

PD Leader Master

5th-Grade Guide to Video Clips for Day 5

Video clip 1: Before the lesson, the teacher introduces the unit central question (How do living things depend on one another to get the food they need to live and grow?) and the day’s focus question (What is food?).

Student ideas: None

Science ideas: Living things need food to live and grow. (Suggested by the unit central question; see video segment 00:01.8.)

Main learning goal: Something about living things and food. The focus question (What is food?) suggests that the main learning goal is a definition of *food*, but we don’t know what that definition is yet.

Video clip 2: During the lesson, students have been introduced to a scientific definition of *food* and are trying to use that definition to determine whether materials such as juice and water are food.

Student ideas:

00:06.1	Juice isn’t food because it’s a drink.
00:34.6	Food is always solid.
00:46.1–00:48.4	Water is food because it has nutrients and vitamins in it.
01:14.8–01:27.3	Water has vitamins in it that help you live. Things with vitamins in them are food.
01:58.3; 02:24.0	Water has zero grams.

Science ideas:

02:36.0; 02:43.3; 03:11.4	Water has mass.
02:54.7	Water doesn’t have any Calories.
03:24.8–3:37.7	Water has to have both mass and Calories to be a food.
03:38.3	Water doesn’t have any energy.

Main learning goal: Food has both matter and energy; water isn’t food because it doesn’t have energy.

Video clip 3: At the end of the lesson, the teacher challenges the class to decide whether Diet Coke is a food. She tells students that Diet Coke has zero Calories.

Student ideas: None

Science ideas:

00:41.5	Diet Coke has zero Calories.
01:28.7	Diet Coke isn’t food because it doesn’t have any energy; it has zero Calories.
01:48.5	Diet Coke is not a food.
02:26.6	Plants get the food—both matter and energy—they need to live and grow.

Main learning goal: Food has both matter (mass) and energy that living things need to live and grow.

Analysis Guide: One Main Learning Goal

Analysis of the three classroom video clips suggests that the main learning goal is a definition of food: *Food has both matter (mass) and energy that living things need to live and grow.*

1. Is the main learning goal stated in a full sentence that represents a science idea (not a topic, phrase, activity, or question) that students could take away with them at the end of the lesson? **Yes.**
2. Do students already know the science content reflected in the learning goal? **No. (Seems evident from these clips that students don't know this content.)**
3. Is the learning goal an important science idea? **Yes.**
4. Do students have misconceptions or confusion about this science idea? **Yes. (See the debate in clip 1 about drinks not being food, food needing to be solid, and water containing vitamins, which means it's food.)**
5. Does this learning goal challenge students' thinking and/or misconceptions? **Yes.**
6. Is the learning goal grade-level appropriate and matched to state and/or national standards? **Yes; it's matched to NGSS standards.**
7. Is the learning goal scientifically accurate? **Yes, but it's probably more accurate to say that food "provides" (rather than "has") both matter and energy that living things "can use" to live and grow. This is a subtle point, but scientists wouldn't want students to think that energy is a "thing" (e.g., matter) inside food. Rather, when food reacts with oxygen, it releases energy that living things can use. The concept of energy is a challenging one!**

Suggest how to improve the main learning goal: Change the definition to "Food *provides* both matter (mass) and energy that living things *can use* to live and grow."

Are there any supporting ideas that don't closely match the main learning goal? **No.**