

Lesson Plan

Assessment	observation
Cross-curricular	nutrition

Big Ideas

- Living organisms decompose as compost
- Earth is made of decomposed living organisms
- We can make compost and use it to help plants grow.

Learning Goals

- Learn how one can make compost
- Learn about the uses for compost
- Learn about the importance of composting

Overall Expectations

- demonstrate an ability to use problem-solving skills in a variety of contexts, including social contexts
- demonstrate an awareness of their own health and well-being
- demonstrate an awareness of the natural and built environment through hands-on investigations, observations, questions, and representations of their findings

Description

In this lesson we will set up a composter to learn about how earth is “made” and how people can compost materials.

Materials

- Organic matter
- For example: Food leftovers (apple cores, banana peels, other peels, etc.), Dead leaves, Grass clippings or green leaves from a tree or bush, Straw (not too much), Shredded paper (e.g. newspaper), Wood chips or sawdust
- Baskets or bins – one for each child
- One large container (plastic bin) or a 2L pop bottle for each student or group of students

- Nylon stocking or other fine screen material
- Glue or tape and/or elastic bands
- Small gardening shovel
- Scissors
- Optional: Some small items that will not decompose. E.g. small plastic items (wrappers, bottle caps, beads etc.)

Safety Notes

Introduction

Children may be disgusted by decomposing matter, and they may not yet realize how important decomposition is for life on Earth to thrive. In this lesson we will set up a composter to learn about how earth is “made” and how people can compost materials.

We will start outdoors (weather permitting). Otherwise you can bring the necessary materials indoors and discuss the topics that are given here with the children.

Getting Started

- Take the children to an area with dirt, mud, or somewhere where plants grow.
- Let’s have a look at the plant. What does it need to grow? Answers can include water, light, earth/soil, space, etc.
- Soil
 - Take a closer look at soil. Touch it, smell it.
 - What do you think it’s made out of? Where did it come from? Guide students toward the fact that soil was formed when things decompose. For example, leaves from trees will slowly fall apart until they become part of the ground.
 - If you have a forested area you may be able to show that by lifting a few layers of leaves you get to decomposed leaves and then soil underneath.
 - Without soil many plants couldn’t live. We eat these plants so we also depend on the soil!
- Would you like to try to make your own soil? What do you think we could do? (Gather things that will decompose into soil)
- OK. Let’s all gather up some things to make our own soil.
 - Instruct children to find things that they would like to try to make their own soil out of. Include things like:
 - Dried leaves
 - Lunch leftovers (peels, bread crusts, etc.)
 - Grass, leaves from live plants (where it’s ok to take some)
- Let’s go inside (or get together) and discuss how we’ll make our soil!

Action

Children could each make their own composting bin, but it will work better to have one larger one. Both options are below.

Making Compost

- When we make soil out of biodegradable materials (that’s a big word that means things that can rot, break down) we call that compost. Does anyone have compost at home? What do you put in your compost? (Compare to the materials that children collected).
- To make soil quickly it works best if we frequently mix up the materials and air can get in.
- If compost doesn’t get any air it can get very stinky!
- So we need to make a container to put our compost in. Let’s build one!

Make a class compost

- Use a container such as a 5-gallon paint can or a large plastic storage bin. Something transparent is extra cool as you can see what’s happening inside easily.

- If possible make one or several holes into the lid. You can have the students glue/tape nylon stockings over the holes to keep fruit flies (etc.) from getting in or out of the compost.
- Chop up all of your ingredients as much as you can with scissors, knives or by shredding/breaking them by hand. The finer the pieces are the faster they will decompose!
- Add all the ingredients in layers in about equal amounts:
 - Green stuff the students collected (grass clippings, food left overs, etc.)
 - Brown stuff the students collected (leaves)
 - Additional brown stuff if necessary (sawdust or wood chips for example)
 - Soil, finished compost, or potting mix
- Make sure there is some room for air at the top, especially if you aren't able to make holes into the lid.
- Lightly water the mixture as you go so that it is moist, but not soaked
- Close the compost and let it sit. Every few days open it up and have a look.
 - What changes do you notice? What decomposes first? What lasts the longest?
 - Mix up all the ingredients with a small shovel. Add water if necessary to keep it moist.
 - Close up again.

Alternative: Make a compost for every student or group

- Use a two litre pop bottle, either for each student or shared between a few students
- Cut off the top of the bottle to make it easier to fill (maybe adults have to do this ahead of time)
- Then follow the instructions above (chop up, add ingredients, and lightly water)
- Cover the opening with a piece of nylon stocking and keep it in place with an elastic, tape or glue.
- As above, observe what happens and mix up the ingredients each day. Add a bit of water if the compost dries out.

If you have a good mixture your compost should not become stinky and you can keep it in your classroom. Make sure to NOT add any meat!

NOTE: Especially if you mixed in soil, some small flies or other creatures may multiply in your compost. So make sure you open the bin(s) outside if that is the case, so that you don't have them in your classroom. You can talk to the class about how these creatures are helpful in the decomposition process. Larvae and worms eat the materials and their poop becomes part of the compost. Even without these visible helpers there are life forms that do the decomposition. Bacteria are responsible for breaking down most of the materials in a compost pile.

Consolidation/Extension

- Once you decide that the compost has progressed enough have a wrap up discussion.
- What happened? (The ingredients decomposed and formed compost – which looks like soil)
- Soil is in fact accumulated organic materials that decomposed.

- Discuss what decomposed the best and what took the longest.
 - Hard things (e.g. pits) take longer
 - Smaller pieces decompose faster
 - Etc.

Extensions:

- Use the compost you made to grow a plant. For example place a tomato seedling in a pot full of your compost and watch it grow! This will illustrate beautifully the cycle of nature where plants decompose to provide soil for new plants. These plants grow and provide sustenance to humans and animals, before decomposing and becoming soil themselves again.
- Add a few items that won't decompose. For example plastic cutlery, food wrappers etc. This will provide a great conversation piece as to why we need to separate our garbage and why we should try to make as little garbage as possible that won't decompose.