UF|CPET

FFL Principle 7- Recycle Yard Waste
Breaking It Down: The Science of Compost
High School Level

Denise Trzcinski, Haines City Senior High School

Program Type: Activity/ Informal Lab	**Duration:** 250 minutes, plus weekly monitoring

Standards:
SC.912.L.17.9: Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.
SC.912.L.17.10: Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.

Learning Objectives: Students will be able to explain the process of composting and its benefits to the environment(Focusing on FFL Principle 7: Recycling). Students will be able to create their own model of a composting system and observe changes over time in that system.

Guiding Questions: What is composting? What type of materials can and can't be composted? How does composting help the environment? What effective strategies can I use to create my own model of composting?

Intended Outcomes

As a result of the program, what I want my audience to LEARN…	**As a result of the program, I want my audience to ACT by…**	**Assessment: (*How will you know* your audience has reached your intended outcomes)**
What composting is and why it is beneficial What decomposers are and why they are important to the composting process How to create an effective composting system	Students will be able to create their own effective composting system and explain its benefits to various stakeholders	Students create their own composting bottle system and observe changes over time (Observation Log) Students will be able to explain why composting is beneficial to the environment (Summative Project)

Schedule Layout:	**Items Needed:**
Intro to Composting- 10 minutes **"Composting Made Easy"** video from PBS (4 mins 25 seconds) Hand-out "Compost Contents" graphic organizer and ask students to take note of examples in the video to fill out their chart. Ask follow-up probing questions using think-pair-share. (Video and questions for this activity were sourced from "Composting Made Easy", Year Round Gardening, PBS Media, via link Composting Made Easy | Year-Round Gardening | PBS LearningMedia) **Follow-up questions to consider:** What is composting? What kinds of materials can and can't be composted? Which strategy of composting do you think is most important and why? How does composting help the environment?	Video Link: Composting Made Easy | Year-Round Gardening | PBS LearningMedia Compost Contents 3-column graphic organizer: Brown, Green, and Non-Compostable Material
Decomposers- 10 minutes Nova **"Decomposers"** Video (3 minutes and 4 seconds)	Video Link: NOVA | Decomposers | PBS LearningMedia

Edited by Morgan Nielsen, Center for Precollegiate Education and Training, University of Florida

Ask follow-up probing questions. (Video and questions for this activity were sourced from "Decomposers", NOVA, PBS Media, via link NOVA | Decomposers | PBS LearningMedia) **Follow-up questions to consider:** What do decomposers recycle? What kind of organisms are decomposers?	
"Compost Critters" Activity- 25 minutes (Students should be split into groups of four for this activity). Each student will receive and read the compost critters information sheet. Once students take time to review the information sheet, the teacher will ask the probing question: Why are decomposers important to our environment? Use a digital randomizer to select student and have student share out their thoughts. Hand out the Compost Critters Worksheet (one per student) and other activity material (compost, toothpicks, newspaper) to each group. Have students complete the activity as stated in the activity instructions (taking about 8 minutes to explore compost). Each group will take 30 seconds to report their findings to the classroom Compost Critters Activity was sourced from CVSWMD Organics do_the_rot_thing_cvswmd1.pdf *courtesy of the Alameda County Waste Management Authority & Source Reduction and Recycling Board*	Probing Question: Why are decomposers important to our environment? Compost Critters Information Sheet and Worksheet (1 per student) do_the_rot_thing_cvswmd1.pdf Compost, Toothpicks, Newspaper, Pencils
Day 2: Compost in a Bottle Activity- 50 minutes Students will create their own compost in a bottle using the instructions provided, as well as their knowledge from the previous day. *****Please note that the diagram indicates the choice to use a compost booster. This is not necessary or recommended, please omit this step**** When the compost bottle is completed, students will have 5 minutes to answer the quick write prompt: What observations can you make about your compost bottle in its initial stage? Bottles will be monitored and students can make observations weekly and journal them for bellwork on a set day each week. Observations can be put in science notebooks or an observation sheet created for the activity **Compost a Bottle Activity was sourced from** **Compost_in_a_Bottle_Activity.pdf** *Courtesy of West Lothian Council, UK*	Compost bottle activity sheet scissors, permanent markers, sticky tape, 1- 2 liter bottle per student or group, Materials to make compost e.g. leaves, flowers, fruit and vegetable peelings, tea bags, grass cuttings, soil, newspaper, and light card Science journal or weekly observation sheet
Day 3 and 4: Compost Presentation or Pamphlet- 150 minutes Students will plan and organize how to communicate their knowledge of composting to others. Students will work together in groups, use community resources, develop materials, write, and present their work. Compost Presentation or Pamphlet was sourced from CVSWMD Organics do_the_rot_thing_cvswmd1.pdf	Presentation or Pamphlet instruction sheet Paper, colored pencils, markers, computers