

# Workshop Title: **Help Solve Climate Change Through Global WORMing!**

Date: **Saturday, May 8, 2021**

Time: **10:00-11:30 am**

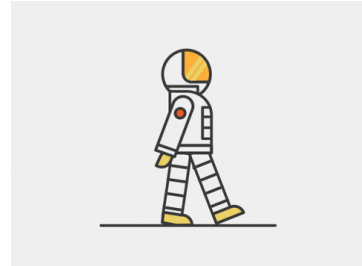
## RESOURCE SHEET for PARTICIPANTS

### Workshop Links

- [Link to Google Slides Presentation](#)
- [Jamboard Link](#)
- Video Link

### Student Target Grade Range

- TK-8



### Workshop Description

Join our **Climate Action League** and help solve the climate crisis through global **WORMing!** Your facilitation team will demonstrate science concepts and student engagement strategies in a fun and playful way. We will share hands-on and digital activities as well as demonstrate role play and humor as engagement tools for communicating the topics of climate science, composting, and gardening. You'll come away from the workshop with a better understanding for how waste diversion and composting are great ways to help solve climate change as well as with an action plan for student engagement.

Facilitator	Organization	Position/Role	Email
Haley Thiltgen	<a href="#">Chabot Space &amp; Science Center</a>	Science Educator/Exhibit Developer	hthiltgen@chabotspace.org
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Cristian Aguilar	<a href="#">Stopwaste</a>	caguilar@stopwaste.org	caguilar@stopwaste.org

### Goals/Purpose of Workshop

- Share students engagement strategies
- Share hands-on activities and digital learning tools
- Help attendees realize that composting (vermicomposting in particular) is extremely beneficial to the health of our planet and people.
- Share that green waste makes up a large part of our waste stream and can be composted
- Give attendees tips and tools to start vermicomposting on their own with their students/classes.

- Highlight the potential benefits of vermicompost in regards to interplanetary travel and lifestyle.
- Compare Earth's closed resource system with the closed system needed for living off the Earth (in space, on the moon or on another planet for example)
- Show connections between composting, recycling, gardening and greenhouse gas reduction.

## Objectives

Students will learn:

- How food waste contributes to climate change
  - What is climate change and what is the distinction between it and global warming?
  - The statistics on food waste in landfills
  - Introduction to the heroes of the project, worms. Introduce general anatomy and classification, aka the squirm hall of fame.
  - What can you do?
- How worm composting reduces food waste and creates reusable matter which we call compost
  - How worm castings improve soil quality for plant growth and happiness
  - How to profile your dirt and amend it with worm compost
  - How and why scientists are experimenting with worms aboard the ISS
  - How the perseverance mars rover is collecting soil samples for return to earth for analysis
  - What could go wrong with worms in space?
- What can you do?
  - How to further reduce food waste by regrowing a percentage of your food
  - Statistics on the climate impact of food travel
  - How to regrow your groceries, harvest, store, sell or trade seeds to reduce your food carbon footprint
  - How to calculate the amount of money saved by growing at home even in small spaces or containers
  - How to have tea time with your plants, compliments of the worms
  - Should we incorporate worms in the future exploration of humankind? How and why?

## Activity Outline

1. Quick Survey/Pre Assessment (5 mins) - Zoom poll
  - a. Have you cared for a compost bin before?
    - i. Yes/No
  - b. Does your school have a garden that students can work in?
    - i. Yes/No
  - c. Which worm do you resonate with?
    - i. Participants choose one from image provided and share in chat

2. Closed Systems Comparison (10 mins)
  - a. Participants use Jamboard to brainstorm and make connections between composting on Earth and in Space
  - b. Guiding Questions:
    - i. How does composting benefit the Earth
    - ii. Why might astronauts want to compost
    - iii. How does composting help solve climate change?
  
3. Worm Bin and Soils Exploration (25 minutes)
  - a. Soils Exploration
    - i. Comparisons and profiles
      1. Ask participants to bring a sample soil to the workshop
      2. Discuss soil types
    - ii. Worms on the big screen!
      1. Circle creatures you see on the digital microscope
    - iii. Soil pH
  
4. Climate Action League (15 mins)  
 Create your own Character! Share your own story and mission!
  - a. Participants can reference the workshop characters we share, the ideas and data presented and their own personal interests to create an original “character” they can use in their future teaching.

Characters	Personality Type
Cadet Wormhole	shy, humble, unassuming, silly, often confused
Cristian Cantaloupe/super reducer?	Cristian Cantaloupe- self as super / educator Super Reducer- 4Rs Action League original character Wiggle E worm
Food Rescue Mama	Fun, happy, caring - Understands her role is making sure food is eaten and feed worms food scraps to create healthy soil ecosystems
Seedy Gardener	Keeper of the seeds! earthy; whimsical, collector; nurturer, reuser, trader of high value heirlooms, scrappy and crafty!
Space Monkey	bossy, serious, a primate of few words and many screeches...

- b. Additional current and past examples to share:
  - i. Stopwaste.org’s 4Rs Action League - characters include Super Reducer, Rot Girl, Professor Reuse, Wiggly Worm; Activities from Stopwaste Community Outreach Team - have videos
  - ii. Chabot’s Zero Waste Lunch Team - characters included Captain Recycle, Compost Commander, The Wasteful Witch and Dr. Rubbish
  - iii. FBI - Fungi, Bacteria, Insects

5. Develop an Action Plan (10 mins)

- a. Identify your next steps, including the following:
  - i. Schedule
  - ii. Activities
  - iii. Additional support and resources needed

**Additional Background/Information**

The number one contributor of waste to landfills is food.

As we pursue sending humans beyond the earth, it's mission critical that we continue being good stewards of our home planet. Worms, those wiggly squirmy critters, play a vital role in diverting and converting food waste into reusable organic matter. We'll show you how to get into the wiggly action in ways that are good for you and the planet. We'll explore experiments with live worms on Earth aboard the International Space Station. Lastly, you will decide how and where worms should go next in space.

STOPWASTE STATS: Forty percent of the food that is grown in the U.S. ends up being wasted and 20 percent of food that families purchase to eat never actually gets eaten. Food wasted in a landfill also contributes to climate change and wastes of all the energy, water, and resources that went into producing that food.

Using waste as a resource - why do we have the concept of waste

**Bonus:** Alameda County residents have the option of receiving a free pound of worms! Please contact a member of the Stopwaste Team if interested.

**Stopwaste Links**

[www.Stopwaste.org](http://www.Stopwaste.org)

[Gardening playlist](#)

[Soil test](#)

[Mama wanda playlist](#)

[Quick intro to worms and compost](#)

[Action league](#)

[Stop waste tool](#)

Soil Health Activities	<a href="#">Soil Exploration Worksheets</a> (Type, worm count, pH)
	<a href="#">Healthy Soils Activity Guide</a>
	<a href="#">Video: Nitty Gritty</a>
	<a href="#">Video: Worm Count</a>
Wiggle E Worm Comic/Read Along	<a href="#">Comic Book</a>

	<a href="#">Read-a-long Video</a>
<b>Activity Pages</b>	<a href="#">Worms at School</a>
	<a href="#">Worms Inside and Out</a>
	<a href="#">I'm a Climate Action Hero</a>
<b>Posters</b>	<a href="#">Worm Anatomy</a>
	<a href="#">Food Chain in a Worm Bin</a>
<b>Doing the 4Rs</b>	<a href="#">Lesson 20: Compost Critters</a>
	<a href="#">Lesson 23: Setting up a Worm Bin</a>
	<a href="#">Lesson 24: Harvesting a Worm Bin</a>
<a href="#">Worm Composting</a>	
<a href="#">Do The Rot Thing (Movie: Run time 25 minutes)</a>	
<a href="#">Web of Life (Food Chain In A Worm Bin)</a>	<a href="#">Web of Life (Food Chain In A Worm Bin) Spanish Vocabulary</a>
<a href="#">Compost: How Do You Know?(Fava Bean or Plant Investigation, Soil Only vs. With Compost)</a>	<a href="#">Compost: How Do You Know?(Fava Bean or Plant Investigation, Soil Only vs. With Compost Spanish Worksheet)</a>
<a href="#">Compost Critters</a>	<a href="#">Compost Critters Spanish Worksheet</a>
<a href="#">Wonderful Worms</a>	<a href="#">Wonderful Worms</a>
<a href="#">Warming Up To Worms &amp; Worm Anatomy</a>	<a href="#">Warming Up To Worms &amp; Worm Anatomy Spanish Worksheet</a>
<a href="#">Setting Up A Worm Bin</a>	
<b>Mama Wanda's Garden School</b>	<a href="#">Mama Wanda's Garden School Teaser Trailer</a> <a href="#">Common Vision, Wanda Stewart Soil Puppet Show: Episode 1: Soil, Worms</a>
<b>Bringing It All Together: Food Waste, Compost, Climate Change &amp; Youth Taking Action, Activity Journal, Grades 3-High School</b>	<a href="#">Amazing Garbologist Adventure StopFoodWaste Edition English</a> <a href="#">Amazing Garbologist Adventure StopFoodWaste Edition Spanish</a> <a href="#">Amazing Garbologist Adventure StopFoodWaste Edition Chinese</a>