

Lesson Title: Warming Up to Worms: Bacteria and Fungi**Time:** 40 minutes**Materials:**

Bin
Newspaper
Bowl for water
Soil
Worms (might come later)
Worksheet
Posters
Markers

Objective:

Build a worm bin and learn about what worms can eat.

Opening:

Explain role in MAMS with the garden. Play 2 truths and a lie with worm facts: (T) In ancient Egypt under Cleopatra's rule, it is reported that anyone who knowingly killed a worm would be sentenced to death. (T) Today, there are engineers in India who are learning how to clean sewage water using worm systems. (Lie) Ten years ago, in a school in California, students all had pet worms that decomposed their lunches for them.

Lesson Plan/Procedure/Activities:**Activity 1: Worm bin building**

1. Introduce worm composting by discussing the importance of worms in nature, and worm composting as a waste management strategy.
2. Buy, scrounge, or build a worm bin:
 - A worm bin can be made of wood, plastic, or other materials.
 - The size of your classroom worm bin should be at least 1 ½ square feet, and about 16 inches deep.
 - Good ventilation is essential for aerobic decomposition and a healthy environment for worms.
3. Prepare Worm Bedding:
 - Tear newspaper into ½" to 1" wide strips (tear lengthwise, with the grain).
 - Dunk newspaper strips in water and add to bin.
 - Add a handful of soil and fluff.
 - Toss everything like a big salad.
4. Add worms and food:
 - Purchase or obtain about 1 pound of red worms (about 500 to 1,000 worms)
 - Gently place you worms in the moist newspaper bedding near the bottom of the bin.

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- Put a handful or so of food waste near the worms and cover well with the moist newspaper bedding.
 - Add more dry shredded newspaper to fill the bin, and then a layer of burlap or cloth.
5. Explain to participants that using worms to compost our food scraps makes sense for a lot of reasons:
- We will reduce the amount of garbage we create.
 - Compost improves the soil and makes it hold water better.
 - Using compost reduces the need for chemical fertilizers, which helps prevent the creation of more pollution.
 - Composting with worms is fun!

Activity 2: Worm Diner (15 min)

Discussion:

Tell students they are going to learn how to feed their leftover food to worms in a worm bin. But first explain that they need to learn where food comes from.

1. What kinds of foods do you like to eat? (Take all answers)
2. What is this food made from? (Take all answers, but the main answers are animals and/or plants. Explain that cheese and milk come from cows and that fruits and vegetables come from plants.)
3. What fruits or vegetables are in your snack or lunch today?
4. Do they come from plants? (Yes)
5. Are there any foods in your snack or lunch like meat, bologna, cheese or milk?
6. Where do these foods come from? (Animals like cows and chickens)
7. Do these animal-based foods come from plants? (No)

Activity:

Students make 2 posters to describe our worm bin. The first poster will describe how the worm bin recycles our food and the second will list the foods a worm bin can have and what it cannot take

Day 2: Worm restaurant

Objective Students will learn about what worms need to live, what they can eat and conduct a lab. They will also discuss the benefits of a worm bin.

Grade Level 7th grade learning support

Time 40 minutes

Materials

Worms and bucket to carry worms
paper plates
toothpicks
spray bottles
worm lab worksheets
worm diner cards
paper (to made worm diner signs)

Opening

Explain role in MAMS with the garden. Play 2 truths and a lie with worm facts: (T) In ancient Egypt under Cleopatra's rule, it is reported that anyone who knowingly killed a worm would be sentenced to death. (Lie) Ten years ago, in a school in California, students all had pet worms that decomposed their lunches for them. (T) Today, there are engineers in India who are learning how to clean sewage water using worm systems.

Before breaking into groups, discuss how worms are recyclers, how they have been held in high esteem by many cultures for centuries, and that they can help us manage our waste. After today, students will have a worm bin in their class to help them manage waste. Today they will learn about their worms and how to care for those worms.

Lesson Plan/Procedure/Activities

*Do this lesson in two groups, and rotate after 15 min

Activity 1: Worm Lab (15 min)

1. Begin by going over rules with worms: treat them nicely, no hurting them, NO HAND SANITIZER/SOAP (it hurts them).
2. Ask participants to brainstorm questions about worms. Encourage students to ask any kind of question about worms. Try brainstorming worm adjectives.
3. Tell participants they are now going to investigate the answers to their questions through direct observation of redworms. Each student needs a paper plate and a toothpick in case they don't want to touch their worms.

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4. Hand out the Warming Up to Worms worksheet to each participant. Walk the class through filling out the worksheet. Then give them their worms.
5. Once the students are finished, facilitate a discussion on the questions that were brainstormed at the beginning of the lesson. Some of the questions might not have been answered from observations. How would participants research those unanswered questions?

Activity 2: Worm Diner (15 min)

1. Tell students that today they are going to learn how to feed their pet worms that live in the class worm bin. Just like all living things, red worms need air, water, and food to live.
2. Tell students they are going to pretend to open up a Worm Diner or restaurant. They will need to make a menu that lists foods that worms can eat. This is what will be fed to the worms living in the worm bin.
3. Explain to students, that worms do not have teeth. Instead, they scoop up their food with their mouth and swallow it whole. Explain that although worms can eat any kind of food out in nature, that the worms eating at the Worm Diner are vegans. A vegan is someone or something that only eats foods from plants. That means that worms should only eat plant-based food like fruits, vegetables, beans, nuts, and grains like rice and wheat that get turned into pasta, bread, cookies and crackers.
4. Explain that if you feed animal foods at the Worm Diner, that the food in the worm bin will get very smelly and stinky before the worms can eat it. The worms that will eat at the Worm Diner need students to make sure the food on the menu is only made from plants.
5. Begin sorting the foods into two piles by holding up one of the food samples. Ask students if the food comes from an animal or a plant and then ask them if it should be served at the Worm Diner.
6. Place foods that worms can eat in a pile labeled “Worm Diner--Yes,” and the foods that worms cannot eat in “Worm Diner—No” pile. Encourage active student participation by giving individual students a food item and asking them to place it into the correct pile.
7. Once students understand the diet of their worms, you can have them take a single sheet of paper and make a sign for their worm diner.