

MATERIALS

- (3) 5-gallon plastic buckets, (3) 3.5 gallon red Tubtrugs, (3) 7 gallon blue Tubtrugs, 1L Watering Cans (3), paper cups (3), Garden Claws (3)
- Sticks, soil, food scraps, straw
- Garden gloves (3)
- Re-closable plastic freezer bags, quart or gallon size (3)
- A piece of chart paper listing the eight steps of Building Compost (see below)

PREPARATION

- The day before, contact a local restaurant or food coop and ask them to set aside some food scraps. Pick them up on the way to school.
- Fill the red Tubtrugs half-full with food scraps. Fill the 5-gallon buckets with straw. Fill the watering can half-full with water. Place a small scoop of soil in each paper cup.
- Identify a location around school grounds where students can complete the relay. It should have a clearly distinguished starting line. Place the three blue Tubtrugs about 30 feet away from the starting line, one for each relay team. Place all other items (except gloves, freezer bags, and chart) around each Tubtrug.

PROCEDURE

Part 1: Play Compost Relay

- As a class, review the eight steps of building compost:
 1. Start with Sticks (Place a layer of sticks on the ground to maintain airflow underneath the pile.)
 2. Scoop Some Soil (Even a small scoop of soil helps populate the pile with beneficial decomposers.)
 3. Break Down Browns (Chop/shred brown matter, like leaves or paper.)
 4. Make a Super Bowl (Place a layer of brown matter—2x the amount of greens you are going to add—on the pile. Arrange it like a bowl or a nest.)
 5. Fill with Greens (Fill the bowl created in step 4 with kitchen scraps, etc.)
 6. Cover with Browns (Cover the greens-filled bowl with more browns.)
 7. Keep it Damp (Water lightly. It should feel like a wrung-out sponge.)
 8. Turn, Turn, Turn (Use a garden fork or claw to turn the pile.)
- Outdoors, divide students into three teams of eight, and line each team up at the starting line, in line with their respective blue Tubtrugs. Each student is responsible for completing one of the steps of building compost. When it is his/her turn, the student will put on a pair of gloves, run up to the Tubtrug and complete the action. Then, he/she will run back to the starting line, give the gloves to the next student, and sit down at the end of the line.
- Give the starting student a pair of gloves and station yourself near the Tubtrugs. Hold up the chart paper listing the eight steps of building compost. *On your mark...*

Part 2: Make Compost in a Plastic Bag

- After the relay is over, give a freezer bag to one person in each group. Ask the student to fill the bag with the compost they've built in the blue Tubtrug, making sure the bag contains roughly 3 parts browns and 1 part greens.
- *We are going to watch the ingredients decompose in our classroom!* Ask students to come up with three different scenarios for the bags of compost. Perhaps one bag will remain open and they will stir it every day. The second bag will be closed and unstirred, and the third bag will be stirred and sprayed with water.
- Select a student to empty the remaining ingredients in the blue Tubtrug into the compost bin. Return to the classroom and place the three bags in a visible location.

Decomposition

Soil & Ecology

ENGAGE

Prior to this lesson, select two locations in the garden with very different soil conditions. During your class tour of the garden, visit each location and have students make observations about the soil and its surroundings. “What types of plants (if any) are growing here? Do they look healthy?” Use a hand trowel to scoop up a small sample of soil. Pass the soil sample around for students to examine. “How would you describe the soil’s appearance? Does it look rich and robust? If not, what do you think it is missing?”

OBJECTIVES

- Students will be able to identify organic soil components, such as leaves, straw, and plant matter
- Students will be able to describe the conditions necessary for aerobic decomposition

EXPLAIN

What is compost?

When a plant, animal, or insect dies, it begins to decompose, or break down. During this process, helpful decomposers such as bacteria, fungi, or worms feed on the dead materials, breaking them down into progressively smaller pieces. Over time, these materials will become part of the soil. As materials decompose, valuable nutrients are released back into the soil, providing a food source for existing plants.

The term “compost” refers to the decaying remains of organic matter. Since it is full of nutrients, compost is an ideal fertilizer. Compost also improves the structure, or *tilth*, of the soil. Adding it to sandy soil that drains water too quickly will improve water retention. At the same time, adding compost to clay soil that’s as hard as a brick will loosen it up.

How to Compost

Great garden compost requires a balanced mix of ingredients and the right conditions in order to yield the rich and robust “humus” that gardener’s love. The primary ingredients are air, water, decomposers, brown matter (straw, leaves, paper, etc.), and green matter (kitchen scraps, grass clippings, weeds, etc.). See our “How to Compost” guide for more specific details.

Aerobic vs. Anaerobic Decomposition

Adequate airflow is an important component of a successful compost pile. The beneficial decomposers mentioned early require air in order to survive and do their very important work. When little or no air is available, your compost pile will be taken over by anaerobic decomposers. These organisms work in the absence of air. Anaerobic compost piles take much longer to break down and smell horrible in the process.

ADDITIONAL CONTENT INTEGRATION *(see previous page)*

After the activity, discuss which steps provide each of the five ingredients of compost: air, water, decomposers, brown matter, and green matter.

ADDITIONAL MATERIALS

- Transplanter trowel
- “How to Compost” guide

EVALUATE

Journal prompt: Make a guess as to what will happen in each of the three compost bags.