Workshop #4.1
Compost

Age Groups
● 5-8
● 9-13
● 14+

Learning Objectives
● Students will understand what is biodegradable and what ends up in the landfill, and what can be used for compost
● Students will understand the importance of reducing waste
● Students will learn what the uses of compost as fertilizer

Materials/Resources Needed
● Poster-sized piece of paper (i.e. 24x36 inches)
● List of kinds of garbage
● Markers, crayons, or any drawing material
● Paper to draw on
● Tape

Estimated Time | Activity
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10 minutes | **Introduction:**
  ● Begin with asking the question: where does our garbage go when we throw it “away”?
    ○ Have a discussion based on those answers and what happens when our garbage sits in landfills.
    ○ Explain how some pieces of garbage, like food scraps, will decompose while others will stay in the landfill for a very long time, like plastic.
  ● Why is it bad when our food and other organic material sits in the landfill?
    ○ When organic waste decomposes, but is so covered and tightly packed that it doesn’t receive oxygen, it will release methane.
    ○ Methane is a greenhouse gas
      ■ Ask kids if anyone knows what a greenhouse gas is.
      ■ Explain the connection between greenhouse gases and climate change.
  ● What is composting?
    ○ Recycling decomposed organic material and accelerating the natural processes when organic material, or anything that was once living, breaks down.
    ○ Composting allows organic material to break down with enough exposure to oxygen that it produces
carbon dioxide instead of methane.
  ○ Humus--the product--is a natural component of soils that is formed by the decomposition of plant material.

15 minutes | Age Group: 5-8, 9-13
Preparation for workshop:
  ● On the poster paper, or large sheet, create three columns that take on the entire paper.
  ● Label one column “Compost”, one as “Landfill” and one as “Recycle”.
  ● Cut up the list of types of garbage so each item is on an individual strip of paper.
During workshop:
  ● Have the kids pick a strip of paper randomly so each student has their own garbage item.
  ● After distributing the drawing materials, have each student draw their item.
  ● Once every student has created their item, give each person a piece of tape.
  ● When everyone is ready, have each student attempt to place their item in the correct column.

5 minutes | Conclusion
  ● Have a discussion about where everyone placed their items
  ● Have each student write down one thing they learned from today's workshop

Age Group: 9-13, 14+
Why compost?
1. Benefits to the physical properties of soils
   a. Organic matter in the compost loosens heavy soils, which improves the soil structure and allows for greater **root penetration**.
   b. Compost is a dark-brown humus material, which provides greater **aggregate stability**. Aggregate stability refers to the resilience of soil aggregates, or small groups of soil grouped together, when faced with disruptive forces such as wind or water erosion, or tillage.
   c. **Water retention** is improved because water is able to bind to organic material, and the changes in structure of the soil because of compost allows for greater movement and absorption in the soil.
   d. The soil structure allows for greater **soil aeration**, and more oxygen is available to the roots.
2. Benefits to the chemical properties of soils
   a. Compost in soil increases the soils **cation exchange capacity (CEC)** and **anion exchange capacity (AEC)**, which improves the soil’s ability to utilize nutrients.
b. Compost itself supplements the soil with **nutrients** such as nitrogen, potassium, calcium, magnesium, and sulfur. In addition compost provides **micronutrients** such as copper, zinc, iron, manganese, boron, and molybdenum.

   c. The humus and organic matter can **regenerate poor soils**.

   d. Can act as a **buffer** between soil and exposure to acidity, alkalinity, salinity, pesticides, and toxic metals.

3. **Benefits to the environment**
   a. **Diverts** food scraps and organic materials from landfills, which release methane through anaerobic decomposition.
   b. Can bind heavy metals and other pollutants, preventing them from entering water resources.

4. **Economic benefits**
   a. Can extend landfill longevity which could potentially delay construction of replacement landfills or waste management strategy (i.e. incineration)
   b. Could create new jobs for citizens
   c. If used as an alternative to other topsoils in areas of new construction, landscape renovations or container gardens, it would not be a cheaper option initially, but by using compost instead of other topsoils, the quality of the plants would increase which would require less management or replacement.