Compost Family Feud: Build a Worm Bin Compost Challenge- the game Grade 6 Facilitator Notes

Objective: Students will learn why and how to successfully maintain an indoor worm compost.

Recipe Category: Soil & Composting

Cooking Time: 25 mins

✔ **Level of Difficulty:** Grade 6

Recipe Ingredients:

- ☐ **Buzzers:** 2 bicycle bells
- ☐ **Worm Bin challenge questions sheet**
- ☐ **Worm Bin containers:** 2 empty bins
- ☐ **Worm Bin covers:** 2 worm bin lids with holes, 2 worm bin lids without holes
- ☐ **Bedding:** Burlap, tarp, shredded paper, shredded cardboard and/or egg cartons, dried leaves, woodchips, straw etc.
- ☐ **Multiple laminated compost bin & food cards**: worms (2+), water drops(4X), air cards (4X), banana peels (2X), apple cores (2X), bacon(2X), mango peels(2X), rotting lettuce(2X), orange peels(2X), buttered toast(2X), pasta with sauce(2X), plain rice(2X), chicken bones(2X), plastic wrap(2X), steak(2X), eggs(2X), egg shells(2X), chips(2X), coffee grounds(2X), garlic(2X), onions(2X), tea bags(2X), potato peelings(2X), hot peppers(2X), sweet peppers(2X), cheese and crackers(2X)

- ☐ **2 real Worm Bins with red wigglers & other compost creatures**. Cover with a blanket to hide from participants until the final portion of the workshop.

green thumbs growing kids

☐ **Worm Bin Materials:** Spray bottles with water, shredded paper, trowels and real food waste in containers to feed worms (i.e. pre-chopped apples, banana peels)
☐ **Finished compost to take home**
☐ **Compost Cycle poster or diagram** (visuals of inputs and outputs from worms to food)

NB: Ideally it would be great have more than one facilitator. One facilitator can be the game show host and the other can keep track of time and team points. If there are more than two facilitators, you can have more than one judge or game show assistants.

Set-Up: Cover the Laminated Cards until Part Two and the real Worm Bins until Part Three

Overview of the workshop

- **Part One: Introduction & Know Your Worms Challenge (15 minutes)**
- **Part Two: Build a Worm Bin Home & Presentation to Judges (5 minutes)**
- **Part Three: Interact with the Worm Bin (5 minutes)**

Curriculum Links:

Grade	Subject Area	Ontario Curriculum Links
6	Science and Technology	*Systems and Interactions* Investigate the characteristics of living things, and classify diverse organisms according to specific characteristics. (O) ▪ Identify and describe the distinguishing characteristics of different groups of plants and animals and use these characteristics to further classify various plants and animals. (S) ▪ Identify everyday products that come from a diversity of organisms. (S)
		Sustainability and Stewardship Assess human impacts on biodiversity, and identify ways of preserving biodiversity. (O) Demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefits to humans. (O) ▪ Relating a local issue related to biodiversity (e.g. the effects of human activities on urban biodiversity i.e. soil biodiversity), propose action that can be taken to preserve biodiversity, and act on the proposal. (S) ▪ Describe ways in which biodiversity within and among communities is important for maintaining the resilience of these communities

Part One: Introduction & Know Your Worms Challenge (15 mins)

- Introductions
- Welcome students to the **Worm Bin Compost Challenge**. You are the worm host and the following co-facilitators are the judges. Tell the class you will be splitting the group into two teams and that they will be competing with each other in three sections. Teams will accumulate points by answering questions about composting correctly.
- Before launching into the game **discuss the following:**
  1. **What is compost?**
  2. **Why do we want to make compost?**
  3. **How do you make compost?**

Key terms:

Compost: Compost is nutrient-rich soil resulting from the process of composting, that is, the process of decomposition - **food waste rotting food** and breaking down turning into soil. I.e. food for plants, organic matter derived from plant and animal waste. **You can use the Compost Cycle poster as a visual aid, if you'd like!**

Why we want to compost:

- Compost is like **healthy food and vitamins for plants** – It increases the organic and **nutrient content of soil**, improving the texture, drainage and fertility of the soil so that plants can grow well – so you get healthier food plants. It is the most nutritious organic **plant food**!
- It is beneficial to the land and environment i.e. **ecosystems** (i.e. rainforest, arctic, our urban setting etc. An **ecosystem** "is a natural unit consisting of all plants, animals and micro-organisms in an area functioning or interacting together with all of the non-living physical factors of the environment" → a community of living and non-living things). By improving the soil conditions, it provides a **healthy habitat for many different life forms (a variety of insects, animals and plants) to thrive – increasing biodiversity (variety of living things)**.
- Takes away garbage **away** from landfills as we're running out of space to dump our garbage!

How you make compost:

1. To make compost you need a combination of "**greens" and "browns"**
    - **Greens** – materials that are **high in nitrogen** or protein i.e. vegetables, coffee, fruits etc.
    - **Browns** – materials that are **high in carbon** and carbohydrates i.e. shredded paper, dry leaves, newspapers, woodchips, and dry grass clippings etc.
    - **When composting you need a BALANCED ratio of 1:1 of greens and browns**.

2. <u>You can make compost in various ways:</u>

a. **Outdoor composting** – large bins outside.

b. **Indoor composting** – **vermicomposting with red wigglers** in relatively small contained bins so that you can compost even if you live in an apartment and do not have access to a backyard. They are not like the earthworms that are native here that dig deep into the ground. They come from a warmer climate than Ontario, and actually live in the layer between the soil and leaf matter – which is why they can't survive winters.
    - Red wiggler worms speed up the process of decomposition or composting.
    - Worms actually eat the bacteria that are breaking down the food scraps ("greens") or bedding ("browns")
    - **There are other decomposers such as pill bugs, microorganisms such as microbes, centipede, pot worms, millipedes etc. They are part of the worm bin ecosystem community.**

Know Your Worms Challenge Game!

<u>Split the group into two teams --- the Greens and the Browns.</u> Give each team a bicycle bell to use as a buzzer. Teams are only allowed to ring the bell <u>once</u> the whole question is read out loud. Once a team rings the bell, they have five seconds to discuss with their teammates the answer. If the first team gets the question wrong, the question goes to the other team automatically. **Tally the votes**. **See attached list of *Know Your Worms Challenge questions*.**

Part Two: Build a Worm Bin Home & Presentation to Judges (5 minutes)

Explain that both teams have to now build a worm bin with the following materials that are displayed in the middle of the room (it is ideal to hide these items until you get to this portion of the game). **Let them know that they will want to think about how they use the items they pick beforehand and brief them on the key concepts below as considerations.** You might want to consider quickly showing the students the items that they can use beforehand. They will be given **2-3 minutes** to work together to build an indoor vermicompost. When they hear the bike bell, they must drop everything.

Key concepts to consider when building a Worm Bin Home:

- Darkness/Lightness
- Ventilation/Air flow
- Humidity Level
- Types of food
- How food is presented (i.e. whole, chopped, minced etc.)
- Ratio of **"**Greens" (i.e. food waste) and "Browns" (i.e. to cover food waste)

Each team will designate a leader or explain as a team why they designed and built their worm bin as such i.e. why did you pick apple cores? **They will be given 30 seconds to a minute to promote why their worm bin home is the best. For every valid point a group makes they get a point.**

Part Three: Interact with the Worm Bin (5 minutes)

- Students will have a chance to look and interact with a **real worm bin**. Provide **food scraps in a container** (with trowels for students who do not want to touch worms with bare hands), **spray bottle filled with water** and **shredded paper** so that students can feed, hold worms in their hands and provide some bedding.
- You might have to remind students that worms are living creatures and that we should be gentle when handling them.

Serving Suggestions:

1. Worm bins
2. Diagrams of the compost cycle
3. *List of Know Your Worms Challenge* questions

Know Your Worms Compost Challenge Questions

1. **A worm bin is a:**
   a. home for worms
   b. compost producer
   c. living ecosystem
   d. all of the above

   Answer: d

2. **What do we call the types of materials that go in the worm bin?**
   a. greens and browns
   b. blacks and whites
   c. yellows, oranges and greens

   Answer: a

3. **The main ingredients needed to make compost are:**
   a. water, greens and browns
   b. greens and browns
   c. air, water, greens and browns
   d. green, browns and air

   Answer: c

4. **What are other creatures that might live in an indoor worm bin?**
   a. beetles and snails
   b. caterpillars and bees
   c. ants
   d. microorganisms, pills bugs and mites

   Answer: d

5. **Worms have teeth. Yes or No?**

   Answer: No

6. **Worms eat:**
   a. bananas
   b. bacteria
   c. cardboard

   Answer: b

7. Foods that worms like are… Name as many as you can:

Answer: fruits and vegetables (apple cores, mangoes, banana peels), grains, egg shells, coffee grounds, plain bread, plain rice etc.

8. Worms don't like certain conditions or foods…Name as many as you can:

Answer: Light, cold weather, onions, garlic, lemon and orange peels, oily foods, hot pepper etc.

9. What are castings?

a. fishing pole and hook you attach worms to use as bait
b. worm poo
c. auditions for actors in a film or TV show

Answer: b

10. Worm bins require a green and brown <u>layering</u> ratio of:

a. 1:1
b. 2:1
c. 4:1
d. 6:1

Answer: a

11. Worms breathe through their skin. True or False?

Answer: True