



## WEEKS 2-8 Day 1

# STEM Investigation 2: Compost and Worms

Children prepare a compost bin and observe what happens to food scraps and plastic materials in the bin over time.

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| **Big Ideas** | People, other animals and plants depend on and impact the environment. As caretakers of the earth, people can create and participate in sustainable systems to use natural resources wisely.<br>Through investigations and research, people learn about the natural world. |
| **Guiding Question** | In what ways do people, animals and plants depend on and impact the environment? |
| **Vocabulary** | **compost:** dead plants and leaves |
| **Materials and Preparation** | ● *Dirt the Scoop on Soil*, Natalie Myra Rosinsky<br>● Compost Recording sheets<br>● large,clear, plastic container with a lid (e.g., a plastic storage bin, approximately 12”x 10”x 8”)<br>Prepare the compost bin by drilling/punching 5−6 small holes in the bottom of the plastic container and 5−6 holes in the top. The holes will ensure air circulation for the compost. A clear container will allow children to observe the compost more closely.<br>● 1 full newspaper<br>● a bin or small bucket for water<br>● fruit and vegetable scraps that break down easily (e.g., fruits/vegetables from the school lunch)<br>Collect a small container of food scraps, either from home or from the school cafeteria. Gather only fresh fruit scraps, vegetable scraps, or coffee grounds (no meat, cheese, eggs, or cooked foods). |

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| | • dead leaves<br>• red worms<br>• small plastic or styrofoam containers, a plastic grocery bag, or any other material made of plastic or styrofoam<br>• watering can spray bottle for water<br>• magnifying glasses<br>• paper plates or small plastic containers<br>• plastic spoons<br>• gloves, optional<br>• smocks or old t-shirts<br>• device and projector (to show composting video)<br>Composting video:<br>https://www.youtube.com/watch?v=dRXNo7Ieky8<br>• non−fiction books about composting<br><br>This Investigation unfolds over the course of the unit.<br><br>Place the bin, food scraps, leaves, and newspaper in the STEM Center. Bring relevant non−fiction books to the STEM Center, so that children can reference them during the Investigation.<br><br>Some children may be reluctant to touch the materials; provide gloves, plastic spoons, or popsicle sticks.<br><br>Bring to Intro to Centers: some food scraps, some newspaper, some dried leaves, water, Compost Recording sheet |
| **Intro to Centers** | *Remember when we read this book,* Dirt! The Scoop on Soil?<br>Hold up the book.<br>*When we read this book, we learned a lot about soil and what it is made of. One way to make soil is to compost.* ***Compost*** *means to help food scraps and other old plant parts, like leaves and grass, break down into small parts. Compost can then be put on or into soil, to make the soil even better for growing new plants. Let's watch a video to learn more about compost.*<br>After the video, invite children's reactions and questions.<br>*Turn and talk to a partner about your thoughts.*<br><br>*Those are interesting ideas. In our classroom, we are going to conduct an experiment to learn more about compost. We will make* |

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| | *a small compost bin. We will add red worms. The bin is going to be a habitat for the worms. Why do you think we would want worms in the compost bin?*<br>Invite 2-3 responses.<br>*You have so many ideas about the worms! This week, our job is to get the compost bin started. Here are the materials we have to put into the compost bin today.*<br>Show the food scraps, newspapers, dried leaves, water.<br>*When you go to the STEM Center, you can help add these materials to the compost bin.*<br><br>*When we finish putting materials in the compost bin, we will need to record information about what the compost looks, smells, and feels like.*<br>*Model completing the Compost Recording sheet.*<br><br>*We will keep observing the compost over many days, to see what happens. On your recording sheet, you can draw the habitat and all the ingredients we put into it. As scientists, we should label what we draw and write down our observations.* |
| **During Centers** | Throughout the Investigation, listen for children's questions. Encourage children to seek answers to their questions through consulting non fiction books, online resources, or by asking an expert.<br><br>**Setting up the bin:**<br>● Children rip newspapers into about one−inch strips.<br>● Children will dunk the strips in water and then squeeze out any access water before adding the newspaper to the bin. Children fill the bin until it is half full.<br>● Add food scraps, leaves, and plastic items to the newspaper, and mix the materials together using hands or plastic spoons.<br>● Place the worms into the bin and observe what happens.<br>● Children record and draw what they put in the bin on their Compost Recording sheet. Children photograph the bin.<br>● Keep the bin moist over the following weeks by spraying or pouring in water.<br><br>**After the bin is set up:**<br>● Children examine the compost bin to see what has changed |

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| | ● Children document their observations on their Compost Recording sheets and/or with a device.<br>● Children might want to explore the worms. |
| **Facilitation** | ● What do you think will happen to the food scraps? The plastic containers? The leaves? Why do you think that?<br>● What do you think the red worms need to live?<br>● How could you find out more information about the worms?<br>● How can we record our information so another scientist can learn about what we found?<br>● What do you notice about the food scraps? What do you notice about the plastic containers?<br>● What do you think the worms did in the compost bin? |
| **Sharing Our Research** | Use the suggestions below to hold Sharing our Research meetings throughout the composting process.<br><br>**Right after the bin has been put together**: Bring the bin to the meeting area, along with some of the children's observation notes. Ask, "What do you hypothesize will happen to the food scraps, plastic containers, and leaves that we put in the bin?" and "What do you think the worms do in the compost bin?"<br><br>**Once visible breakdown is apparent in the food scraps or leaves**: Discuss the questions: "What have you noticed about the materials we put into the bin?" "Why do you think the food scraps look so different?" and "Why do you think the plastic containers still look the same?" |
| **Standards** | **K-ESS3-1** Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live. **Further explanation:** Examples of relationships could include that deer eat buds and leaves and therefore usually live in forested areas and that grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system. Examples could include coastal tidepools, humans in Maine live in insulated buildings for protection during cold months, or uninsulated structures during warm months (e.g. camping in a tent). Examples of animals that migrate include monarch butterflies, ducks, Canada geese, etc. Developing and Using Models, Natural Resources, Systems and System Models |