

| DAY 9 Connecting As Scientists | | | |
|---|--|--|--------------------------------------|
| Reading Strategy: Making Connections | | Science Concept: Scientific Illustration — What’s My Butterfly? | |
| Reading TEKS: 2.6E | Figure 19: Reading/Comprehension Skills F | ELPS: Speaking K-12, 19 TAC 74.4(c)(4) | Science TEKS: 2.2(A, D); 2.10 |
| 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: “Butterflies are Colorful” page; projector and whiteboard or screen; copy of “My Favorite Butterfly” page; copy of “Twelve Butterflies” page; glue or tape; and scissors. (See section for details.) | | | |
| Content Vocabulary: Scientific description — Using details or evidence based on observation to help visualize or explain a subject being described. | | | |
| Science and Literacy Connection: We make connections while we are reading, and as scientists we make connections while we are observing. | | | |

For an expanded version of the Standards listed above, see page 6.

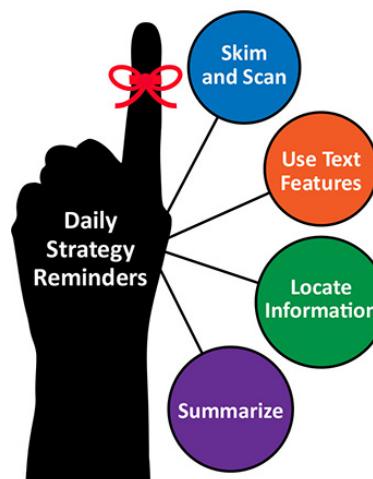
Reading Mini-lesson — 15 minutes

OVERVIEW

Scientists make connections while doing research all of the time. When making observations about the larvae, a scientist may notice that the spines on a caterpillar remind them of the spines on a cactus. Since they already know that the spines help protect the cactus, this connection helps the scientist understand that the spines might be a defense mechanism against predators for both organisms.

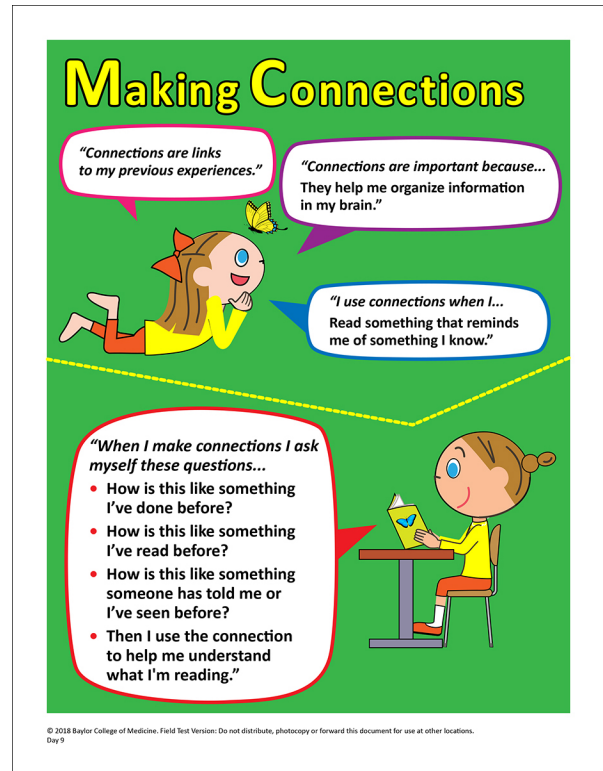
Explain the strategy below as follows.

- **Tell what the strategy is (declarative knowledge)**
 - Say something like, “Our strategy today is called accessing and making connections. It is thinking about the text and how it relates to myself, another text, or the world. I can also think about science and how it relates to myself, other sciences, and the world.”
- **Tell when and why to use the strategy (conditional knowledge)**
 - Say something like, “I know to use this strategy (making connections) because the text or science investigation reminds me of something I already know. This strategy is important because my brain stores information in neat compartments (like drawers, or buckets). As I observe the world around me (or read), my brain is always trying to ‘match’ the new information with what I know. Some people call this schema. Making connections helps me organize my new information (or observation) so I can find/locate it later.”



- **Tell how to employ the strategy (procedural knowledge)**

- While modeling the strategy, say something like, “The first thing I do is recognize that I already know something about the topic. I can think about what aspects of the old information can help me understand the new information.”
- Say something like, “I can ask myself literacy questions like ‘How does this text relate to something I’ve already done before? How does this text relate to something I have read before? or How does this text relate to something that I’ve seen in a movie/song or that someone has told me about before?’”
- Say something like, “I can also ask myself science questions like ‘Have I observed anything like this effect in my life?’ ‘Have I seen similar effects in other experiments?’ or ‘How might this effect interact with others in the real world?’”
- Say something like, “Now, I will use those connections that I’ve made to help me understand what I’m seeing (in science) or reading (in a text). Once I’ve made the connection, now what I know and think has been changed.”



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 like 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
2. e 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) were used, or how the group solved a problem.”

Science Whole Group Lesson — 30 minutes

OVERVIEW

In this activity, students individually examine pictures of different butterflies. They secretly pick out their favorite butterfly and then write two sentences describing it. When finished, they swap their sentences with other students to see if they can pick out the correct butterflies using the scientific descriptions in the sentences.

GUIDING QUESTIONS

Why do scientists record notes of their observations? What is the value of written records?

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.

BACKGROUND INFORMATION

Artistic abilities are just one tool scientists use for observing the natural world. Another tool is written descriptions. No matter how good a sketch or a drawing is of an animal, plant, or landscape, there are things that are very difficult to illustrate accurately. For example, many butterflies and other insects exhibit a color property called iridescence. This means that the scale color on the wings can change

when viewed from different angles. It is difficult to exactly capture all the iridescence variations of a butterfly wing in sketches or even photographs. A written description, however, allows the scientist to report on the various iridescent colors the butterfly exhibits. Combining detailed notes with a sketch provides a more accurate description of the subject being studied.

MATERIALS

For the Teacher

- Download “09-Twelve Butterflies.pdf” (grayscale image) and ready it for projection. Also download “09-Butterflies Color.pdf.” Hold for the end of the activity (Step 11).
- Download “09-My Butterfly.pdf.” Make one copy per student.
- Projector and whiteboard or screen

Per Student

- Copy of “My Favorite Butterfly” student sheet
- Glue or Tape
- Scissors

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. Review with your students what they learned the day before about making scientific illustrations. What were they able to show in their illustrations? Did their illustrations look like the real butterfly subject they were shown? What interesting things did they discover about the butterfly while sketching?
2. Ask your students if there are things about the butterflies that would be hard to sketch? Discuss behavior. How fast do they fly? Do they fly in a straight line? Do they like particular colors of flowers? Are they constantly moving, or do they rest from time to time? How long do they live? Etc.
3. Ask your students what they could do to record the behavior of the butterflies? Accept all responses.

Explore

4. Give each student a copy of the “Twelve Butterflies” page (designed in grayscale). At the same time, project the “Twelve Butterflies” page (grayscale) on a white board or screen. Tell students that they will secretly select their favorite butterfly on the picture. Instruct them not to tell anyone which one they choose!
5. Give students a copy of “My Favorite Butterfly” page. Tell them to write two sentences describing their butterfly in the “Description” box in the square to the left. Challenge them to use words that describe the butterfly so that other students can tell exactly which butterfly you are writing about.

Important: The descriptions may not use words that tell where the butterfly is located on the page.

Note: The pictures are deliberately depicted in grayscale. This makes the students write a detailed description rather than just saying “the blue butterfly.” Color is only one of many properties of the butterflies and seeing the colors may prevent seeing the other properties.

6. Make a list on the board of good descriptive terms students can use (shape, size, patterns, etc.). Ask students for their ideas. Include sentence stems to help students organize their thoughts.
 - My favorite butterfly has...
 - My favorite butterfly looks like...
7. Give students 5 to 10 minutes to select and write a description of their butterflies. Remind them to write their names on their note pages and not to tell anyone which one they are writing about.

Explain

8. Collect, shuffle, and pass out the descriptions. Tell the students that they have 5 minutes to read the descriptions given to them to try to identify the butterfly being described.
9. After 5 minutes, begin calling on them to read the description aloud. After the description is read, students should point to the butterfly on the white board or screen they think was being described. The student who wrote the description will say whether or not it is the correct butterfly. Allow students time to explain their descriptions.
10. Conclude the activity by returning the description pages to your students. Have students cut out the gray butterfly from the set of 12 and paste or tape it in inside the right square on their “My Favorite Butterfly” page.

Elaborate

11. Finally, project the “Colorful Butterflies.pdf” page and have students add color properties to their descriptions. Have each student place the finished page in their notebooks.

Evaluate

12. Read final student descriptions to assess degree of complexity in their observations.

Expanded Standards

Reading TEKS: 2.6 E 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: (E) make connections to personal experiences, ideas in other texts, and society.

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: (F) make connections to own experiences, to ideas in other texts, and to the larger community and discuss textual evidence.

ELPS: Student Expectations for Speaking K-12, 19 TAC 74.4(c)(4) The student is expected to: (D) speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency; (E) share information in cooperative learning interactions.

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.

2.10 The student knows that organisms resemble their parents and have structures and processes that help them survive in their environments.