

DAY 13 Look Closely			
Reading Strategy: Monitoring Comprehension and Fix Up Strategies Practice		Science Concept: Scientific Illustration — The Chrysalis	
Reading TEKS: 2.6 I	Figure 19: Reading/Comprehension Skills C	ELPS: Speaking K-12, 19 TAC 74.4(c)(3) D	Science TEKS: 2.2 (A, D), 2.4(A), 2.10
Materials for Reading Mini Lesson: chart paper, markers, butterfly inquiry chart, nonfiction butterfly text to model strategy			
Materials for Inquiry Circle Groups: group inquiry charts, pencils, variety of nonfiction texts for each group			
Materials for Science Whole Group Lesson: Butterfly habitat (containing Painted Lady chrysalises); colored markers, pencils, or crayons (shades of brown or tan); copy of “My Chrysalis” page; hand lens; science notebook; scissors; yarn; glue. (See section for details.)			
Content Vocabulary: Chrysalis — The protective hard outer layer of the pupa. Scientific Illustration — A picture or diagram that explains or helps make something clear, like the anatomy of a butterfly. Pupa — An insect in the stage of development between a larva and a fully grown adult.			
Science and Literacy Connection: As readers, we evaluate how well we understand a text as we read. If the text was confusing, we use a fix up strategy to get back on track. This evaluation of our understanding is a skill that we use when making close observations. We must ask ourselves, “Am I getting an accurate picture of what I see, hear, or experience?” If not, we know we need to pay closer attention to get our understanding back on track.			

For an expanded version of the Standards listed above, see page 7.

Reading Mini-lesson — 15 minutes

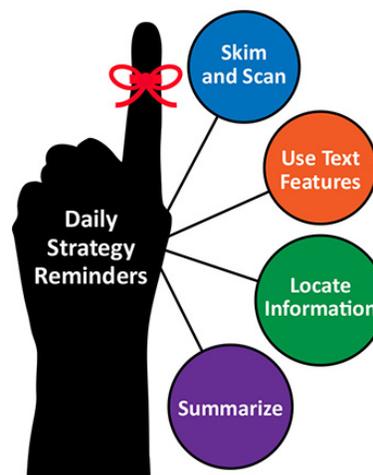
OVERVIEW

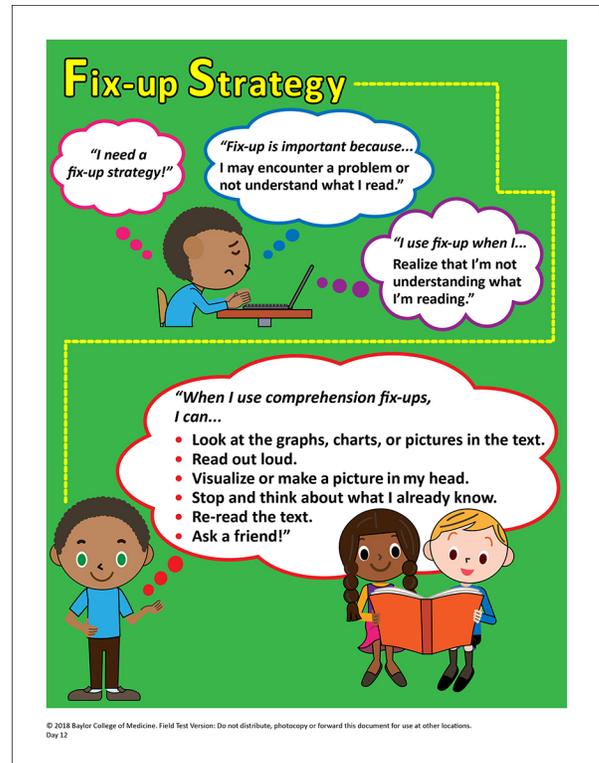
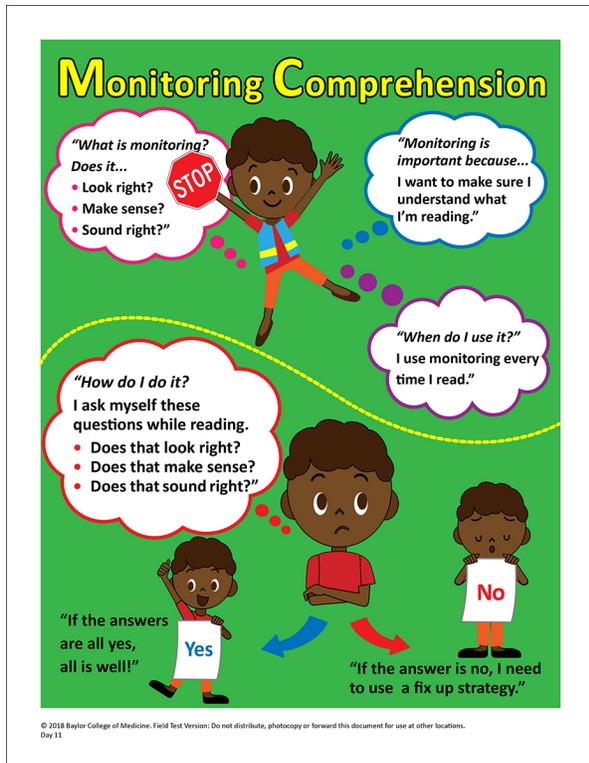
Mini-lesson practice should be used as a time to practice the reading strategies previously taught in this unit. Teachers are encouraged to use this time to best meet the needs of their students. Perhaps your class needs more time with the Mini-lesson from the day before, or you may choose to circle back to mini lessons from a week ago. The choice is yours; we just ask that you use this time to practice!

Teachers should determine if this mini lesson will be facilitated with the whole group or a small group (i.e., a particular inquiry circle group) who needs additional support. If you are working with a small group, we suggest your other learners spend additional time within the inquiry circles.

Explain the strategy:

- **Tell what the strategy is (declarative knowledge)**
 - Say something like, “Today we will continue to practice monitoring comprehension and using fix up strategies. Remember, monitoring comprehension means I will listen to myself to be sure everything





makes sense, looks right, and sounds right. If I don’t understand something, then I will use a fix-up strategy.” Refer to the anchor charts previously made with the class.

- **Tell when and why to use the strategy (conditional knowledge)**
 - Say something like, “This week, we talked about how we monitor every time that we read even though we may not notice it (like with an easy book). It is important to always pay close attention so we know when to use a fix-up strategy.”
- **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. Be sure to use a different text or page in the text than what you modeled yesterday.
 - 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 using a fix-up strategy. I was so impressed when they_____.” Teachers also are 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 the strategy, say something like:
 - “I ask myself three things while I am reading,”
 - “Does that look right?”
 - “Does that make sense?”
 - “Does that sound right?”
 - Say something like, “If the answers to these questions are yes, then all is well. If the answer is ‘no,’ then I have to use a fix-up strategy. When I am finished reading, I will ask myself, ‘What did I learn?’ If I can answer this, all is well. If I cannot, then I should use a comprehension fix-up strategy.”
 - Say something like, “There are several comprehension fix-up strategies that I can use. But, first I have to recognize that something has gone wrong in my reading. I know something has gone wrong when I read and I think, ‘What in the world did I just read?’ Once I recognize that I’m not understanding, then there are a few things I can do to fix it. Here are some of them:

- ...I can re-read the text.”
- ...I can read out loud.”
- ...I can stop and think about what I already know.”
- ...I can look at the graphs, charts, and pictures in the text.”
- ...I can visualize or make a picture in my head.”
- ...I can ask someone in my inquiry circle.”

Practice in text (print, video, or interview)

Post the anchor charts 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 — 2–5 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 — 30 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.”
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

In this activity, students learn more about the life cycle of the painted lady butterfly as they begin observations of the newly formed chrysalis.

Note: This activity should take place when the butterfly larvae have moved into the chrysalis stage.

GUIDING QUESTIONS

What is the chrysalis and what does it look like?

BACKGROUND INFORMATION

In the middle of the life cycle of the painted lady butterfly, and of all other butterflies, is the pupae or chrysalis stage. In nature, the butterfly larva attaches itself to the lower surface of a twig or a leaf and hangs upside down. In the classroom habitat, the larvae climb to the upper end of the growth chamber. There, they attach some silk to the surface of the plastic so that the larvae can hang upside down.

Prior to this and during the larva (caterpillar) stage, the butterfly larva become eating machines. In nature, larvae would eat leaves and other plant matter. In the classroom growth chambers, they ate a paste-like food that provides the needed nutrition. As the larvae grew longer and fatter, they had to shed their outer skin several times to permit growth. When it is time for the chrysalis, the last outer skin is shed. Underneath is a hard skin. This is the chrysalis.

The term chrysalis comes from a Greek word (*chrysós*) which means gold. Many species of butterflies have chrysalises that are golden in color or at least shades of gold. The painted lady chrysalis is a brown or dark tan color. It actually looks like a curled up dried leaf still clinging to the branch. This is a form of protection from potential predators.

During the chrysalis stage, an amazing and dramatic change takes place. During the change, called metamorphosis, the butterfly larva breaks down completely into a kind of thick caterpillar soup. Over the next several days, the components of the soup reorganize themselves into the adult butterfly.

This activity should take place when the butterfly larvae have moved into the chrysalis stage.

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.

MATERIALS

Per Student

- Butterfly habitat (containing painted lady chrysalises)
- Colored markers, pencils, or crayons (shades of brown or tan)
- Copy of “My Chrysalis” student page (13-My Chrysalis.pdf)
- Hand lens
- Science notebook
- Scissors
- Yarn
- White glue

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?” and “What has changed since the last time you observed your organisms?”

PROCEDURE

Engage

1. When a chrysalis has formed, gather the class to observe the change. Ask them what changes they had observed over the last few days before this happened? (Larvae moving up to attach themselves? Did anyone see them attaching themselves? If so, what did they observe? If not, how did they do it?)
2. Tell them that this is the beginning of the amazing stage of metamorphosis, when the caterpillar changes into the butterfly!

Explore

10. Temporarily leave the chrysalises inside the growth chamber. Have student research teams carefully observe the chrysalises without handling the chamber. Explain that it is likely that one or more larvae have not formed its chrysalis along with the others and will need a little more time to do so. Emphasize that it is not good to disturb the larva.
11. Have students list all the things they observe about the chrysalises such as color, shape, size, surface texture, and movement.
12. Tell them that some chrysalises will wiggle like a fast pendulum for a time. Explain that this happens due to internal movement of larvae parts before the metamorphosis begins. It is thought to be a defense mechanism against predators. When disturbed, the chrysalis will swing or shake to possibly scare off a predator.
13. Have students make sketches of one of the chrysalises for their notebooks. They should sketch the chrysalis from the side and from the front. Encourage students to use their hand lenses and to estimate how large the chrysalis is.
14. **When all chrysalises have formed**, students can each choose one to carefully measure the size, length and width using yarn pieces. Instruct them to paste them on the student page as they did before with larvae measurement.

Explain

15. Ask students to report on their observations to the whole class. Begin by having students discuss their observations with a partner. Suggest some sentence stems to help them organize their thoughts by writing them on the board.

- I noticed...
- The chrysalis I observed is...
- I used to think, but now I know...
- I was surprised to see...

9. **Elaborate**

Article/Link:

A *Discover* magazine online blog article, “See Inside a Chrysalis as it Develops into a Butterfly” contains a link to a fascinating animated video of X-rays of a painted lady butterfly chrysalis going through metamorphosis. You can view it on the blog page. Or enlarge and view the video on YouTube.

Blog page:

<http://blogs.discovermagazine.com/d-brief/2013/05/15/see-inside-a-chrysalis-as-it-develops-into-a-butterfly-video/#.W66FqRNKg7z>

YouTube

https://www.youtube.com/watch?time_continue=95&v=SoMs5czRo14

BioEd Online

Though part of a different project (experiments conducted on Earth and on the Space Station), several videos also may be useful for this activity. The Earth-based videos show Painted Lady larvae feeding, chrysalis formation, butterfly emergence, butterfly wing unfolding, and a closeup of a Painted Lady butterfly. Each video can be enlarged for viewing. Scroll to the bottom of the page to review the videos.

<http://www.bioedonline.org/library/media/photos-and-video/butterflies-in-space/>

Evaluate

10. Are students demonstrating progress in using new vocabulary in their explanations? Is there evidence of progress in describing their observations? Are their measurement skills improving ?

Expanded Standards

Reading TEKS: 2.6 I 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: (I) monitor comprehension and make adjustments such as re-reading, using background knowledge, checking for visual cues, and asking questions when understanding breaks down.

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: (C) monitor and adjust comprehension (e.g., using background knowledge, creating sensory images, re-reading a portion aloud, generating questions).

ELPS: Student Expectations for Speaking K-12, 19 TAC 74.4(c)(3) The student is expected to: (D) speak using grade level content 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

2.4 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

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