



Lesson 2: Waste Management & Composting

Time: 1hr

Common Core Standards

NGSS.K.LS2.1

Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]

Objectives:

Teach students about how composting can reduce our impact on landfills and benefit the environment.

Key words: Vocab Tree

Landfill; Methane; Methane Emissions; Reduce, Reuse, Recycle; Humus; Decomposers; Food (nutrient) Cycle

(Using Key words: Students can create a glossary, in books or on wall in classroom. Students are encouraged to practice using vocab in written or verbal sentences - perhaps writing example sentences and displaying them. Students could earn points for using the vocab in novel sentences each week)

Resources:

- PowerPoint - Waste Management (shown at the beginning of lesson)
- Lunches
- Paper
- Colored Pencils
- White/ Chalk Board
- Picture of whole lunch, and “processed lunch”

Activities:

Introduction

Composting is an important method in reducing waste from our landfills. When food waste goes into landfills the food cycle is broken and nutrients are not able to return into the ground. By composting our food we give it new purpose as fertilizer for new plants. This activity shows how when we eat whole foods we are able to easily trace their origins to the ground, where highly processed foods are much more difficult to trace.

Group Activity: What Comes From the Dirt?

- Inform students that real food comes from the dirt. Ask them to consider their lunches, what items could have come from the ground?
 - Challenge students to name a food in their lunch that did not come from dirt. Examples of this include non-organic chemicals including preservatives or food coloring in chips such as Doritos or Cheetos.
- Show the students the two pictures of the whole lunch and the packaged processed lunch.
- Help students figure out the ingredients in the whole lunch and, as a class, trace each food's origin back to the ground.
 - Use a tuna fish sandwich for example: Bread came from wheat grown in the dirt. Pickles are preserved cucumbers grown in the dirt. Lettuce was grown in the dirt. Mayonnaise came from eggs, which came from chickens, which ate grains grown in the dirt. Tuna living in the ocean eat smaller fish, which eat zooplankton, which eat phytoplankton, which needs nutrients from the decomposed bodies of dead plants and animals that accumulate on the ocean floor and are brought to the surface by currents.
 - Potato chips as another example: Made of potato, salt, and canola oil. Potatoes grow underground, salt is a mineral sometimes found in the sea in the form of sea salt, canola oil comes from the canola plant which is grown in the ground.
- Ask students if they can easily trace the origins of the unhealthy lunch; where does soda come from? What is in a candy bar or M&Ms?
 - Explain that these items, when thrown away are not able to easily decompose like the less processed food choices because of the large amount of packaging and preservatives.
 - If food can't decompose, it will just keep building up in our landfills!
- Ask students to list some of the things they had for lunch (or any food items they want to choose) on a white board, chalk board, or individually on paper.
- Once students have made a list of ingredients, ask the students to draw pictures of where their lunches came from. For example, one drawing may have a field of wheat, a cow, a chicken, a farm, etc.
 - Encourage students to show their drawings to the class and explain how their lunch may or may not have come from dirt.

(This activity was inspired by "Do the Rot Thing, A Teacher's Guide to Compost". For similar activities or more information visit:

http://www.cvswwmd.org/uploads/6/1/2/6/6126179/do_the_rot_thing_cvswwmd1.pdf)

Recap

Most things we eat come from the dirt. To have a complete nutrient cycle, our leftover food waste needs to return to the ground to become rich fertilizer for new plants. Nutrients from food waste are

not well utilized when we throw food into a landfill. In addition, unhealthy food choices include a lot of chemicals and preservatives that decrease foods ability to return to the ground and are therefore unable to be composted properly. These foods further increase the amount of waste in our landfill. In conclusion, eating healthy lunches composed of natural ingredients that can later be composted, is the best method for optimizing the food cycle.

Further Activities/ Homework:

- Have students go home and research facts about landfills in the United States. Ask them to find out which landfill is closest to their house, how many landfills are in their area and how large they are.
 - Each student should come to class with at least one new fact. Have them discuss what they learned in class, and brainstorm methods to better reduce their individual impact on landfills. Ask students how they could reduce their own food waste (taking less food at lunch, ordering only what they can eat, utilizing leftovers, composting at home, ect.)
- After doing some research, have students imagine what it would be like if there was a landfill next to their house or school.
 - Talk about the sights, smells, and sounds around a landfill. Many students don't understand the environmental costs of their waste because they have not seen a landfill. Having a discussion about what it would be like to live close to a landfill will put these costs into perspective.