

Lesson #6 **Getting Wormy!**

Overview: In this activity Students learn about earthworms; how they eat, where they live and how they benefit the environment. Students observe worms in soil and create art about worms.

Objectives: Students will describe a worms diet and habitat. Students will explain why worms are important for a healthy environment.

Subjects: Science, art, language arts
Key Concepts: Earthworms are necessary for healthy soil and a healthy environment. Earthworms are nutrient recyclers
Duration: 2 class periods (80 minutes)
Season: spring, summer, fall
Setting: In the field, outdoor natural landscape or in the classroom
Interdisciplinary Connections
Frameworks: science as inquiry, life science, earth and space science, art, language arts

Environmental Education @ the Cove River Site, and other coastal Connecticut settings.



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Introduction / Engagement: There are more than 7,000 species of earthworms. Earthworms benefit other animals, plants and the soil because of their role as nutrient recyclers, or decomposers. Worms eat soil and digest the organic material from the soil to get nutrients. Earthworms spread their nutrient rich excrement (castings) throughout the soil, renewing it for new plants to grow. The castings also provide food for smaller animals and microorganisms. Earthworms live in deep narrow tunnels called burrows. Worm burrows loosen the soil allowing plant roots to grow. They also provide tunnels for smaller organisms. The burrows also aerate the soil, bringing oxygen deeper and allowing rainwater to flow through.

Materials:

Clear tennis ball containers (enough for groups of 2 and one set for teacher)
Spoons
Grass
Dead leaves
Soil
Water
Bucket
Black construction paper
White construction paper
Rubber bands
White crayons
Eyedroppers (one per group)
Scissors
Glue
Writing paper
Lab notebooks
Newspaper (per working area)
Red wiggler earthworms (5 per group)

Preparation:

This activity is designed to complement the soil explorations at the Cove River site. It can be done in the classroom or in an outdoor lab area of the schoolyard. Worms should be collected or purchased ahead of time by the teacher.

Engage:

What is your opinion of worms? Are they useful?

1. Review basic information on soil layers with the class.
2. Discuss that worms live in the upper layer of soil.
3. Discuss the worms' diet and how it helps the soil.
4. Discuss ways in which the worms' habitat benefits the soil.

Explore:

1. Students fill jar $\frac{3}{4}$ full with loosely-packed soil. Students then add bits of composting scraps, or dead leaves on top of the soil.
2. Place 5 worms in each jar and cover
3. Wrap the jar with a (pre-cut) strip of black construction paper and secure with two rubber bands. The paper should block all light except that coming in from the top of the jar. This will force the worms to move down into the soil. Use white crayons to write names of group members and date on the jar.
4. Ask students to predict what will happen over time. They should write their predictions down in lab notebooks.
5. The teacher will fill two jars and label them "jar 1" and "jar 2" Jar one will be filled with dry soil, jar two with moist soil. Compost scraps will be added to both jars but do not add worms. Students should make predictions for what will happen to the three jars over a one-week time period. These predictions will be based on what was discussed during the engagement.
6. Clean up work areas.
7. The class can maintain these jars for one week. Bits of composting can be added each day. Paper can be removed for observation purposes and then re-secured. If the (pre-moistened) soil has

dried, a bit more water can be added.

8. After the week has passed, have the class observe their worm containers compared to the teacher containers. The worm-filled soil should be dark and rich. Jar one (un-watered, no worms) should look sandy with dried compost. Jar two should look sandy with moldy compost that is not broken down.
9. Students should make drawings in their lab notebooks of the three different types of jars, labeling what they observed.
10. After all observations, the jars should be emptied into a bucket and cleaned. The worms can be released to a school or home garden.

Elaborate:

1. Students can cut a large worm shape out of white construction paper. This worm should be glued on to a sheet of black construction paper.
2. Students can write and illustrate short stories on the white space of their "worm books" – describing life from a worm's point of view. Encourage creativity!!

Evaluate:

Each group should work on creating a worm information poster. Devise a rubric that spells out your expectations for the poster. The poster should show worms beneath the soil surface, the 3 soil layers, good uses of the earthworm as well as examples of other plants and animals in the soil that may benefit from the earthworm habitat.

Extension:

The class can make further observations such as birds hunting worms, worms after a rain storm, etc.