DAY 5 What Conclusions Can You Draw?			
Reading Strategy: Drawing Conclusions		**Science Concept:** Measuring Caterpillars Day 2	
Reading TEKS: 2.6F	**Figure 19**: Reading/ Comprehension Skills D	**ELPS**: Reading 2-12, 19 TAC 74.4(c)(4)	**Science TEKS:** 2.2(A, D); 2.4(A)
Materials for Reading Mini Lesson: Chart paper, markers, butterfly inquiry chart, butterfly 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: Copy of the "Team Graph: Caterpillar Growth Measurements" that they began yesterday; growth habitats with larva inside, hand lens, yarn, scissors, and white glue. (See section for details.)			
Content Vocabulary: **Measure —** To find the size, amount or degree of something using a standard or non-standard unit or instrument.			
Science and Literacy Connection: Just like readers, scientists have to read between the lines to draw conclusions. Scientists use measurements and observations they have recorded to draw conclusions about what might be happening.			

For an expanded version of the Standards listed above, see page 5.

Reading Mini-lesson — 15 minutes

OVERVIEW

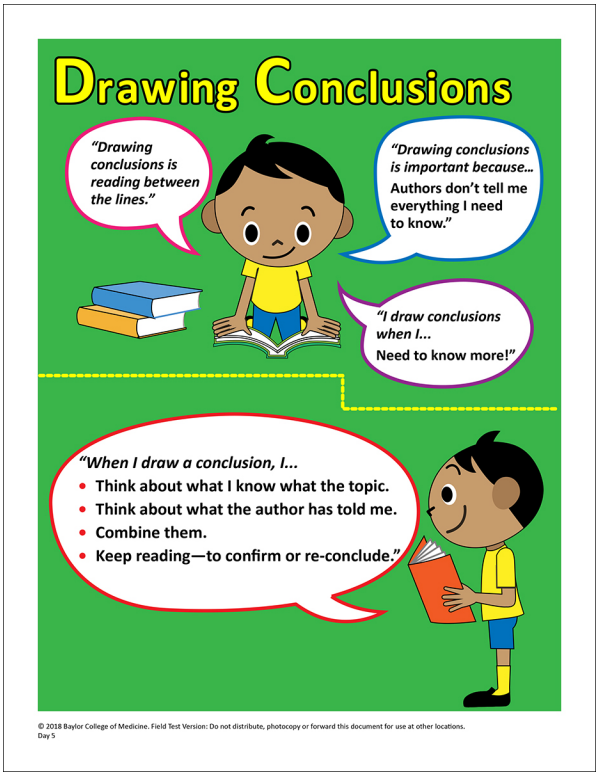
Scientists draw conclusions every single day. When conducting an experiment, they look at the data and think about what they already know. Then, they draw a conclusion about the experiment based on the new information they collected during their experiment. Readers do that, too.

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 (butterflies). 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. Their book (text) would simply be too large! 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, say something like, "The first thing I will do is pay attention to the details the author does give me when reading, watching a video, or interviewing an expert."
  - Say something like, "Now, I will think about what I already know about this topic and the goals/intentions of the author."
  - Say something like, "Now, I will put these two things together to draw a conclusion."
  - Say something like, "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 experiments. 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 liking a scientist, and writing like a scientist.

PROCEDURE

Before Inquiry Circle Groups — 5 minutes

1. Say something like, "It is time to get into our inquiry circle groups. You will be with the same research team as yesterday."

2. Say something like, "When we research organisms, 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

1. Say something like, "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.

2. Say something like, "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."

3. Say something like, “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.

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

After Inquiry Circle Groups — 5 minutes

1. Say something like, “As we are concluding our inquiry circle groups for today, each group will have a chance to share what they accomplished and learned.”

2. Say something like, “The Lab Director should lead the discussion with their inquiry circle group about today’s results. For example, what did you learn about your organism? Which reading strategies did you use? What problems did you encounter? How did you resolve those problems?”

3. Say something like, “The Data Scientist will now share with the entire class either something the group learned about their organism, which reading strategy(ies) where used, or how the group solved a problem.”

Science Whole Group Lesson — 30 minutes

OVERVIEW

Students will practice how to measure larvae daily using bits of yarn to record growth. Over time, they will see how fast the larvae grow.

GUIDING QUESTION

How fast are the larva growing?

BACKGROUND INFORMATION

Butterfly larva are eating machines. Within a span of just a few days, the larvae provided by the supply company will double and triple in length and width. They become easier and easier to observe. In the natural world, observing larvae growth is more difficult. They larvae may have moved on to another part of the plant or a predator may have gotten it. However, it is easy to detect the presence of larva without seeing them directly. Just look at plant leaves. Leaves that were originally full and lush, are peppered with tiny holes and framed with ragged edges.

The previous day, students learned how to use bits of yarn to measure the larvae. They cut off a length of yarn equal in length to the larva they were measuring. Each team member got to measure a different larva. Today, many will be nearly the same size. However, If there is a mixture of larvae that hatched on different days, one or two might be noticeably longer.

Each day until the larvae go into the chrysalis stage, teams will measure larva lengths and paste the longest yarn piece on their team graphs. On this day, team members will practice the measuring skills they developed the day before.

SAFETY

Remind student teams daily to be gentle with the growth habitats when they handle them to prevent disturbing the larvae.

Please follow all district and school science laboratory safety procedures. It is good laboratory practice to have students wash hands before and after any laboratory activity. Clean work areas with disinfectant.

DAILY OBSERVATIONS

Give students time to observe their organisms (whether they are in the larvae, pupa, or adult stage), take measurements of the larvae (if applicable), and record their observations in their science notebooks. Facilitate group discussions by asking questions like, "What did you notice? What has changed since the last time you observed your organisms?"

PROCEDURE

Engage

1. Gather the class around the growth chambers. Ask if anyone notices any changes yet. Discuss any responses.

2. Remind the students about how they measured the larvae the day before. Ask if there are any questions about how to do it. Tell them that they will practice measuring again today and that they will need to measure the larvae every day to see how fast they are growing.

Explore

3. Have students measure all the larvae in their habitat chambers and select the longest yarn measurement piece to paste to their graph.

4. Check the results from each of the teams and compare the yarn lengths of the two days. The yarn segments glued to their graphs should be equal or slightly longer than the segments from the day before. If not, review measuring procedures with the team to improve their precision.

Explain

5. Ask your students what else they observed as they were measuring larvae. Were they moving? Wiggling? Feeding? Remind them to record observations in their science notebooks.

6. If students note that one or more larvae have stopped moving and have not grown, that is a good indication the larvae have expired.

Evaluate

7. Check measurements every day to insure they are being done correctly and recorded.

EXPANDED STANDARDS

Reading TEKS: 2.6F 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;

Figure 19: Reading/Comprehension Skills. Students use a flexible range of metacognitive reading skills in both assigned and independent reading to understand an author's message. Students will continue to apply earlier standards with greater depth in increasingly more complex texts as they become self-directed, critical readers. The student is expected to: (D) make inferences about text using textual evidence to support understanding.

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:

2.2 Scientific investigation and reasoning. The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations. The student is expected to:

(A) ask questions about organisms, objects, and events during observations and investigations;

(D) record and organize data using pictures, numbers, and words

2.4 Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world. The student is expected to:

(A) collect, record, and compare information using tools, including computers, hand lenses, rulers, plastic beakers, magnets, collecting nets, notebooks, and safety goggles or chemical splash goggles, as appropriate; timing devices; weather instruments such as thermometers, wind vanes, and rain gauge