



Lesson Plan: Compost, Grade 7 Science and Technology

Activity

Research and construct a compost food web.

Introduction

While we encourage you to decrease food waste by making sure to eat what you buy, composting can help take care of what is left. Composting is the process of turning **organic material**, such as garden and food scraps, into a dirt-like material called **humus**. The process works with the help of bugs, insects, and **microorganisms** (a microscopic organism such as bacteria and fungi) combined with air and moisture. Everything that grows will eventually decompose in time. Providing the ideal compost environment can speed up the process. In this lesson, students will explore the components of an active ecosystem through the composting of organic material and construct a detailed food web to explain the compost process.

Curriculum Connections

Science and Technology, 2022 (revised)

Grade 7

- Strand A: STEM Skills and Connections
- Strand B: Life Systems

Learning Objectives

1. Define and explain organic waste, waste diversion, ecosystem, and food web
2. Make connections between soil, plants, and the food we eat
3. Explain why food waste is a problem
4. Identify strategies to reduce food waste
5. Describe what happens to food waste in their community
6. Construct a detailed compost food web

Resources Provided

- Module: Compost

Activity

1. **Organic waste** is anything that use to grow, or use to be alive, that we no longer need or want. How is this waste managed in the Region of Durham? As a class, discuss organic materials and create a list of common organic materials that can be included in the Region's Green Bin and Leaf and Yard Waste programs.

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2. Ask students why it might be important to have a **waste diversion program** (a program that diverts waste away from the garbage) for organic waste? How does composting support sustainability?

It takes a lot of energy to grow and transport plants and food. While we encourage you to eat what you buy, composting can help take care of what is left. Composting is a great way to recover resources and to promote healthy soil and plants. There are many ways you can participate in composting. This includes participating in the Region's waste diversion programs, backyard composting, and vermicomposting at home or within the classroom.

3. As a class, watch the video Backyard Composting for Beginners.
4. Explain to the class that with the right conditions, a compost pile will have all components of an active **ecosystem** (all the organisms and the physical environment that they interact with).

Everything that grows will eventually decompose in time. Providing the ideal compost environment can speed up the process. The compost ecosystem includes an energy source, primary consumers, and multiple levels of secondary or tertiary consumers that make up a health food web. In the food web, each organism has a job to do to help turn our organic waste into a dark, rich, finished compost.

5. Students will now research and create a detailed illustration/diagram of the compost (soil) food web.

A **food web** consists of all the food chains in a single ecosystem. Their food web must include both biotic (living) and abiotic (non-living) component of the compost process.

6. Ask students to choose two parts of the ecosystem and include a written paragraph describing what might happen if you were to alter these selected parts of their constructed ecosystem?
7. Final projects will be submitted to the teacher for review.

Summary

Composting is a great way to divert organic waste away from the garbage. Using finished compost on lawns and in gardens returns important nutrients back to the soil and improves overall soil conditions. Compost can be used to grow new plants and food - this is a great circular approach to managing our organic waste!

Expanded Curriculum Connections

Grade 7, Science and Technology, 2022 (revised)

A: STEM Skills and Connections

A.1 STEM Investigation and Communication Skills

- A1.1 use a scientific research process and associated skills to conduct investigations
- A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes

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B. Life Systems

B2. Exploring and Understanding Concepts

- B2.1 explain that an ecosystem is a network of interactions among living organisms and their environment
- B2.2 identify biotic and abiotic components in an ecosystem, and describe the interactions between them
- B2.3 describe roles and relationships between producers, consumers, and decomposers within an ecosystem
- B2.4 describe the transfer of energy in a food chain, and explain the effects of altering any part of the chain
- B2.5 describe how matter is cycled within the environment, and explain how the cycling of matter promotes sustainability
- B2.6 explain the differences between primary succession and secondary succession in ecosystems
- B2.7 explain how biotic and abiotic factors limit the number of organisms an ecosystem can sustain
- B2.8 describe how different approaches to agriculture and to harvesting food from the natural environment can impact an ecosystem, and identify strategies that can be used to maintain and/or restore balance to ecosystems