

Vermicomposting

Grade 4, Understanding Life Systems

<h1>Lesson Plan</h1>	Assessment	Research & Design
	Cross-curricular	Language

Big Ideas

- Plants and animals are interdependent and are adapted to meet their needs from the resources available in their particular habitats.
- Changes to habitats (whether caused by natural or human means) can affect plants and animals and the relationships between them.

Overall Expectations

- Investigate the interdependence of plants and animals within specific habitats and communities;
- Demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them.

Specific Expectations

- 2.1** follow established safety procedures for working with soils and natural materials;
- 2.3** use scientific inquiry/research skills to investigate ways in which plants and animals in a community depend on features of their habitat to meet important needs;
- 2.4** use scientific inquiry/research skills to create a living habitat containing a community, and describe and record changes in the community over time;
- 3.1** demonstrate an understanding of habitats as areas that provide plants and animals with the necessities of life;
- 3.3** identify factors (e.g., availability of water or food, amount of light, type of weather) that affect the ability of plants and animals to survive in a specific habitat;
- 3.5** classify organisms, including humans, according to their role in a food chain (e.g., producer, consumer, decomposer);
- 3.9** demonstrate an understanding of why all habitats have limits to the number of plants and animals they can support.

Description

In this activity, students will inquire about the conditions needed to create an ideal vermicompost. They will learn that worms are decomposers - plants and animals that feed on the waste products of consumers. Decomposers turn that waste into materials that can be returned to the soil.

Materials

- Student Design and Observation sheet
- Worms
- Compostable materials for bedding and food (including soil)
- Plastic containers (or custom built)
- Spray bottles & water

Safety Notes

Students are required to wear gloves when working with worms, soils and composting materials.

Introduction

Pre-teach the concepts of food chains and the interdependence of plants and animals. Start the lesson by asking students where a worm fits into a food chain. Ask them to consider what a worm would eat and why that would be important for a soil ecosystem. Discuss that worms are an important part of a food chain as they serve the role of decomposer. Explain to students that worms assist in decomposing material which can be used to enrich soil with nutrients in a process called vermicomposting. Inform students that they will be building their own vermicompost to better understand the role worms play in composting.

Action

Students will research what is needed to create their own vermicompost. They will be required to design their vermicompost and prepare a list of materials that will be needed for its construction. Students will consider:

- What makes their vermicompost ideal?
- How long might it take for them to determine that they have the ideal vermicompost?
- What factors will they be investigating during this inquiry?

To help in the design of the vermicompost, investigate as a class how factors such as the soil type, pH or moisture level will affect the outcome. Other factors to consider in the design of the vermicompost are the amount of materials being used or the the types of materials being added. Students will build their vermicompost and record their observations during an agreed-upon timeframe.

Consolidation/Extension

Students will create an artifact to present their findings to the other groups in the class. To extend student learning, some areas for further inquiry could include researching the impact that vermicomposts have on the environment, specifically at landfills where the green bin is not being used effectively. Alternatively, students can investigate how many worms would be ideal for the size of the container they used and what might happen if there were too many worms for the available space and resources. Another possible extension would be to discuss adaptations and why worms have features that allow for them to be able to live in the soil.

Resources

Worm Guide for Teachers:

<http://www.calrecycle.ca.gov/publications/Documents/Schools/56001007.pdf>.