

## PD Leader Master

### 5th-Grade Guide to McCabe Video Clips for Day 6

**Video clip 1:** McCabe classroom—At the beginning of the lesson, the teacher elicits student ideas about the lesson focus question (strategy B).

#### Analysis Guide B: Setting the Purpose with a Focus Question or Goal Statement

1. **Does the focus question or goal statement help students anticipate one main learning goal for the lesson? If yes, write the implied main learning goal here.**

**Focus question:** How do we get the energy we need to survive?

**Implied main learning goal:**

- We (humans) get energy from food, which is passed from producers to consumers in food chains/food webs.
- All living things need to get energy from food, which is passed from organism to organism in food chains/food webs.

**Actual main learning goal:**

- Organisms use some of the energy stored in food to live and grow, some is released into the environment as heat, and some is passed from one organism to another in food chains/food webs. Once energy is used, it cannot be reused or recycled.

2. **Does the focus question or goal statement use everyday language that students will understand at the beginning of the lesson? If no, what words need to be changed? Yes.**
3. **Is the focus question presented in a scientifically accurate way? If no, what is accurate? Yes.**
4. **Would the goal statement be improved if it were turned into a focus question? If yes, provide a suggested focus question here.** Not applicable. However, the focus question could be improved to better match the actual main learning goal and the summary statements. Alternatives might be “How do living things get the energy they need to live and grow?” or “How does each organism in a food chain get the energy it needs to live and grow?”

**Video clip 2:** McCabe classroom—The teacher ends the lesson with the focus question, “How do we get the energy we need to survive?” (strategy I).

#### Analysis Guide I: Summarizing Key Science Ideas

1. **Is there some kind of summary statement or activity in the lesson? Yes.**
  - In segments 1:08:29.13–1:08:43.10, the teacher guides students in making a *summary statement* about energy. One student states that “energy starts off with the Sun and ends up with the decomposers” (1:08:30:07). When the teacher asks whether energy can be reused once the decomposers are done with it, the student concludes that it can’t be reused “because it can’t be recycled” (1:08:41:11).
  - The teacher assigns a *summary activity* at segment 1:05:40.14: “Can you ... write down in your journal one thing that you learned for sure today?”

2. **Does the summary focus on conceptual understanding and not just a listing of facts or activity procedures?** Yes. The summary focuses on the big concept that energy moves (flows) through food chains/webs (from the Sun to decomposers) and cannot be recycled.
3. **Do the science ideas in the summary match the main learning goal and the focus question or goal statement?** The science ideas in the summary only partially match the focus question. The focus question asks how humans get the energy they need to survive. This question could be answered by talking about how humans get their food. However, the science ideas in the summary focus on bigger ideas about how energy moves in food chains/webs—starting from the Sun and ending with the decomposers—and is not recycled.
4. **Is the summary statement/activity scientifically accurate?** The summary is broadly accurate (the important idea that energy cannot be recycled is accurate), but it's incomplete and potentially misleading.

**Incomplete or misleading ideas:**

- Saying that energy starts from the Sun and ends up with decomposers is accurate but doesn't clarify how the energy from the Sun (light energy) is different from the chemical energy stored in food that plants make and all organisms use to live and grow. Living things cannot directly use light energy to live and grow. It must be changed (transformed) into stored chemical energy in food.
  - Saying that energy starts from the Sun and ends up with decomposers leaves out important ideas about how it gets from the Sun to decomposers (e.g., the process of photosynthesis enables plants to make their own food, which all organisms consume).
  - Saying that energy starts from the Sun and ends up with decomposers leaves out what happens to it along the way: Organisms use some of it to live and grow, some is given off into the environment as heat, and only a small fraction of the energy stored in an organism gets passed along to the organism that consumes it.
  - Saying that energy ends up with the decomposers sounds as if decomposers store all the energy. In fact, decomposers, like all other organisms, use energy to live and grow.
5. **Are students engaged in making sense of the summary statement?** Students are engaged in reflecting on the lesson and writing down ideas they've learned. In the small-group and large-group discussions, a few students talk about energy (segments 1:06:32.19, 1:07:48.06, 1:08:05.04, 1:08:22.10). Some of these ideas are accurate (1:06:32.19: "Crickets eat plants to get energy"), and some are accurate but incomplete (1:07:48.6: "Energy will be released as heat"). One student observes that energy will be released as heat, but it isn't clear how this idea is connected to the food chain. Other ideas are inaccurate, at least without further elaboration (1:08:26.25: "Energy gets energy from the Sun").

Student talk doesn't include the big ideas that organisms use some food energy to live and grow, and some is given off into the environment as heat (not recycled). There is only one bit of evidence in this clip that students understand that energy is not recycled (though it may appear more often in students' writings). This occurs at segment 1:08:39.06 in response to the teacher's question, "Can we reuse that energy, once the decomposers ... are done with [it]?" A student replies "No" and then adds, "Because it can't be recycled."

6. **Could the summary be improved? Write suggested modifications.** Yes. An improved summary would include the following science ideas:
- a. Light energy from the Sun is transformed into energy that producers (plants) store in food molecules.
  - b. All organisms (producers, consumers, decomposers) need to use this food to live and grow.
  - c. When herbivores eat plants, when carnivores eat other organisms, or when decomposers eat wastes and dead organisms, some of the stored energy is passed from one organism to another.
  - d. Organisms use some of this food energy to live, move, reproduce, and grow. During this process, some energy is given off as heat.
  - e. The energy given off as heat cannot be reused or recycled (i.e., organisms can't use it again as energy to live and grow).
  - f. Therefore, food chains/webs depend on a constant supply of new light energy from the Sun and the food energy plants continually produce.