

# COMPOST CONNECTIONS: BUILDING A WORM BIN

Garden

Grade 4 • 45 mins • Fall, Winter, Spring, Summer • Outdoor

ADAPTED

GRADE 4

SCHOOL PARTNER  
LESSON PLAN

SUBMITTED BY

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## ? ESSENTIAL QUESTIONS

- What is composting and how is it beneficial?
- What is vermicomposting?
- How is a homemade vermicomposting system created and maintained?
- How are the materials that we can compost alike?
- What is a decomposer and what role do decomposers play in the garden?
- How do decomposers break down organic matter?

## MATERIALS

- An opaque plastic tupperware bin with a tight fitting lid and pre drilled holes (at least 1 per class) It is helpful to have several so that once they are set up, small groups of 2–4 children can observe the worms and care for them.
- Bedding Materials
  - Used brown cardboard boxes, paper grocery or lunch bags, newspaper, etc.
- A Bowl or Bucket of Water for each group to dip and squeeze bedding materials in
- Food Scraps
  - Fruit and vegetable peels and scraps (no citrus), garden scraps (surplus cuttings, leaves, stems that can be cut or broken into smaller pieces)
- Decomposer Hand Out (linked under additional resources)
- Organic Matter/Biodegradable Materials or a printed handout (teacher created handout with pictures of fruit peels, newspaper, fallen leaves, fallen twigs or sticks, apple cores, etc.)

## Abc VOCABULARY

- Compost
- Decompose/Decomposer
- Biodegradable
- Organic Matter
- Vermicompost
- Bedding
- Castings

### NOTE:

Adapted from **Grade 4 Garden Lesson #8: Building a Worm Bin**, pg 174.

 ASSESSMENT

Student selected assignment to be completed as group or independent work:

- Create a video explaining how to set up a worm bin.
- Bring in 1 bedding material and 1 food material suitable for vermicomposting to our garden and add it to the bin.
- Create a collage, poster, or other visual aid showing materials that are suitable for vermicomposting.
- Create a guide for setting up and maintaining a worm bin.
- Create a song, rap or poem about what can and cannot be composted by the red wigglers. Turn in a video performance or written work.

## PREPARATION (ESTIMATED TIME VARIES)

Print out and laminate (if desired) handouts. Prepare enough bedding, water bowls, and food scrap materials for each small group or station, plan how you will distribute these materials or how students will rotate through. Pre drill holes in your worm bin containers. (I often combined the worm bins that students had set up after class to allow for an empty bin for the next group.)

## TEACHER BACKGROUND

The educator needs to know the basics of **vermicomposting** and how to set up a worm bin.

## LESSON DESCRIPTION

- Compost Concept Review: Revisit the compost tumbler by spinning it at that start of class and discussing how it works.
- Compost Connections: Student Led Discussion about Organic Materials and Decomposers
- Worm Bin Set Up and Clean Up
- Vermicompost Do's and Don'ts Guided Handout
- Closing Appreciations

LEARNING OBJECTIVES

**Content Learning Objectives**

*Soil*

**S.4.1** Identify and describe structure and function of organisms living in soil.

*Garden Tools and Equipment*

**GTE.4.1-4** Garden Tools and Equipment

**Life Skills Learning Objectives**

*Personal Life Skills*

**PLS.2** Students are able to express empathy and caring for themselves, others, and the environment.

*Community Life Skills*

**CLS.2** Students cooperate and communicate well with each other.

ACADEMIC STANDARD CONNECTIONS

**NGSS Science and Engineering Practice:** Planning and Carrying Out Investigations.

**CCSS.ELALITERACY.W.4.2.D** Use precise language and domain-specific vocabulary to inform about or explain the topic.

HEALTH STANDARD CONNECTIONS

**National Health Education Standard 7:** Students will demonstrate the ability to practice health enhancing behaviors and avoid or reduce health risks

*Lesson Sequence**Engage***Cultivate Curiosity:**

On the way to the garden classroom tables, have each student spin the compost tumbler. Once everyone is seated, facilitate a quick student led discussion to review what we have learned about the tumbler.

Ask students to look at and discuss the question on their clipboard. “What do all of these materials have in common?” Facilitate another quick discussion—each table can share out their ideas or you can allow students to call on each other. All ideas should be accepted, then restate ideas that are key to today’s lesson—all of these materials come from nature, they were once living, they can be broken down, they will decompose over time. Introduce the terms organic matter and biodegradable. Push for a connection to the compost tumbler.

Next flip the hand out over to see pictures of organisms—allow for thinking or table talk time, then ask “What do all of these organisms have in common?” Allow for all ideas and restate key ideas—they break things down, they need other living things to survive, etc. Introduce the term decomposer—all of these organisms are decomposers they break down organic and biodegradable materials. They help the earth by breaking these materials down and creating healthy compost.

Explain: Today we will set up another composting system, this one will use red wiggler worms because they are excellent decomposers. To do this, we will need to make the worms a special home.

*Explore***Root Around:**

Worm bin set up: Show students the empty bin, point out that it is opaque, and that there are holes drilled along the top. Ask them why both of these features are important.

Show students bedding materials and demonstrate how to prepare them by tearing, dipping, and wringing out bedding.

Show students food and garden scraps and ask—how do you think the worms will break this down—(by eating and creating nutrient rich waste called castings that become part of the soil and feed the plants.) If possible, show students a bag of store-bought castings and quickly explain or ask students how it is used in the garden. Then ask—do you think large pieces or small pieces of food will be easier for the worms to break down? Demonstrate making the pieces as small as possible, allow student to leave a few large pieces available to observe what happens over time.

*Explain* **Grow Understanding:**

Allow students time to prepare the bedding and food for the bins, then pass the bin and instruct students to add materials in layers. Clean up tables and stations before adding the worms. They can be placed on top because they will dig their way down. Once students have had time to observe them, close and collect bins and wash hands.

*Elaborate* **Observe The Fruits:**

Distribute the worm bin basics handout (linked below). Ask students to name foods that worms can decompose easily. Check for understanding by asking if we need to buy fresh fruit just for the worms (no use leftover scraps). Ask—how will the worms turn this into compost? What will we do with that compost? Ask students to name something we should not put into the bins.

*Evaluate* **Reflect:**

- What did you enjoy about today's class, what was your favorite part?
- Did anything about our class surprise you? Did you learn any new information or skills in class today? What could you teach someone based on what we did today?
- What connections can you make between what we did today and the kitchen?
- How did you or a classmate show a school value or honor our garden agreements?

**ADAPTING FOR INDOORS**

Take it all inside on a cart. Bring tablecloths and allow extra time to get to a handwashing station.

**CONNECTIONS TO KITCHEN LESSONS**

Add food scraps from the kitchen into the worm bin. Create a sorting station for food scraps in the kitchen based on the infographic of what worms can and cannot breakdown.

**POSSIBLE EXTENSIONS**

Create a system for collecting compost scraps from the cafeteria.

**ADDITIONAL RESOURCES**

This lesson has been adapted from the following extensive composting curriculum:

- [DO THE ROT THING Compost Critters worksheet](#) located on page 14 of the handout.
- [What Can Red Wigglers Eat? Magnet](#) used for Class Discussion Available for Purchase at this link and on Amazon