

## Beautiful Soil

(Garden– based activity)

### Provided by:

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### Sources:

Adapted from: *How Groundhog's Garden Grew* by Lyn Cherry, Blue Sky Press 2003.

### Curriculum connections:

Science (Junior Level, could be adapted for younger or older groups)

### Sources:

The inspiration for these activities comes from the author's five field seasons of soil surveying with Agriculture Canada and the Ministry of Forests. Soils are often overlooked for the more interesting plants they grow and the amazing animals that eat those plants. An understanding of soil building can be a foundation for gardening and conservation awareness. Also from a practical point of view, our short growing season means that the emphasis is on bed preparation rather than planting on the spring season field trips. Other influences in developing these activities is Steve Van Matrye's Earth Education activities which always emphasise showing rather than telling and the active participation of the students.

### Basic Description:

This is a series of activities and demonstrations in the garden to show what are the components of soil, how it is formed and it's importance, and to engage the children in garden activities and processes.

### Materials:

- Station 1: Making soil- soft and hard rock materials and hammers  
Containers of sand, water, and compost materials  
Individual containers or bags for students  
Different types of soils
- Station 2: Soil pit showing A,B and C horizons
- Station 3: Compost heap- pitchforks, shovels
- Station 4: worm compost

### Time Allotment:

- introductions 5-10 minutes  
each station 5-10 minutes each (depending on age group)  
discussion and response 15 minutes

### Procedure:

Ideally the class can be split in smaller groups to go around to the stations.

### Introductions:

Welcome to the garden. Rules and outline of program.

### Station 1: Making soil

- Have each student hold a handful of garden soil and describe what they see.
- Explain how soil is formed from below by rock, glacial till "the parent material" breaking down, combined with organic material decomposing and combining with the parent material. (for extra drama have students hammer different kinds of rocks to show soft and hard rocks breaking down)

*Activity:*

- Students in pairs take a combination of materials- sand, silt, organic material, water and combine them to make their own soil.
- Discussion around how long nature takes to make an inch of soil (not just five minutes in a mixing bowl!) but depending on the area from a few years to thousands of years depending on the climate conditions.

*Demonstration:*

- Different types of soils and how well they hold or let water through depending on ratio of coarse material to organic material.

**Station 2: Soil pit**

*Demonstration:*

- Look at the layers in a soil pit demonstrating the principles of soil formation just discussed.
- Discuss the ABCs of soil horizons.

**Station 3: Compost heap**

*Activity:*

- Usually the spring is a good time to get help in turning the compost with help from the energetic young students.
- Explain the principles of composting, what will and won't compost while working with the students.

**Station 4: Portable worm compost**

*Activity:*

- Hold a worm and learn about its biology and ecology. There are many interesting facts about the worms to captivate all ages such as how many hearts they have, how they reproduce, what and how they eat etc. They can also represent a whole realm of soil fauna that facilitate decomposition and are fundamental to soil building.

**Final activity: Whole Group**

- The delicate process of transplanting seedlings to the garden that the students have sprouted in their classroom.
- We also have each class plant a row of seeds- radishes, carrots, potatoes, onions for each class, sing the school song to the newly planted seeds and mark the row for all visitors to know which class planted it.

**Extensions:**

In the East Kootenays of British Columbia, a big threat to native grasslands and their thin soils is the off road use of ATVs. Ask the students to research why this is a problem (erosion, weed infestation, loss of plants etc.) and perhaps monitor a site near their home or school. How thick is the organic 'A' layer in your garden, school yard, local forest? How long does it take for an area ripped up to heal?

Experiment with growing seeds in soils that have different proportions of sand, silt, and organic matter, fertilizers etc. to see what differences result in growth rates.

