remind them how you determined if your question about the effect of light on the green substance was testable. Ask if there are any questions about that process.
2. Announce that today it's their turn to do the same thing. Repeat the fact that they are now working as a team of scientists, with everyone contributing to the work. Their work includes helping each other check for testable questions and then deciding on the ONE question they will choose to investigate.
3. Show the assembled question wheel to the students. Explain that this tool will be used as an easy way to determine if they have a testable question.
4. Read what it says on the front aloud to the class, then rotate and read to demonstrate how to use it.
5. Read the directions on the handout.
6. Tell them they have 5 minutes to cut and assemble the question wheels to use them.

Explore

7. When students are ready, tell them they will now have 10- 15 minutes to work with their team to refine /review their team questions using the question wheel to decide if they are testable.
8. Teacher should move among the groups to listen to their discussions, providing feedback as needed.
9. If students are stuck on a "NO" on the question wheel, ask them to consider how they might change their question, perhaps using a starter like "What if.., How.., or Does…".
   Refer them back to the teacher example as well.
10. At the end of ten minutes, ask for volunteers to share their questions and explain how they refined them or insured that they were testable.
11. Provide feedback and allow discussion or comments from other teams.
12. Notify the class that they will receive enough of the green substance for 1 investigation.
13. Now they have to decide which of their questions they will investigate. Allow 5 minutes for discussion.
14. After 5 minutes, ask students to write their selected question(s) in the science notebooks.

Explain

15. Ask the Data Scientist from each team to explain their choice of question to investigate. Why did they choose that one? Did it meet the criteria for a testable question?

Elaborate

16. Tell the students that in the next class they will determine what information they will need to collect to find an answer to their question.

Evaluate

17. Did students communicate a developing understanding of what a testable question is?
18. Did all members of the team contribute to the process of developing the beginning of an investigation?
19. Are students using science vocabulary in their written or spoken words?

EXPANDED STANDARDS

Reading TEKS: 3.6 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.

ELPS: Student Expectations for Reading 2-12, 19 TAC 74.4(c)(4) The student is expected to: (J) demonstrate English comprehension and expand reading skills by employing inferential skills such as predicting, making connections between ideas, drawing inferences and conclusions from text and graphic sources, and finding supporting text evidence commensurate with content area needs

Science TEKS: 3b2A: The student is expected to plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world.