



4-H Grab and Go: Composting

Concept:

Understand the process of decomposition and be able to create a compost bin.

Age Level:

Middle School: Grades 6-8

Education Standard:

NSES - Life Sciences, and Earth and Space Sciences

SET Ability:

Build/Construct, Draw/Design, Observe

Life Skill:

Learning to Learn, Problem Solving, Critical Thinking, Planning/Organizing, Cooperation

Success Indicator:

Youth will be able to describe the decomposition process. Youth will create a simple composting bin.

National 4-H Curriculum:

Exploring Your Environment (www.4-H.org/curriculum/environment)

PREPARATION

Time: 20 minutes

Space: Classroom with internet access and outdoor area to construct bin.

Note: Materials are needed to create a compost bin in an outdoor setting. Youth are encouraged to create their own in their backyard or at a school, community club setting.

Materials:

- Poster paper
- Markers
- "Bin" (wire or wood) that allows air to flow through sides, no smaller than 3x3x3 feet. (See resources on next page for more information.)
- Carbon sources
- Nitrogen sources
- Access to water
- Shovels
- Soil
- Thermometers

Background Information:

Soil is essential to all life on earth because plants depend on soil. Soil is the place where plants are rooted, and it is the place where plants obtain the nutrients and water they need for growth and photosynthesis. The soil is composed of minerals, rotting dead plants and animal matter, water and air. It is also the home of fungi, bacteria, insects, worms and other animals and plants. The decomposition process and the activities of soil organisms produce an acid that increases the rate the soil minerals dissolve. When minerals dissolve they produce nutrients that plants can use for growth and health. Composting is a representation of the natural decomposition process of organic materials.

Recipe for Composting

- Oxygen - air
- Moisture - water
- Organic Matter – carbon and nitrogen sources
- Bacteria – soil

Carbon sources – dried leaves, pine needles, newspaper, sawdust

Nitrogen sources – grass clippings, food scraps, coffee grounds, horse manure

Not to use in compost: Meat, fat, pet droppings, bones, milk, diseased plants, cheese, oil

Instructions:

1. Ask youth to list what is essential for plant life. Make a list on the poster paper.
2. Ask youth to describe the necessary components of soil needed to support plant life. Make a list on the poster paper.
3. Instruct students to use the internet to research these two questions and the design of compost bins. If internet isn't available, provide several library or extension services resources that contain the information.

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Composting

YOUTH DEVELOPMENT TIP

When asking questions, recognize all possible solutions and answers. Respond with additional questions to probe for deeper learning and stimulate dialogue.

Checkpoint:

Prior to construction of the compost bin, have students discuss their research and plans for construction.

Open Ended Questions:

1. Where do plants receive the essentials needed for growth?
2. Why is composting good for the environment?
3. What are uses for composted materials?

4. Ask students to generate a 'recipe' for composting materials.
5. Bring students back together and discuss additions from their research to the two lists on poster paper. Make sure that the final recipe and ingredients list is in a simple format (similar to the one provided in the background information) for them to follow.
6. Either in teams or individually, have students design their compost bin; list ingredients they will need and the steps of constructing the compost.
7. When plans are complete, instruct students on the availability of ingredients for them to use and allow them to construct their bin. You can do this one of two ways:
 1. Gather the ingredients ahead of time, prior to leading this activity
 - Or
 2. Allow youth to gather the materials on their own. Be sure to find a safe place outdoors for them to do this.
8. Each week, have students record the temperature, look of decomposing material and differences from prior week.

Resources:

- <http://sustainable.tamu.edu/slidesets/kidscompost/compostingforkids.pdf>
<http://www.ecy.wa.gov/programs/swfa/kidsPage/compost.html>
<http://www.epa.gov/epawaste/conservation/rrr/composting/basic.htm>

Sample Table for Recording Weekly Results:

<i>Week</i>	<i>Temperature</i>	<i>Look and Feel</i>	<i>Changes Noted from Prior Week</i>
Week 1			
Week 2			
Week 3			
Etc...			

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