

Introduction to Worms and Starting a Classroom Worm Bin

Grade(s): K-5	Topic: Worms, Decomposition	Season: Any
<p>Timing: 60 minutes, including 5 minute RPK, 10 minute introduction and book reading, 10 minutes on worm anatomy, 20 minutes of direct worm observation, 10 minutes setting up a classroom worm bin and going over care, 5 minute conclusion</p>		
<p>Follow-up: Checking in on, watering, and adding food scraps to worm bin for ideally at least 2 months. Make sure you monitor how much food is going into the bin and adjust as needed. You can designate worm feeding to day one day of the week to avoid overfeeding. Do not add liquid (juice, milk, etc), meat, dairy, or cooked/processed grains (pasta, bread, etc) products to the bin and monitor bin moisture. At end of worm bins' tenure, use soil created in worm bin for a classroom planting or mulching project.</p>		
<p>Objectives:</p> <ul style="list-style-type: none">• Students can explain that worms play an important role in decomposition and that by tunneling in the soil, they make space for air, water, and plant roots. They break down organic matter to make humus, a very important and nutritious part of the soil.• Students make the connection that without the nutrients from humus, we wouldn't get nutrients from the plants we eat that are grown in the soil• Students can list a worms' body parts, including head, tail, clitellum, 5 hearts, segments, and setae• By creating and helping to maintain their classroom worm bin, students understand the origin and importance of compost and how their food waste can be turned into nutritious soil right in the classroom		
<p>Materials:</p> <ul style="list-style-type: none">• Large yogurt or like-sized container with bedding and compost and enough red wiggler worms for every student in class to have one (ask a friend who has a worm bin, or purchase red wiggler worms (Note: Make sure there are holes in the lid for worms to get air. This is not an ideal environment for the worms, so put them back in a large bin as soon as possible after work. Worms found in the soil outside tend to hold up very poorly with classroom observation)• Plastic plates or trays, preferably with high edges, for worm observation• Spray water bottle filled with water• Worm observation sheets• Magnifying glasses• "Fun Worm Facts" printed out for you to read to class• <i>Worm Observation</i> worksheet• Flexible straws <p><u>For creating a classroom worm bin:</u></p> <ul style="list-style-type: none">• Plastic or wooden bin with air holes (can buy pre-made or make yourself)• Newspaper, fallen leaves, or other bedding• Compost scraps to feed to worms• Red wiggler worms, enough for the amount of compost you'll be putting in the bin• <i>Worms Eat My Garbage</i> by Mary Appelhof, about setting up and maintaining a classroom worm bin		

Prep Needed:

- Shred newspaper and add water to create worm bedding in classroom worm bin (class will enjoy helping with this step). Note that newspaper ink will come off on your hands when mixed with water and stain them slightly.

Degree of need for extra teacher or parent helper? High

Journal Prompt: Why are worms important?

Lesson Sequence:

Reactivate Prior Knowledge (5 minutes)

Review what the class already knows about soil, worms, and decomposition.

Introduction and Wonderful Worms Reading (10 minutes)

Ask students why they think that worms are important. Explain that today you're going to explore why worms are special and look at them more closely. Read the book *Wonderful Worms* or another worm book of choice to the class. After the story is over, ask the students what they learned about worms. You can make a list of facts and opinions that the children share about worms. Be sure to review the important role that worms play as a decomposer and reinforce soil and worm vocabulary.

Worm Anatomy (10 minutes)

Ask the students what they have in common with a worm and what is different. What parts of a worm's body do they know? Draw a diagram of a worm labeling the major parts. This is a good time to use the flexible straws to demonstrate worm locomotion (akin to an accordion).

Worms Up Close (20 minutes)

Tell the students that they will get to meet a real worm today. This will be exciting for all students, and scary for some. Tell them that it is an opportunity to try something new, to be brave if they are a bit scared, and to support any classmates who may need some help. It is always good to try and challenge our comfort zone. It is not required to touch the worms, but everyone should observe (hopefully) and everyone **must** be respectful.

Set clear guidelines before you take out the worms. Tell them that worms breathe through their skin, and so it is very sensitive. It needs to stay moist or wet to breathe so you have a spray bottle to keep them comfortable. Also, worms like the dark, so you are going to put some compost out with the worm so they can hide a little. The children will keep their trays on their desks and allow the worms to move around on the wet tray without bothering them. Additionally, worms don't have ears like we do, but instead they hear with their entire body. Yelling is absolutely not allowed and anyone speaking above a whisper will not be able to participate (this is usually a fun game for students, if you start out whispering too).

Stress that the children should be respectful of worms just as they are respectful of each other. Worms are living creatures, too. As incentive for good behavior, tell them that they will be allowed to hold a worm at the end of this activity if they can treat the worms with care during the observation. (Only promise this if you know there will be time.) For the first part of the activity they will only be using their eyes and magnifying glasses to look at the worms.

Go over the worksheet with them briefly. Then pass out the "red wiggler" worms. As they observe the worms, they should fill out their observation sheet.

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Note: for an outdoor option, if there is a place at the school where students can dig in the soil and the ground is not frozen, students can dig up their own worms for worm observation. Just be careful to distinguish that the worms you dig up outdoors are a different species and cannot be put into worm bins.

Worm Bin Setup and Worm Care (10 minutes)

Worm bins can be set up in one of two ways. Bins can either be a complete free-for-all with scraps everywhere, or bin can be partitioned so as to have a section for just newspaper, a few different types of food scraps, and then some inorganic materials to see what worms will decompose best/fastest. If doing the latter approach, students should make a hypothesis in their journals about which part of the bin the worms will decompose the fastest.

You can set up the worm bin before class, or have the class help you. You need to have a worm bin with holes and fill it with a bedding material such as newspaper scraps soaked in water. Then you need to add the worms and bury compost for them to eat.

To introduce your students to the concept of a worm bin, ask the children what worms eat in nature. (Dead plants – leaves, stems, roots, etc.) Ask them what they could feed the worms while they live in their classroom. Ask them if there is anything that they would normally throw away that the worms might like to eat. Do you think worms would like leftover people food? What can they eat?

Worms are omnivores. That means they can eat both plants and dead animals. Even though we sometimes have extra meat in our lunches, we won't put any meat in our worm bin because it will start to smell bad. But the worms can eat dead insects instead. For their plants, they can eat things like apple cores, banana peels, potatoes, lettuce, and lots of other fruit and vegetable scraps. Ask students for ideas of what they could bring in from their own kitchens. Show them some examples you brought in. Let them put the scraps in the bins if there is time and be sure to bury them under at least an inch of bedding so that they do not mold. No liquids should go in the bins and there should never be any standing liquid in the bins.

Tell the students that they can help to feed the worms each week by bringing in a small bag of food scraps from their kitchen. The worms don't mind eating our food scraps, and by giving them to the worms, we are helping to recycle and reduce our waste.

Also, show them the spray bottle and how to check the bin for moisture. Make this check a daily class chore – schools are often so dry that the worm bins need to be misted lightly every day or the worms will die. There should be no pools of water at the bottom of the bin, but the newspaper should be uniformly wet.

Conclusion (5 minutes)

Review what the class has learned about worms and who is going to be in charge of the first round of worm bin monitoring.

Vocabulary

Anterior
Bedding
Castings
Clitellum

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Compost
Decompose
Humus
Posterior
Segment
Setae

Vocabulario

Anterior
Cama
Cáscara
Clitelo
Composta
Descomponer
Humus
Posterior
Segmento
Setas

Extensions / Homework Ideas:

- Read *Diary of a Worm* with the class. Have students write their own worm diaries from the perspective of a worm. Encourage them to be creative and use humor like the author did in her book.