DAY 10 Why Are Producers So Important?		
Reading Strategy: Making Connections Practice		**Science Concept:** Producers are organisms that make their own food. All other living things depend on producers for food.
Reading TEKS: 3.6E	**ELPS:** Speaking K-12, 19 TAC 74.4(c)(4)	**Science TEKS:** 3b2B, 3b4, 3b9A, 3b9B
Materials for Reading Mini Lesson: chart paper, markers, pond ecosystem inquiry chart, pond 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: **Food chain –** sequence of whom eats whom in an ecosystem that provides the transfer of energy between organisms **Producers** – make their own food from simple substances and energy from the Sun (Ex. plants) **Consumers** – Cannot make their own food, must obtain energy from consuming (eating) producers or other consumers **Decomposers** – break down dead plants and animals, returning important nutrients to continue the food chain **Energy** – required by organisms on Earth to move, grow, and sustain themselves. Food provides energy and other raw materials necessary for life **Ecosystem –** a group of living organisms interacting with each other and their non-living environment		
Science and Literacy Connection: Scientists study the connections between organisms to understand the dynamics of ecosystems.		

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

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 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." Refer to the anchor chart previously made with the class.
- **Tell when and why to use the strategy (conditional knowledge)**
  - Say something like, "Yesterday, we talked about how 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)**
  - 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 making connections. 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 do is access my schema about the topic. I can think about what aspects of the old information can help me understand the new information.
- 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?'
- 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?'
- 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, my schema may have been changed or reaffirmed.

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

Students will use organism cards to create a simple food chain.

GUIDING QUESTIONS

What is a food chain? Why are producers and consumers important? How is energy transferred in a food chain? Why is the transfer of energy important in an ecosystem?

BACKGROUND INFORMATION

There are three types of organisms that make up an ecosystem: producers, consumers, and decomposers. Without producers, the other organisms would not exist- they depend on producers for food. Producers make their own food using energy captured from the sun and stored as chemical energy.

Producers, consumers and decomposers make up the food chains in an ecosystem which are the general sequence of whom eats whom. Producers provide the basis for a food chain's energy as the energy is passed from one consumer to another. An ecosystem contains many food chains, which in turn create food webs.

SAFETY

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

MATERIALS

- Organism cards (from Lesson 9)
- Organism key (from Lesson 9)
- Arrow doc.
- Food chain key

SET UP

- Print arrow doc. on cardstock and cut into cards - 1 set (three arrows) per team
- Sort out organism cards so that each team gets one complete food chain (see key)
- Add 1 Sun card to each set.
- Shuffle the cards before you secure with rubber band or place in a baggie.
- Print out or prepare to project the Food chain Key

DAILY OBSERVATIONS

Students observe their samples and record data/information on data logs in their science notebooks.

PROCEDURE

Engage

1. Start the class by asking, "What happens if your parent's car runs out of gas?" Responses may include that the car will not "go". Ask them why. (Because it has no fuel to run the engine and the many parts of the car that depend on it.)
2. Ask, how are our bodies like a car? How do we fuel them? (with food). Why is food important for us? (provides the energy and nutrients we need to "go"- to move, think, and grow)
3. Remind students that in the previous class they learned how organisms live in specific environments that can provide their needs. One of those needs is food for energy.
4. Explain that our (human) food comes from both plants and animals. Ask them for examples. (vegetables, fruit, legumes, fish, chicken, beef, etc.)
5. Ask them to give examples of where organisms in the natural world get their food. (from making their own food, like plants; or from eating each other)

Explore

6. Ask the Equipment Directors to distribute the prepared sets of organism cards (one set per team
7. Remind the students that in the previous class they sorted out organism cards to figure out which organisms lived in the same environment.
8. Today they will try to figure out "whom eats whom".
9. Each team will have a specific group to work with (Ex. desert, marine, etc.)
10. Direct the students to make a linear L-R progression with the cards to describe whom eats whom.

11. Instruct them to use arrows to point to the organism (or mouth) that consumes (or eats) it.
12. Ask them to write down their sequence in their science notebooks.
13. Allow 5-10 min to complete.

Explain

14. Ask the Data Scientists from each team to describe their food chain and explain why they organized it that way. Accept their responses.
15. After all of the teams have presented their food chains, direct their attention to the projected slide showing the correct order of food chains.
16. Discuss each one as the team checks their work. Allow time for questions if their sequence didn't match the key.
17. Ask students to write down the correct sequence in their notebooks if needed (without erasing the other!)

Elaborate

18. Point out that in every food chain, every component (producer, consumer, decomposer) is important.
19. Every food chain begins with the energy from the sun that producers use for making their own food. Without producers, consumers and decomposers would not be able to live. As they eat one another, they are passing energy needed to live, grow, and maintain themselves.
20. Consumers balance the food chains in an ecosystem by keeping producers in a limited number. Without balance, ecosystems would collapse.
21. Decomposers break down dead plants and animals, returning nutrients back into the ecosystem to grow more plants to continue the food chain.

Evaluate

22. Write the following prompt on the whiteboard and have students write a response in their science notebooks: "Why is the transfer of energy important in an ecosystem?"
23. Did student written responses include new science vocabulary?
24. Did they give reasonable explanations about how food chains transfer energy?
25. Do students communicate understanding of the components that make up an ecosystem?

Expanded Standards

Reading TEKS: 3.6E 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

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: 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. 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. 3b9A: The student is expected to observe and describe the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem. 3b9B: The student is expected to identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field.