




Lesson Plan: **A Home of their Own**

How does vermiculture composting contribute to a healthy town watershed?

Alignment with STEM Framework

Tinkerer  Investigator  Conservationist 

Overview

This lesson explores the environmental benefits of vermiculture composting. This lesson addresses the concept of biodegradable matter. Youth will build their own mini vermiculture composting bin and set up for investigations exploring composting, vermiculture, decomposition and nutrient rich soil for plants.

Practice Goals

- Building and Caring for vermiculture compost
- Predicting what will happen in the compost over the week
- Creating method data for collection
- Obtaining, evaluating, and communicating information about worms, compost, and the biodegradable material.

Content Goals

- Why composting?
- Why vermiculture?
- What is biodegradable?

Purpose

The purpose of this lesson is to introduce youth to the relevance of vermiculture composting as a doable action to address environmental concerns. Youth will engineer a personal vermiculture compost to care for and engage in scientific inquiry in this lesson. In conjunction with composting as an environmental action this lesson is intended to provide youth the opportunity to engage in scientific practices such as questioning, observing, predicting, and organizing for data collection.

Teacher Background Information

Composting is beneficial because:

- It recycles household waste while conserving landfill space
- Reduces water runoff and preserves soil moisture
- Adds beneficial microbes and nutrients to the soil
- Increases organic matter in the soil
 - Encourages healthy root structure in plants
- Improves clay soils and assists sandy soil in holding water
- Aids in balancing soil pH
- Helps control soil erosion



There are different means of composting. Vermiculture uses worms to aid in quicker richer composting.

The benefits of vermiculture include:

- Worms are outstanding decomposers
- the worm castings provide rich nutrients to the soil
- the tunnels worms create aerate the soil
- the worms tunneling effectively mixes the subsoil and topsoil

Affinity Goals



I can act like a **Tinkerer** by building my vermiculture compost bin.



I can act like an **Investigator** by exploring what biodegradable materials are and how the worms assist in decomposition of organic materials.



I can act like a **Conservationist** by caring for a vermiculture compost bin.

Materials

- (Digital) biodegradable materials cards for sorting
- Plastic bin and lid with pre-drilled holes
- Shredded paper
- Worm bedding (soil, compost starter)
- Hand shovel
- Gloves
- Worms
- Black paper (optional)
- Plastic spoon and paper cup
- Organic matter - baggie of leaves, baggie of sticks or other brown compost material, banana, apple, grass clippings (?)
- Spray bottle filled with water
- Care handout
- Observation notebooks

Time Needed

45 Minutes

Instructional Sequence

1) Phenomena

Facilitator will:

- Ask youth to share their ideas about composting.
 - What do youth know already?
 - What experiences have they had with composting?
 - Why do youth think composting might be helpful to the environment as well as people?
 - How do they think composting works?
 - What materials are compostable?
- Present youth with a card sort - for remote purposes digital. Card sort will have biodegradable and non organic or slow decomposers.

Youth will:

- Sort into what is biodegradable and what isn't.

Teacher will:

- Lead discussion on what youth feel can go into a compost.

2) Exploration

Youth will:

- Build their vermiculture bin.

Facilitator will:

- Explains materials and steps. (youth can eat their banana or the apple and set aside peel or core respectively.)
 - 1) Youth may want to put their gloves on. Put a layer of worm bedding (soil/compost) at the bottom of the bin approximately as deep as the shovel blade.
 - 2) Fill bin about $\frac{2}{3}$ of the way to the top with shredded paper (reserve some for step 4)
 - 3) Add worms.
 - 4) Add another layer of shredded paper over the top of the worms.
 - 5) Add plastic spoon, paper cup, a handful of grass clippings, a handful of dried leaves, a few sticks, banana peel or apple core

3) Observation Notebook

Youth will:

- Set up their observation notebooks.
 - Youth will predict what matter will decompose most quickly by ranking the materials from fastest to slowest decomposition.
 - Youth will discuss with each other why they made these predictions.
 - Youth will then prepare a place for daily notes for the week on their vermiculture care and observations. It might look like this:

	Thursday	Friday	Saturday	Sunday	Monday	Tuesday	Wednesday
Temperature							
Organic materials added							
Number of water sprays							
observations							

Facilitator will:

- Explain to youth how they will care for their vermiculture bin over the week.
- Provide youth with a care handout.
- Youth will care for their vermiculture compost for the entire 5 weeks of the afterschool program.

Handouts

[Vermiculture Care and Observation Guide](#)

[Compost Grows](#)

