



# Lesson Plan: Compost, Grade 6 Social Studies

## Activity

Can food waste change Earth's climate?

## Introduction

We rely on complex food supply chain to move food from producers to consumers. As the world's population continues to grow, we often focus on how to produce more food. In this lesson, students will be asked to challenge this view and consider how we can feed more people while wasting less of the food that we already produce. Students will make links between food waste, greenhouse gases, and climate change and investigate responses to food waste in their community.

## Curriculum Connections

Social Studies, 2018 (revised)

### Grade 6

- Strand B: People and Environments: Canada's Interactions with the Global Community

## Learning Objectives

1. Define and explain the difference between weather and climate
2. Define and explain organic waste, food waste, and waste diversion
3. Examine the food supply chain
4. Identify strategies to reduce food waste
5. Investigate what happens to food waste in their community
6. Complete a greenhouse effect experiment

## Resources Provided

- Module: Compost

## Materials Required:

- Four identical clear glass jars
- Water
- 20 ice cubes
- Access to direct sunlight
- Plastic wrap or four clear plastic bags (this is a great opportunity to reuse any clear plastic produce bags you may have at home!)
- Thermometer

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## Activity

1. Lead a discussion with the class about climate change and greenhouse gas production.

a. What is the difference between weather and climate?

**Weather** describes the conditions outside in a specific place over a short period of time. Some examples of weather events include rain, snow, and wind.

**Climate** describes the weather conditions that are expected over a region at a particular time in the year. Examples of climate include whether a region is typically wet, dry, hot, or cold.

b. What is global warming and climate change?

**Global warming** is the long-term heating of the Earth's climate. This warming is associated with human activities that increase heat-trapping greenhouse gases.

**Climate change** describes the change in the average conditions in a region over a long period time due to both human and natural factors.

c. What are green house gases and how do they contribute to climate change?

**Greenhouse gases** are gases in the Earth's atmosphere that trap heat. They let sunlight and heat into, but prevent the heat from leaving the atmosphere. Some of the most common greenhouse gases include carbon dioxide and methane. **Carbon dioxide** is emitted when carbon-rich fossil fuels (like coal, oil, and natural gas) are burned, like when we drive a gas or a diesel-powered vehicle. **Methane** is caused by the decomposition of plant matter. When food ends up in a landfill, it generates methane. See the extension activity for a simple experiment to illustrate the greenhouse effect.

d. What are some potential impacts that we might feel locally or globally if the greenhouse effect continues to change the Earth's climate? Consider social, political, economic, and environmental factors.

2. Introduce the food supply chain.

The **food supply chain** is the movement of food from the provider to the consumer through production, processing, distribution, retail, and consumption. When we waste food, we waste all the resources (like water and energy) that it takes to move food through the food supply chain.

3. Introduce the class to food waste.

**Food waste** (and food loss) is food that was grown, raised, caught, or harvested that was never eaten.

4. Food waste is a growing problem. As a class, discuss how food waste might occur within the food supply chain.

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Examples include food that was never harvested due to labour shortages, food that doesn't look perfect, food that was damaged during transport, food items in grocery stores that were not sold before they spoiled, leftover food from home cooked meals that were thrown away, and general food scraps that are not seen as favourable including peels, crusts, and fats.

5. As a class, generate a list of potential political, social, environmental, and economic impacts that may occur due to food waste within their community.
6. Ask students to identify and describe some practices that have been adopted to help make waste management more sustainable within their community. This may include curbside programs, individual efforts, non-profit organizations, etc.
7. Independently, students will complete additional research into either backyard composting or the Region's curbside Green Bin program to describe what materials can be composted, how the process works and to identify the climate benefits of compost. The results of their research can be submitted through a written report, a slide show, or another means determined by the teacher.

While we encourage you to eat what you buy, composting can help take care of what's left. Compost has many climate benefits including reducing greenhouse gases created by food waste, promoting the uptake of carbon dioxide by vegetation, and contributing to a healthier soil, supporting the growth of healthy plants which are more resilient to effects of climate change.

### Extension Activity

1. Divide the class into two equal groups. Each group will have two identical clear glass jars, ten ice cubes, plastic wrap or two plastic bags, and access to direct sunlight.
2. The groups will fill each of their jars with two cups of cold water and five ice cubes.
3. Students will measure and record the temperature of the water in each jar.
4. Each group will tightly cover the top of one jar with plastic.
5. Collect all the jars and place them in direct sunlight for one hour.
6. Ask the class to explain what they think will happen to the water in the jars.
7. Once the hour has passed, students will check the temperature of the water in both jars. The water in the jar that was covered should be warmer.
8. As a class, discuss the results of the experiment.

The plastic wrap acts like methane and other greenhouse gases in Earth's atmosphere. The plastic wrap allows light and heat to pass through the plastic wrap but does not allow all the heat to escape.

## Summary

We should avoid wasting food whenever possible. Composting can help take care of what is left. 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 6, Social Studies, 2018 (revised)

### B: People and Environments: Canada's Interactions with the Global Community

#### B1. Application: Canada and International Cooperation

- B1.2 analyse responses of Canadian governments, non-governmental organizations (NGOs), and individual citizens to an economic, environmental, political, and/or social issue of international significance

#### B2. Inquiry: Responses to Global Issues

- B2.1 formulate questions to guide investigations into global issues of political, social, economic, and/or environmental importance (*e.g., child labour, dwindling oil supplies, ownership of and access to fresh water, climate change, food shortages, refugees, or natural disasters*), their impact on the global community, and responses to the issues
- B2.2 gather and organize information on global issues of political, social, economic, and/or environmental importance, including their impact and responses to them, using a variety of resources and various technologies
- B2.4 interpret and analyse information and data relevant to their investigations, using a variety of tools
- B2.5 evaluate evidence and draw conclusions about global issues of political, social, economic, and/or environmental importance, their impact on the global community, and responses to the issues
- B2.6 communicate the results of their inquiries, using appropriate vocabulary and formats

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