



Title: Build an Outdoor Compost Heap

Subjects: Science, Social Studies, Language, Arts

Grades: 3-5

Time: 60 minutes for lesson and 3-6 months to add material to the compost bin.

Standards: Students will...

Science Standard 2: Understand Earth's composition and structure.

- Benchmark # 4: Know the composition and properties of soils (e.g., components of soil such as weathered rock, living organisms, products of plants and animals; properties of soil such as color, texture, capacity to retain water, ability to support plant life).
- Science Standards 6: Understand relationships among organisms and their physical environment. Benchmark # 5: Know that all organisms (including humans) cause change in their environments and these changes can be beneficial or detrimental.

Technology Standard 4: Understand the nature of technological design.

- Benchmark # 6: Use appropriate tools, techniques and quantitative measurements to implement proposed solutions.

Technology Standard 6: Understand the nature and uses of different forms of technology

- Benchmark # 2: Know that elements of an agricultural system are designed to maximize the interaction and production of all the elements in the system (e.g., by composting).

Geography Standard 14: Understand how human actions modify the physical environment.

- Benchmark # 3: Know how human activities have increased the ability of the physical environment to support human life in the local community, state, US and other countries (e.g., improving soil quality through composting).

Language Arts Standard 1: Use the general skills and strategies of the writing process.

- Benchmark # 7: Write expository compositions (e.g., develop the topic with simple facts, details, examples, and explanations, use structures such as cause-and-effect, chronology, similarities and differences).

Objectives: Students will be able to...

- Describe the composition of soil and give examples of the ways in which it is formed.
- Identify and describe ways to protect the environment (e.g., composting and recycling).
- Identify beneficial microorganisms that live in soil and explain how they are beneficial. - Write an expository piece that provides facts and details, and describes and analyzes the composting process.

Materials:

- Bin (depends on method of composting; this example focuses on a chicken wire heap, which is inexpensive to buy and easy to set up.)
- Containers of ingredients (such as pine needles, leaves, newspaper, sawdust, vegetable scraps, grass clippings, weeds, plants)
- Ruler/Yardstick
- Gloves
- Soil
- Shovel
- Water
- Paper
- Pencil
- "Instructions for Making a Compost Heap" worksheet provided below



Overview: When the sun is out and space is plentiful at your school, a great way to turn something old into something new is through outdoor composting. Composting is the process by which “brown” (carbon-producing materials) and “green” (nitrogen-producing materials) breakdown to create a nutrient-rich fertilizer. Just imagine, the very banana peels that you throw onto a compost heap will one day become the food you use to help plant another banana tree or even a strawberry patch!

Kid's Speak: Over time, organic materials like grass clippings and banana peels breakdown to create a nutrient-rich fertilizer called compost.

Eco-Fact: Never add meat, bones, cheese or other dairy products, pet droppings, milk, fats, oils or diseased plants to your compost bin.

Procedures: Before Making Compost Bin:

1. Explain to students what composting is, the process of composting, and the benefits of composting.
2. Pick a spot for your bin. The best place is somewhere with enough space to walk around the bin, secure from animals (a chicken wire perimeter around the heap can be useful), and close to a water source. Scout around your school building. Find a place where there's a water spigot or a hose. If there's space, near the cafeteria would be a good location.

Instructions for Making the Compost Bin:

1. First add the “brown stuff.” Spread a layer of leaves or pine needles about 6 inches thick.
2. Wet the layer.
3. Add a few inches of “green stuff,” like grass clippings. It can be good to mix the layers a little.
4. Wet the new layer.
5. Sprinkle a shovelful of soil or compost to add microorganisms to the heap.
6. Wet the layer.
7. Repeat steps until the heap is full!

After Making Compost Bin:

- Have students write an essay explaining what is in their compost bin, what will happen to the bin's ingredients over time, and the benefits of compost.

Adaptations:

- Older children can take turns as monitors of the heap. They can use a clipboard and make notes on the progress.
- Younger children can take turns as collectors. In the morning and at lunch, they can be in charge of the bin that collects materials for the class heap.