



## Dig In!

### Lesson

#### Goals

Students will demonstrate and practice soil preparation and learn proper tool use and care.

#### Objectives

Students will double dig the garden plots to prepare the soil for planting and learn safe tool use in the garden.

#### Standards

Science: Life Science

GR.2-S.2-GLE.1

GR.4-S.2-GLE.3

**Total Time** – 60 minutes

#### Did you know?

Foot traffic on soil will compact the soil and make it difficult for plants to establish and grow. That is why specified walkways in the gardens are important.

#### Materials

- Shovels
- Spades
- Spading fork
- Steel rakes
- Plant flat filled with soil
- 2 spoons
- 1 fork
- Tool cleaning materials
- Compost
- Journals
- Snack

#### Background for Teachers

The purpose for double digging the soil is to loosen the soil to a depth of 24 inches to allow the roots to grow easily and to improve aeration and water drainage. If your soil is compacted or heavy (high clay content), we recommend using this labor-intensive method to loosen the soil. If you have a light, sandy soil it may be sufficient to loosen the soil in a simpler manner (single digging). The double digging method forms beds that are approximately three feet wide. This width allows students to easily reach the center without ever having to walk on the planted area.

#### Method

Introduction (5 minutes)

1. Discuss: *If our plants are growing in packed soil, what will happen to them? Can you think of ways we can loosen hard, packed soil? We are going to learn a method called double digging. When we use this method we will plant our crops in beds. The beds are for the plants. The paths around the beds are for us to use while working with tools, planting and harvesting. There are many different methods used to prepare a garden plot. Our two steps will be loosening the soil and adding nutrients to the soil.*
2. *Before we work the soil however, we need to know about how to use our tools safely. What are some examples of tools? Would we be able to garden safely without tools?*

### Activity (45 minutes)

1. Show the class the tool storage area. Go over the names of tools. Demonstrate proper storage. Have each student take a tool so that at least one of every tool is represented.
2. Discuss or use role-playing to teach the following safety rules for tool use and care.
  - a. Only those with shoes should use spading forks and shovels on. No sandals.
  - b. Walk when carrying tools.
  - c. Keep tools below shoulder level.
  - d. Take your time. Wait until other people are out of the way.
  - e. Do not use tools in crowded areas.
  - f. Always clean a tool before you put it away.
  - g. Never leave tools on the ground. Always stand them up or return them to the storage area.
  - h. Always walk with a wheelbarrow. Do not use it for rides.
3. Demonstrate double digging using a flat filled with soil (the bed), two spoons (the shovels) and one fork (the spading fork) before getting started in the real garden.
  - a. Dig out a trench across the width of one end of a bed about one foot deep and one foot wide. Pile this soil at the end of the bed, not on the bed. This soil will be used later.
  - b. Standing on the un-trenched part of the bed, try to dig the digging fork into the trench another 12 inches. Put the fork down as far as it will go and wiggle it, trying to loosen the subsoil, but not remove it. Do this across the entire trench.
  - c. Dig another trench behind the first one.
  - d. Mix this soil with compost and use it to fill the first trench. Remember, a trench should only be one foot wide.
  - e. Then loosen the subsoil.
  - f. Continue along the bed until it is complete.
  - g. When you have emptied the very last trench and loosened the subsoil, fill that trench with the soil you laid aside from the first trench.
4. Bring the class to the garden plots you will be working for the season.
5. Have pairs of students dig out a trench across the width of one end of a bed about one foot deep. If the soil is too hard have them dig as deep as possible.
6. Have two students following them working on the subsoil.
7. Have pairs dig another trench next to the first one, while another pair loosens the subsoil behind them.
8. Have students shape the bed using a steel rake, so that it is shaped with a gentle arch and the surface is smooth.

### Snack & Conclusion (10 minutes)

1. Prepare a quick healthy snack to eat while writing in journals.

2. Discuss or write in journals: *Imagine you are a little seedling trying to grow your roots in a hard compacted path. Think of your fingers as roots. Would it be easy to poke them through the soil? Now imagine you are growing in a double dug bed. Which place do your roots prefer? Why?*

**Assessment Tools**

- Participation
- Journals

**Source**

Lesson adapted from Jaffe, Roberta, and Gary Appel. *The Growing Classroom: Garden-based Science*. South Burlington, VT: National Gardening Association, 2007.

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