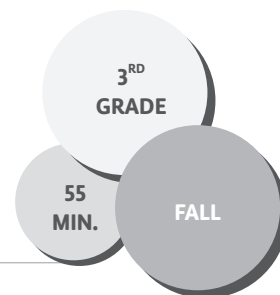


# Worm Bin Wonders

**THEME:** GROWING AND ACCESSING HEALTHY FOOD



## ESSENTIAL QUESTION

*How do decomposers play an important role in growing food?*

## LEARNING OBJECTIVES

- ✓ Students will be able to identify parts of the worm anatomy.
- ✓ Students will be able to construct a worm bin.

## LESSON DESCRIPTION

In this lesson, students learn about the decomposition of food waste by observing worms, identifying parts of their anatomy, and working collaboratively to build a worm bin.

## MATERIALS

- 10-gallon opaque plastic storage bin
- Old newspaper
- Spray bottle filled with water
- 1 pound of Red Wiggler worms (if you have a friend with a worm bin, ask for some starter worms. If not, you can often purchase Red Wigglers in garden centers or even buy them online.)
- Quart container of garden soil
- Food scraps
- Cordless power drill with drill bit
- Paper towel for each student
- Permanent marker
- Worm Anatomy Poster (p. 379)
- Worm Body Part Cards (p. 380)
- Chart paper (optional)
- Magnifying glasses (optional)
- Coffee stirrers for moving worms (optional)

## PREPARATION

- › If you are new to worm composting, research how to build and maintain a worm bin prior to teaching this lesson.
- › Collect approximately one quart of raw fruit or vegetable food scraps, perhaps from lunch or snack.
- › Use a permanent marker to mark and space out dots to drill holes along your bin's lid and the top third of the sides. Make sure there are enough dots so that each student can drill one hole.
- › Dampen paper towels to hand out to groups observing worms.
- › Draw a KWL chart on the board or chart paper (see example).
- › Photocopy or display Worm Anatomy Poster.

### WHAT WE . . .

Know	Want to Know	Learned
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## ACTION STEPS

**1. Connecting to Prior Knowledge:** Ask, *What do you typically do with food scraps?* Discuss whether students throw them in the trash, or whether they use compost bins. Ask, *Do you*

know that worms are excellent at recycling? See if students can explain how. Ask students to share with a partner what they know and what they want to know about worms. Display a KWL chart on the board, and as students share with the class, fill in the “Know” and “Want to know” columns of the chart, taking the opportunity to dispel any myths and/or flag any questions that arise for later research. **(5 min.)**

**2. Explain Worm Bin Setup:** Explain that today you’ll be building a worm bin that the class can use to process its food waste into excellent compost for the garden. Show the class the materials you’ll use for creating the worm habitat. Explain, *Shredded newspaper is the worms’ bedding, but they eat it too! We use the spray bottle to keep the newspaper nice and moist, like a wrung-out sponge. They can’t have it too wet or too dry because worms breathe through their skin and can actually drown! We add soil from the garden because it helps their digestion. We’ll also add food scraps, making sure that we bury it under the bedding so that we don’t also attract fruit flies and other pests. Worms aren’t crazy about food like onions and citrus. Do you know that worms can eat half their weight in food in a day?* **(5 min.)**

**3. Explain Worm Observation:** Explain that you’re going to pass out worms for students to observe at their tables, while other students begin work on the worm bin. Then groups will switch tasks. Ask, *How should we treat the worms?* Discuss being gentle. Say, *Let’s remember to be observers. So we’re mostly using our eyes to observe different parts of the worms. See how many body parts you can recognize. Pass out a small handful of worms on dampened paper towels to half your students to observe.*

Give students a purpose while they are observing the worms, such as generating a list of new questions they have for the KWL chart. **(5 min.)**

**4. Setting Up Worm Bin:** While half your students are observing worms, have the other half finely shredding newspaper and call them up one at a time to drill a hole into the bin (with help from an adult!), add their shredded newspaper, and spray with water. Be sure that each student only sprays a couple times. Remind students that we don’t want our worms to drown! **(15 min.)**

**5. Finishing Worm Bin:** Once all groups have both observed worms and helped establish the worm bin, have one student add the worms beneath the bedding, another student sprinkle the container of soil, and another bury the food scraps under the bedding. Have all students wash their hands, clean the workspace, and return to their seats. **(5 min.)**

**6. Worm Anatomy Challenge:** Show students a diagram of a worm, and ask them to share body parts they noticed. Then explain that there are still other body parts inside that we can’t see. Shuffle the Worm Body Part Cards, and hand them out to students. Challenge students to get into the order of the body parts of the worm (head at one end, then crop, gizzard, intestine, and anus at the other end). Now use this model to explain how worm digestion works: *Soil and organic matter, like decaying plants and food scraps, are ingested by the worm and get broken down with help from the grit in the gizzard. They travel through the intestines and are excreted as rich, beautiful compost full of good nutrients.* When students are in the correct order with the cards, have them wiggle together as one worm! **(10 min.)**

**7. Reviewing Responsibilities:** Explain to students that they'll be responsible for keeping their worms healthy, happy, and fed each week. You may want to appoint a Worm Lifeguard who rotates each week. Say, *You'll want to check your worms' bedding and spray water if it's too dry, or add more newspaper if it's too wet. Start by feeding them once a week, but be sure to observe how much they've eaten since you last fed them, and adjust the amount accordingly. (5 min.)*

## REFLECTION

Have students discuss the following questions in small groups, then share with the class: **(5 min.)**

- *What's one new thing you learned about worms today?*
- *How will you be taking care of your worms each week?*
- *What do you think we will see when we observe the worm bin in one week?*
- *What worked well in making our worm bin as a class? How could we have improved the experience?*

## ADAPTATIONS

**Extensions:** Have students create a poster or brochure of how to care for the worm bin. Students can also keep a weekly log in which they take notes on what they observe. Try also having a rotating chores chart, so students are taking turns feeding, adding bedding, etc.

## ACADEMIC CONNECTIONS

Next Generation Science Standards, Life Science Disciplinary Core Idea

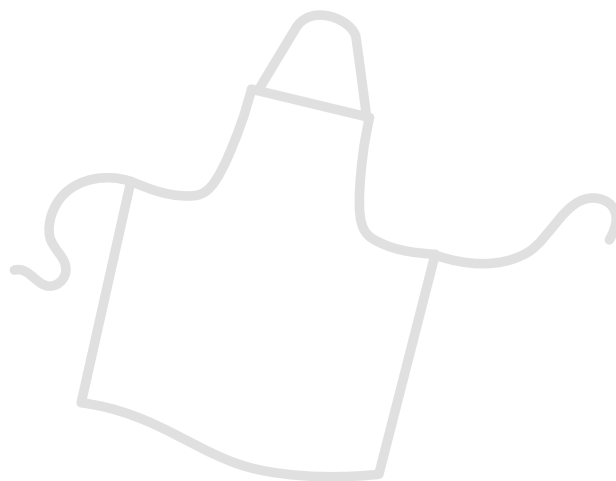
**NGSS LS.4.D**

Populations live in a variety of habitats, and change in those habitats affects the organisms living there.

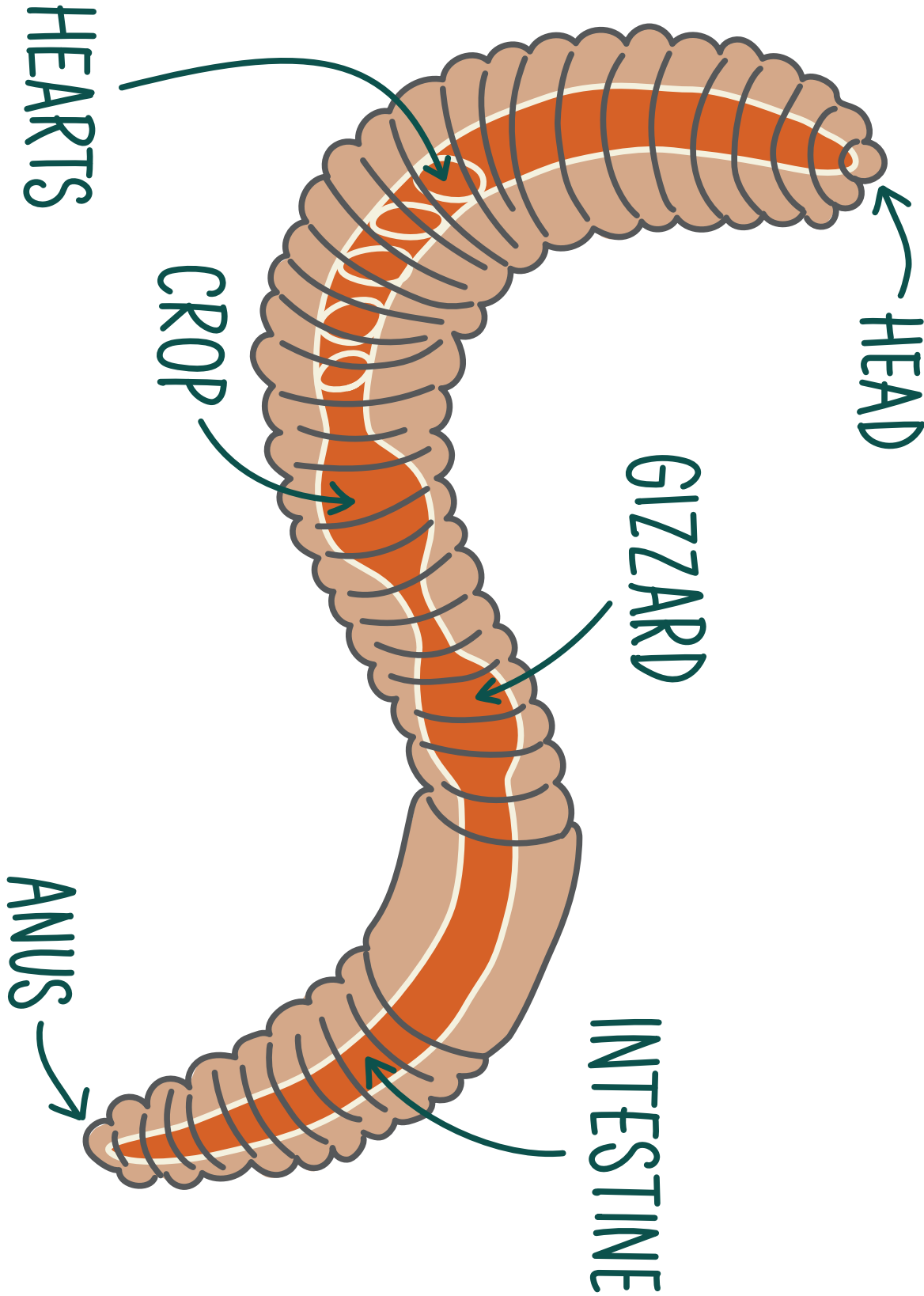
English Language Arts Common Core State Standards

**CCSS.ELA-LITERACY.SL.3.1**

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly.



# Worm Body Part Cards



# Worm Anatomy Poster

