



Compost Chefs



Objective

To teach students how composting can prevent food scraps and yard trimmings from being thrown away and how different components, such as air, moisture, and nitrogen, affect composting.



Activity Description

Students will create four compost bins that differ in their amounts of air, moisture, and nitrogen. Students will observe and record the differences these conditions cause in the composting process.



Materials Needed

- Four thin, plastic buckets (5 gallons each) or other plastic container (e.g., milk jug)
- One hand drill or punch-type can opener
- One copy of the *Compost Chef* worksheet per student
- Grass clippings (shredded, if possible)
- Vegetable and fruit peels
- Weeds (shredded, if possible)
- Hay (shredded, if possible)
- Sawdust
- Coffee grinds
- Thermometer
- Bloodmeal
- One marker or pen
- Tape
- Four pieces of construction paper (3 by 5 inches each)
- Garden trowel



Key Vocabulary Words

Compost
Nitrogen
Oxygen
Decompose
Bedding
Organic



Duration

Set-up: 1 hour

Follow-up: 15 minutes to 1 hour on an occasional basis for up to 4 weeks



Skills Used

Computation
Observation/classification
Motor skills



Activity

Step 1: Photocopy and distribute one copy of the *Compost Chef* worksheet to each student. Introduce the following concepts (refer to Teacher Fact Sheet titled *Composting* on page 141 for background information):

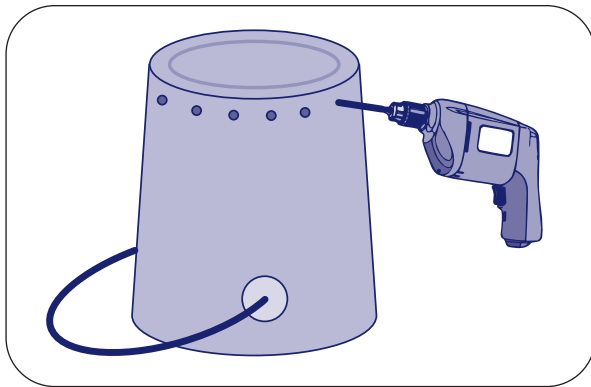
- Explain to the class what compost is and how it is made.
- Discuss why composting is important in managing and reducing trash that is sent to landfills.
- Explain how composting works, and how nitrogen, oxygen, and water all play a part in the creation of compost.



Journal Activity

Ask students to pretend they are gardeners. Ask them if they would use compost to help their gardens grow. Why or why not?

Step 2: Pick an appropriate project space. This activity can either be conducted in an indoor area of the classroom that has been covered with a protective drop cloth or in a designated area outside of the school. If you choose to leave the compost buckets outside, make sure the chosen area will not be disturbed by recess or after-school activity. Use the hand drill and carefully poke several holes in the sides (near the bottom) of three of the buckets or milk jugs.



Step 3: Have the students sit in a circle within view of you and the compost buckets. Divide the class into four groups and assign a group of students to each bucket. Using the construction paper and marker, label the buckets “one” through “four.”

Step 4: Work with each group of students to set up the buckets. As each mixture is created, discuss its ingredients and ask students to record the “recipe” on their *Compost Chef* worksheets. Following are directions for setting up each bucket:

Bucket #1–Compost lacking nitrogen.

- Place mostly “brown” carbon-containing materials in the bucket, such as dead leaves, straw, and coffee grounds. On top, add a few vegetable and fruit peels.
- Moisten, but do not soak, the mixture with water.

Bucket #2–Compost lacking moisture.

- Place a mixture of “green” grass clippings (make sure they are dry), bloodmeal, and vegetable and fruit peels in the bucket.
- Place a few layers of “brown” dead leaves, straw, and coffee grounds into the mixture.
- Do not add any water.

Bucket #3–Compost lacking air circulation.

- Use the bucket without the holes.
- Place several layers of mostly high-nitrogen grass clippings, bloodmeal, vegetable peels, and fruit peels in the bucket.
- Moisten the mixture with water.

Bucket #4–“Perfect” Compost.

- Layer (in an alternating pattern) leaves, coffee grounds, straw, and vegetable and fruit peels, and a small amount of grass clippings in the bucket.
- Moisten the mixture with water.

Step 5: Explain that, as compost chefs, the students must monitor their creations. Give each group written instructions on how to care for its compost bucket over the next few weeks. For example:

Bucket #1

- Use a garden trowel to stir your compost mixture regularly: once every 3 days for the first 2 weeks, then once per week.
- Add a dash of moisture to your compost mixture with a sprinkle of water every other week.

Bucket #2

- Use the garden trowel to stir your compost mixture regularly: once every 3 days for the first 2 weeks, then once per week.
- Keep your compost mixture dry.

Bucket #3

- Add a sprinkle of water to your compost mixture every week.
- Make sure you don't stir your mixture.

Bucket #4

- Add a sprinkle of water to your compost mixture every week.
- Use the garden trowel to stir your mixture regularly: once every 3 days for the first 2 weeks, then once per week.

Step 6: At each interval of stirring or watering, have all of the groups visit each compost bucket and record their findings, including temperature, appearance, and smell. Students can use their *Compost Chef* worksheets for this task.

Step 7: After 4 weeks, have the students use the trowels to dig into each compost pile and examine it closely. Ask them to compare and contrast the compost in each bucket. Ask students which mixture decomposed the most.

Step 8: Use the finished compost from Bucket #4 as soil for classroom plants or a garden. Have students explore how compost aids new vegetative growth.

2. Have the students explain how composting reduces the amount of waste that we send to landfills.
3. Ask students to think of places in nature where composting might occur naturally.



Enrichment

1. Collect and evaluate the data on each student's *Compost Chef* worksheet. Have the students create charts or graphs based on the temperature data they collected. Which pile had the highest mean temperature? What does a high temperature mean in terms of decomposition?
2. Explore composting as a natural cycle. Study the nitrogen cycle and have students make diagrams of its components. (The nitrogen cycle is the continuous cyclic progression of chemical reactions in which atmospheric nitrogen is compounded, dissolved in rain, deposited in soil, assimilated, and metabolized.) Use composting as a lead-in to discuss other natural cycles.
3. Start a schoolwide compost bin using the appropriate wastes from school lunches. Have students decide which wastes can be added to the pile and have different classes watch over and stir the pile each week. Have each participating class start a small flower garden plot, using the compost as a soil amendment.



Assessment

1. Ask students to list the most important ingredients for a good compost pile (nitrogen, water, and air circulation). Have them explain what role each ingredient plays in decomposition. Ask each group to name the missing ingredient in its mixture (Group #4 won't have a missing ingredient).

Student Handout



Compost Chef

Name: _____

Week 1
Temperature: _____
Appearance: _____
Smell: _____

Week 2
Temperature: _____
Appearance: _____
Smell: _____

Week 3
Temperature: _____
Appearance: _____
Smell: _____

Week 4
Temperature: _____
Appearance: _____
Smell: _____

Week 1
Temperature: _____
Appearance: _____
Smell: _____

Week 2
Temperature: _____
Appearance: _____
Smell: _____

Week 3
Temperature: _____
Appearance: _____
Smell: _____

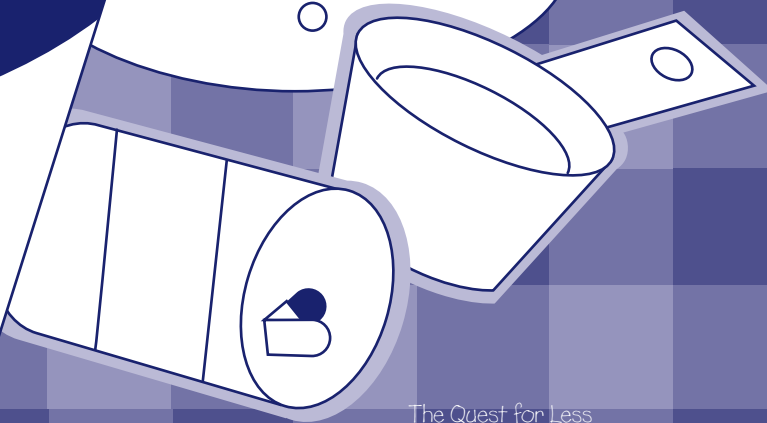
Week 4
Temperature: _____
Appearance: _____
Smell: _____

Bucket #1

Ingredients:

Bucket #2

Ingredients:



Student Handout

Bucket #3

Week 1
Temperature: _____
Appearance: _____
Smell: _____

Week 2
Temperature: _____
Appearance: _____
Smell: _____

Week 3
Temperature: _____
Appearance: _____
Smell: _____

Week 4
Temperature: _____
Appearance: _____
Smell: _____

Ingredients: _____

Bucket #4

Week 1
Temperature: _____
Appearance: _____
Smell: _____

Week 2
Temperature: _____
Appearance: _____
Smell: _____

Week 3
Temperature: _____
Appearance: _____
Smell: _____

Week 4
Temperature: _____
Appearance: _____
Smell: _____

Ingredients: _____