

What is Kognity's pedagogical approach to the 5E's?



Engage

Allow students to begin learning a concept with an activity or **overarching questions that spark curiosity and encourage discussion**. Students are invited to **make connections with existing knowledge and new thoughts & ideas**.



Science and Engineering Practice

Asking questions and defining problems

Take a look at your Venn diagram. What questions do you have about a mountain lion's jaw or diet from your diagram? Write down the questions in your notebook.

Watch this video about mountain lions.



Video 1. See why the mysterious mountain lion is the "bigfoot" of big cats.

- Did this video help to answer any of your questions?
- Review the prey composition analysis from the video. What conclusions can you make about a mountain lion's diet?
- How does a mountain lion's tooth structure help it to meet its energy needs?

Explore

Introduce a concept or skill that gives students the space to explore the phenomenon or problem by providing an overview. Provide opportunities for collaboration and discussion with questions, hypotheses, and activities.



Activity

Create a food web with the following:

- Product/bottle lids of various sizes and string/yarn. (Various sizes and colors would be good to equate to species size or color. Be creative! For example, draw a rabbit and glue it to the top of a bottle cap.)
- Place each lid in an ecosystem and connect all via string/yarn.
- Notice some species and strings might interconnect with others. Consider the following questions:
 - Why does this happen?
 - What happens when one of the caps is removed from the food web? What happens when more than one is removed?
 - Where will replacements occur for consumers?
- Discuss these questions as a class.

Explain

Students are presented with concepts and terms to develop explanations for the phenomenon that they have been exploring. Introduce independent work ideas and opportunities for reflection.



Your context

You are likely familiar with recycling plastic bottles or paper. Recycling these materials allows this waste to be broken down into matter that can be used to make new plastic or paper.

- Based on this idea, why is nature called the ultimate recycler?
- What happens to the matter and energy in a plant when the plant dies?

Elaborate

Encourage deeper understanding of concepts and skills through reflections and provide further opportunities to apply new knowledge to different local or global contexts.



Crosscutting Concept

Patterns

This graph shows the age of deer by sex and population numbers of each sex. Notice the trends. Evaluate the graph.

- What patterns do you see?
- What happens to the deer as they age? Why do you think this happens?
- How will this impact future deer population numbers?


Now, consider the fact that deer are a food source for mountain lions.

- How can mountain lions affect the survival of fawns?
- Can the presence of mountain lions affect the [distribution](#) of deer by age? If so, what effects could this have on the deer population?
- If the mountain lion population increased, what could happen to their food supply?

Evaluate

Ensures students are reflecting on their learnings, new understanding and skills and provides an opportunity to provide evidence for the changes and growth in their learnings.

Every organism has unique biological and energy-dependent needs. When food chains, food webs, or energy pyramids are disrupted, consequences impact every plant and animal in that ecosystem. Mountain lions need certain food sources for energy and survival. Every heterotrophic organism needs a source of food for energy, as they cannot self-generate energy.

 Your reflections

In Kognity, the phase of the 5E instructional model will be highlighted for each module & lesson, and is further explained in your **Teacher Guide!**



Tip!

Find each lessons alignment with which *Cross Cutting Concepts, Science Engineering Practice, Disciplinary Core Ideas, Performance Expectations* and which of the **5E learning phases** is intended for each lesson in your Table of Contents!





Zooming in

Engage

Alignments

CCC	Energy and matter: Flow cycles an... Systems and system models	SEP	Analyzing and interpreting data
DCI	LS1.C LS2.B	PE	HS-LS2-3 HS-ESS1-6

Subsections

-  Earth's early atmosphere: Where is the oxygen?
2.2.1.1 0/23 >
-  The chemical equations of photosynthesis and cellular respiration
2.2.1.2 0/23 >
-  Investigating cellular respiration
2.2.1.3 0/23 >
-  Reflection and summary
2.2.1.4 0/23 >

