



# Cookin' Up Some Dirt Classroom Activity



## SYNOPSIS

Through a hands-on experiment, students will investigate different rates of compostion.

## OBJECTIVES

Students will learn about how much of each type of material is needed to successfully compost by comparing six different ratios of nitrogen fixing material (lettuce-green) and carbon fixing material (newspaper-brown) and observing changes over time.

## NGSS CONCEPTS

**4-ESS3-2.** Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

**5-ESS3-1.** Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

**MS-LS2-3.** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

## MATERIALS

- 6 sealable ziplock bags (sandwich or quart size)
- 3 straws- cut in half
- Sharpie & masking tape
- Kitchen thermometer (if you want to incorporate data collection)
- Tape
- Scissors
- Lettuce
- Newspaper
- Kitchen Scale (Also could measure with measuring cups)
- Water
- Measuring spoons
- Pictures/Videos of Compost Bins

## PROCEDURE

When baking cookies, there is a recipe you must follow to make sure they taste good. You have to mix flour, sugar, eggs, chocolate chips, etc. If you put too much or too little of any of those things, it could change how your cookies end up. That's why recipes are important; they tell you how much of each of the ingredients you need to make sure it ends up delicious. Today we are going to try to figure out if we can make a recipe for compost.

Introduce students to the idea of a compost bin through pictures (see page 3) or videos.

- [Composting for Kids with Peppa the Pig](#)
- [How Compost is Made](#) - Animated Film
- [Make the Most of Compost](#) - This video gives the ratios away
- [Worm Bin 8 Week Timelaps](#)

## PROCEDURE (cont.)

You are going to create six different sample compost bins to see which one works best. We are going to conduct an experiment to see how much of each item we need for the best compost.

1. Label six zip lock bags 1-6.
2. Chop up some newspaper and some green material (lettuce). The smaller the better!
3. Cut three straws in half so there are six short straws.
4. Make sure your thermometer fits inside of the straw.
5. Make bag mixtures using a kitchen scale.
  - a. Bag 1: air (this is the control bag)
  - b. Bag 2: 8 oz of newspaper (0.5 lbs)
  - c. Bag 3: 8 oz of green material (lettuce)
  - d. Bag 4: 2 oz newspaper, 6 oz green material
  - e. Bag 5: 4 oz newspaper, 4 oz green material
  - f. Bag 6: 6 oz newspaper, 2 oz green material
6. Add one tablespoon of water to each bag.
7. Add the half straw to the middle of the bag so it is sticking out and close the bag around the straw.
8. Tape the bags to a window that receives a lot of sunlight. If unavailable make sure all bags are stored in the same place; the warmer the location, the faster the experiment will move.
9. Observe the bags each day for several weeks, taking temperatures and recording changes (if possible).
10. Occasionally mix up compost. If compost seems to be getting dry add a tablespoon of water as needed.

## CHECK FOR UNDERSTANDING

- After observing the compost bags, determine which of the bags are decomposing the fastest, and why you think that is? You will know the bag is composting if you see the green material turn brown.
- Why is it important to pay attention to how much of each material you are adding to the compost?
- Does nature do its own composting? Where and what time of year have you seen this?
- What other materials could replace the newspaper and the lettuce?
- Would this experiment have changed if we took away the air? Or the water?

## EXTENSION

- If you don't have a kitchen scale, you can always eyeball percentages.
  - a. Bag 1: air (this is the control bag)
  - b. Bag 2: 1 cup of newspaper
  - c. Bag 3: 1 cup of green material (lettuce)
  - d. Bag 4:  $\frac{1}{4}$  cup newspaper,  $\frac{3}{4}$  cup green material
  - e. Bag 5:  $\frac{1}{2}$  cup newspaper,  $\frac{1}{2}$  cup green material
  - f. Bag 6:  $\frac{3}{4}$  cup newspaper,  $\frac{1}{4}$  cup green material
- This lesson could be done with the data collection and just use student observes? At the end of three-week experiment, students should describe what you see in each of the bags. Are they different? Are they the same? Compare this to the dirt you see at your house or school. How is it different? Which one do you think is better? Why?

# Compost Pictures



