Descanso Gardens

Square Foot Gardening and Companion Planting

Grade Levels:

3rd-6th

Duration:

Part 1 & 2: 45 minutes

Part 3: 45 minutes

Materials:

- Square piece of paper (1 per student)
- Garden Planning Cards for Fall or Spring Planting (included in online resource packet)
- Seeds and Seedlings
- Colored pencils, crayons, or markers
- Yard Stick & Rulers
- Twine
- Stakes to hold twine
- Planting labels
- Garden Journals or Graph Paper

Standards:

NGSS –Core Ideas

Crosscutting Concepts

Overview:

In this three part lesson, students will work together to plan and plant a garden. Students will explore concepts about companion planting and will create their own square foot garden.

Learning Objectives:

- Students will begin to identify plants needs: including spacing and relationships.
- Students will participate in collaborative conversations: one-on-one, in groups, and teacher-led.
- Students will apply mathematical concepts to gardening. Concepts include: measuring length and width, calculating square footage and creating a grid.

ACTIVITY

Part 1: Planning Your Garden

Before you begin planning your garden, take time to discuss and reflect with students about why you are planting a garden. Possible discussion points (depending on grade levels):

- *What is the value of growing our own vegetables?*
- *What does the word organic mean?*

To make sure the garden does well, let's think about what the plants need. Possible discussion points:

- *What do plants need to grow? (soil (nutrients), sun , water, and care)*

Use a movement activity to demonstrate that seeds and plants need space to grow. Have the class sit closely together, then have them imagine they are a tiny seed of their favorite vegetable. Then "add" all the things the students identified as necessary for healthy growth. As you add these things (" You're placed in healthy soil..." The sun is coming out..." "Now the clouds are forming and the rain comes down..." etc.) Students will be growing as a plant does. Direct them to stretch their legs out like roots, their arms as the first sprout, then into leaves, stem, etc.

Ask Students:

- *What do you notice about being so close together?*
- *What might happen to the plants if the seeds are this close together?*

Tell students plants need different amounts of space. You can also lead a conversation about how the plants we eat grow up or climb, some vine, some grow down (root veggies), and some spread out and up (Kale, Broccoli).

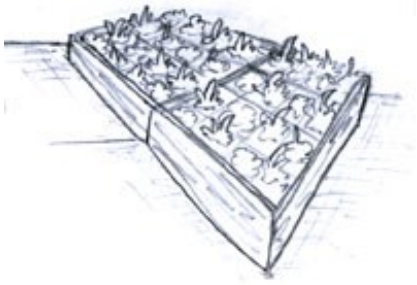
Discussion questions:

- *What kind of vegetables might take up a lot of room?*
- *Which ones might take up very little room?*

Have students work in partners. Each group can pick a vegetable they want to plant in the garden, choosing from the Garden Planning Cards. These cards will tell students how much space each plant needs in a 12"x 12" square. Have partners divide a 12" square piece of paper into appropriate smaller squares (either by folding or measuring). In the middle of each small square students should draw their vegetable.

Make one together as an example:

16 carrots fit in 1 square foot



Part 2: Companion Planting

Plants can act as companions to each other.

Discuss:

- *What do you think companion means?* (Create definition together)
- *Think of what friends do for each other.*
- *How could plants do this for each other?*

Ask students to use their Garden Planning Cards to discover what their vegetable's companions are. Then have students find another partnered group in the class whose vegetable is one of their companion plants. Once students find their companions, invite them to lay out their paper square on the ground in the shape of the bed outline (typically 4'x8', 3'x8', or 4'x4'). Make sure to place companions next to each other. This might require a whole class discussion. Once the paper squares are in place, tape them together to form a square food garden map .

Part 3: The Grid

Creating your square foot garden.

In small groups and using garden journals or graph paper to record data, students will:

1. Measure the width and length of the garden bed.
2. Determine how many inches are in a foot.
3. Draw diagram representing garden bed and create grid to represent the square foot . (This could be to scale if grade appropriate or more symbolic of space)
4. Discuss findings as a class.
5. Measure and mark your square foot grid in the planting area. Place stakes every 12" inches.
6. Create the grid by tying twine to each vertical stake and each horizontal stake.
7. Use your companion planting map from Part 2 to tell you where you should plant each vegetable. You are now ready to sow your seeds or transplants your seedlings.

For Younger Participants

(Grades K-2):

- Add songs and books about seeds, plants, and gardens.
- Prior to activity select seeds that are bigger for little hands, i.e. peas, beans, squashes, nasturtiums, or pelleted small seeds: carrots, basil, lettuces.
- Adapt the lesson by having the 12" x12" paper already in grid, plants/seed per square, i.e. 4, 9, 16 . Then have students draw the plant they've chosen in each square; plants could be represented by shapes or colors i.e. triangles for carrots, red for radishes.
- Pre-create the string and stakes grid in garden bed before students plant.
- Forget the shovels when planting seeds, use fingers to

For Older Participants

(Grades 7 and up):

Expanding the project:

- Study and explore the history of companion planting through time and around the world.
- Larger study and scientific testing can be done on different types of agriculture.

⇒ Monoculture: Single crop in the same space

⇒ Polyculture: Multiple crops in the same space

- Soil Science:

⇒ Microscopic world of soil, minerals, nutrients, and microorganisms and their role in the ecosystem.

⇒ Soil pH and Soil Types

RESOURCES

Background Information

Companion Planting:

There are different ways plants can be companions to each other:

Above ground:

Attractors: Some plants (like flowers) attract beneficial insects, bringing them close to the garden where they will pollinate the other plants .

Trappers: These plants attract pests away from the main crop.

Protectors: Help other plants by giving shelter from sun or wind (ex. climbing beans provide shade to lettuce). Plants with strong smells can hide your crop from pests (ex. onions with carrots).

Below ground:

Soil Improvers: Naturally till the soil or add needed nutrients

Square Foot Gardening:

The method of dividing the growing area into small square sections in order to:

- Utilize a small growing area
- Reduce weed growth
- Create a polyculture of plants and insects