

Program Type: Activity		Duration: 1 day (or more with demo/lab)
Standards: 7th Grade Science Big Idea 1: The Practice of Science SC.8.N.1.1: Define a problem from the eighth grade curriculum using appropriate reference materials to support scientific understanding, plan and carry out scientific investigations of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions. SC.8.N.1.3: Use phrases such as "results support" or "fail to support" in science, understanding that science does not offer conclusive 'proof' of a knowledge claim. 8th Grade Science Idea 18: Matter and Energy Transformations SC.8.L.18.4: Cite evidence that living systems follow the Laws of Conservation of Mass and Energy.		
Learning Objectives: Students will understand that recycling yard waste material in gardening is a way to conserve nutrients and reduce the amount of energy required to move it from place to place. Decomposing organic matter releases nutrients back to the soil in a form that plants can easily use. Using yard waste for composting is a sustainable way of creating organic fertilizer. Students should apply their knowledge of the carbon cycle to this practice. (Florida Friendly Landscaping Principle #7)		
Guiding Questions: What materials are found in yard waste? What is the Law of Conservation of Mass? Energy? How do plants play a role in recycling carbon? Energy? How can the nutrients and energy in yard waste be conserved? (how recycling impacts ecological footprint?) What (if any) benefits does composting have for native gardens? What scientific evidence can be observed to support the claim?		
Intended Outcomes		
As a result of the program, what I want my audience to LEARN... How carbon is conserved through the carbon cycle How energy is conserved Effects of recycling on the ecological footprint Florida Friendly Landscaping Principle #7	As a result of the program, I want my audience to ACT by... Classify common yard waste as trash, recycle, or compost Demonstrate the compost process Explain or model how composting shows transformation of carbon and energy Interpret scientific data and make a claim backed up by evidence and reasoning as to the benefits of composting	Assessment: (How will you know your audience has reached your intended outcomes) Formative discussions Reflection exit tickets or lab report Written description or model of compost system CER based on data presented

Schedule Layout:	Items Needed:
<p>Engage activity- Bring a bucket of common yard waste material (or have students collect from a school garden). Students classify the material as trash, recycle bin, or compost.</p>	<p>Bucket of material and bins</p>
<p>Direct Instruction- Day 1 Florida Friendly Landscaping Principle #7 Students should already be familiar with the Law of Conservation of Mass and Energy and the Carbon cycle although brief review can be included. We are applying these principles to compost as practice/applications of these ideas.</p> <p>Define composting and the compost process. (May elaborate by making a compost sample in a 2L bottle over time, or may have a before/after bottles already prepared)</p> <p>Assessment- Students may produce written explanations or create drawn models giving examples of a carbon transfer and an energy transfer.</p>	<p>Presentation slides</p> <p>2L bottle and materials for composting (# will depend on if demo or if running as a lab)</p>
<p>Day 2 Students should already have practice in the scientific method. Review the steps quickly, including identifying IV/DV, controls, etc.</p> <p>Provide context for Basil Iannone’s work in urban landscape ecology and share the work on establishing native plants in degraded development soils. Point out that multiple stakeholders were involved (scientific consensus, importance of various perspectives, science in the field, science is collaborative, etc.) <i>Do not show the conclusion slides until after student work is submitted and students have a chance to share their conclusions.</i></p> <p>Students will:</p> <p>Work independently and then in partners or small groups (think-pair-share-style) to describe the experimental design used in the investigation and answer guided questions to practice scientific literacy in reading graphs (what type of graph, what information is on each axis, scale of the axis, etc.)</p> <p>After students think-pair-share, they will write their own individual Claim-Evidence-Reasoning on the value of composting</p>	<p>Slides, student worksheet with prompting questions</p>