
Garbage to Gardens



Students Will:

- Determine that all food is dependent on healthy soil in some way.
- Play a game to learn about the role of compost, decomposers, soil ecosystem, and the solid waste municipal system.
- Draw connections about the importance of composting.
- Learn that soil is alive!

Grade Level: 5th grade. Adaptable for younger or older students.

Timing: 45-60 minutes

North Carolina Essential Standards:

- Science as Inquiry: Asking questions, Investigate using tools, Communicate results.
- 5.L.2.2 Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers.
- 5.L.2.3 Infer the effects that may result from the interconnected relationship of plants and animals to their ecosystem.
- 5.G.1.2 Explain the positive and negative effects of human activity on the physical environment of the United States, past and present.

Materials:

- Ability to play video of apple core decomposing and soil microbes video.
- Real Compost/Humus from WCC or backyard bin.
- Game pieces. All items below are included in the *Don't Waste It!* Educator Check Out Program.
 - Game dice (7)
 - Cones with signs (7)
 - My Waste Stream Map (one per student)
- Pencils (one per student)

Background Information:

All of our food, including animal products and processed foods, originates from the earth. We can trace our food back to its original form, and from there back to the soil. This activity illustrates the importance of healthy soil. When we send our biodegradable materials to the landfill, we waste valuable nutrients that the soil needs to give new life. Through composting, we recycle our biodegradable materials and give them back to the soil. Compost feeds the billions of soil organisms that are essential in healthy soil. Healthy soil means healthy plants. Healthy plants mean healthy people and animals. (“Do the Rot Thing”, 2006).

This activity is adapted from the Don't Waste It! educator guide Waste Stream Dice Game by Amy Renfranz with New Hanover Soil & Waste Conservation District.

Important Vocabulary:

Compost Bin – where you put item that can be composted.

Composting – the process of making compost, a mixture that consists of largely decayed organic matter and is used for fertilizing and conditioning lang.

Consumer – someone who buys something at a store.

Farm – an area of land or buildings used for growing crops and rearing animals.

Landfill – a place to dispose of waste by burying it and covering it over with soil.

Store – a place where items made from new and recycled materials are sold.

Trash Can – where you put items that cannot be recycled.

Introducing the Activity- Invitation:

Show students an apple. Think-Pair-Share (TPS) where did that apple come from? Repeat with something else. TPS Does any food not come from soil? Transition: Our food depends on healthy soil. Today we are going to be exploring compost, which is one way that we can use the process of decomposition to help our soil.

Exploration:

1. Show video or photographs of an apple decomposing in a compost bin. One possible video: <https://www.youtube.com/watch?v=r2ToWrvVnM4>
2. TPS What happened to the apple? What has it become? How did it change? Transition: But does this always happen to our apples when we've finished eating them? Let's play a game to explore what can happen to our organic waste.

Concept Invention- Waste Stream and Composting Activity:

1. Set up the stations before the activity, but don't give the students the cube until step 7.
2. Tell the students to imagine that they have become their favorite fruit or vegetable. Ask them to think about where that fruit or vegetable grows. Once someone eats that fruit or vegetable, is there anything left over (like a peel or a core)?
3. Explain to the students that we are going to play a game to learn more about what can happen to fruits and vegetables as they go from the farm, to the consumer, and beyond! **Show students each station and explain what that station represents.**
4. Explain that they will be using My Waste Stream Map to keep track of their movement from place to place. Give the students the Map and tell them that they will need their pencils. Tell the students to draw arrows to each station they move to. Students should also record anytime they stay at a station. They may do this by making a tick mark on the line below the station on their map.
5. Tell the students that they will be divided among the seven stations. Remember, they should imagine that they are a fruit or a vegetable throughout the game. Ask students to move to their first station.
6. Have the students identify the different places that they could possibly go after their station. For example, if at the store they could go to the consumer or they might go to the trash can.

7. Give each group their cube. Explain that for the rest of the game, the roll of the cube will determine where they go. Students should line up behind the cube at their station. Each time they are at the front of the line, they will get one roll, and they should make a tick mark every time they roll. Students roll the cube and go to the location indicated by the label facing up. If they roll “roll again” or if the cube instructs them to stay at their station, they make a tick mark below the station on their map and move to the back of the line. If they move to a new station, they draw an arrow on their map to the new station and get in line there.
8. Answer any questions that the students might have.
9. Tell the students the game will begin and end with a sound of your choosing. Play the game! Circulate from station to station as the game is being played and answer any questions that the students might ask. You can ask broad questions like: What have you noticed so far in the game? Do you think that this happens in real life?
10. **Wrap Up:** Have the students sit back at their seats. Have them look at their maps and think about their experience. TPS Ask students what happened to them when they landed at the trash can and landfill. What happened when they were put in the compost bin? Now we are going to take a look at compost that has turned into humus and is ready to be used in the garden!

Application:

- Show students compost. Allow them to make up close observations.
- “This is compost. We put it in the soil when we grow plants, and it’s very important for gardening because it’s rich in nutrients that help garden plants grow.”
- Play a soil microbes video for students to see the living ecosystem within the soil. An example can be seen here: <https://www.youtube.com/watch?v=RY-JY-D4v7I> or https://www.youtube.com/watch?v=7U_tTg4eMQs
- Discuss composting in the students’ lives and at their school.

Reflection:

Ask students TPS:

- What’s in compost, and why is it there?
- What have you learned since the beginning of class?
- What did you do today that helped you to learn about compost?

Have students write down their explanation for the importance of compost on the back of the Waste Stream Map.

References:

“Do the Rot Thing: A Teacher’s Guide to Compost Activities.” State of Vermont, Department of Environmental Conservation, 2006.

“Don’t Waste It! An educator guide to waste management, recycling, composting, and waste reduction.” Chatham County, North Carolina. 2019.

Apple decomposition video: <https://www.youtube.com/watch?v=r2ToWrvVnM4>