

# Bay Area Scientists in Schools Presentation Plan

**Lesson Name:** Worms and Compost

**Presenter(s):** Meredith Wong

**Grade Level:** 4<sup>th</sup>

**Standards Connection(s):** Decomposers recycle matter from dead plants and animals

**Abstract:** Where does your garbage go? Did you know worms can eat our food waste and turn it into soil in a process we call composting? Did you know that worm poop is full of nutrients for plants? Students will handle and observe live worms and learn what worms eat and how they facilitate plant growth.

## **Vocabulary/Definitions:**

**Decompose** - Something that has died (a plant or animal) is eaten and digested by other living things (bacteria, flies, worms, and other small animals) and broken down into very small pieces.

**Compost** - The product of decomposition (worm poop for example); **composting** is the process of making compost.

## **Materials:**

**I will bring:** worms, plates, activities, paper, and a worm bin for the class to keep if desired.

**Students** should have writing utensils and I need a chalkboard or whiteboard.

## **Classroom Set-up:**

Students should be easily divided into small groups

## Classroom Visit

### **1. Personal Introduction:**

**5 Minutes**

My name is Meredith. I'm from Oakland, but I go to school in San Diego at UCSD. I'm studying environmental engineering. I'm learning about how to design technology that helps people be nicer to the environment, for example, solar energy. I want to teach you about worms because worms can help us be environmentally friendly. I spend a lot of time trying to help the planet and having worms at home is one of my favorite ways to do this.

### **Topic Introduction:**

**5 Minutes**

Talk about our garbage and where it goes: recycling, landfill, or composting. Who has heard of composting? What is composting? One type of composting is worm composting. What do worms eat and what does it become? Worms especially like to eat plants, paper, and eggshells. What are some of these things we might otherwise throw in the trash? How do worms help the environment? When worms eat our garbage they help a process called decomposition.



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Decomposition creates compost (in this case, worm poop, or worm castings). Compost is great for plants. Worms also help plants grow in other ways (aerating the soil, etc). Also, when they eat our garbage, it turns into something that can help life grow instead of going to the landfill and taking up space.

## **2. Learning Experience(s):**

**35 Minutes**

5 min – I'll draw a big diagram and have the students draw it with me using labels and teaching them about the anatomy of a worm.

20 min – (5 observe; 5 talk; 5 observe; 5 talk)

I'll have the students observe the worms. I'll show them the worms in the worm bin and briefly talk about the many living things in the worm bin and how they all help each other.

Then I will give each table a cup with worms and bedding from the worm bin and a plate to let the worms crawl on. The students may each hold a worm in their hand or observe them on the plate.

Each group gets 5 min to observe the worms. One person writes down observations and questions. Then the groups can each share one or two observations and one or two questions.

I will help students answer questions as a class. I will assign groups questions from other students for another focused observational period. A different student should write down the question, observations, and conclusion.

We will discuss the students' conclusions and if I can give them answers they can't obtain with their observations I will offer them now.

10 min – Next I will show the students items and ask if they can be fed to the worms or not and sort the items into the garbage, recycle, and worm bin. They should make their guesses based on the rule I have given them at the beginning of class that worms only like plants and paper with the exception of eggshells.

## **3. Wrap-up: Sharing Experiences and Building Connections**

**5 Minutes**

Putting the pieces together – how will students share learning, interpret experience, build vocabulary?

Ask the students to share what they learned. How do worms help plants? What do worms like? Worms help the environment because they share space with other organisms, helping and receiving help. They can help people make less trash by eating it.

#### 4. Close:

5 Minutes

How can kids learn more? Thanks and good-bye! Clean-up.

I'll leave students with activities on paper they can do to apply their knowledge about worms. I'll include a handout about how to make a worm bin at home.

TOTAL 50 – 60 Minutes

### Follow-up – After Presentation

Suggest students write a letter explaining “How we learned about worms and composting...”

**Compost: A Scientific Investigation** (California Academy of Sciences) – In this activity, learners conduct a scientific investigation involving decomposition and discover that the life cycle of trash is affected by its organic or inorganic nature. Learners develop questions, hypothesize, and record observations in compost workbooks throughout the seven-week experiment. This detailed lesson guide includes key vocabulary, background information, wrap-up and extension ideas, and resources. <http://www.calacademy.org/teachers/resources/lessons/composting-a-scientific-investigation/>

**Garbology – Composting Bioreactor** (Center of Science and Industry) - In this activity (page 19 of the PDF) learners will create a soda bottle bioreactor by exploring the science of composting, comparing variables such as reactor design, moisture content, and nutrient ratios of mixtures to be composted. This was created as a post-visit activity for a workshop about garbage and recycling, but is also makes an excellent stand-alone activity. <http://smile.cosi.org/garbology-teacher-packet-and-classroom-activities.pdf#page=19>

#### Reading Connections:

- Compost Critters by Biana Lavies – Close-up, enlarged photographs follow Lavies’s compost pile through an entire year while the “compost critters” go to work. They recycle her unwanted waste into rich garden soil called humus. Instructions for making your own compost pile are included. <http://www.amazon.com/Compost-Critters-Bianca-Lavies/dp/0525447636>
- I Want to Be an Environmentalist by Stephanie Maze and Catherine O’Neil Grace – Describes career opportunities within the field of environmentalism and suggests ways to pursue such a career. [http://books.google.com/books/about/I\\_Want\\_to\\_Be\\_an\\_Environmentalist.html?id=vs1TPgAACAAJ](http://books.google.com/books/about/I_Want_to_Be_an_Environmentalist.html?id=vs1TPgAACAAJ)