

# Planting: Design & Engineering

Part 2 of 2

SIXTH GRADE

In Part 1, Soil Science, students conducted a series of tests and made recommendations on how to improve soil health. In this activity, students will take on different tasks to design a garden bed taking into consideration the season, seed depth, and spacing. Students will also research recipes for the crops they choose to plant.

## SUBJECT

SCIENCE

## TIME

1 HR

## MATERIALS

Empty Garden Bed (filled with soil but not plants)

Soil amendment (based on the recommendation from previous activity)

Tools - rakes, and shovels to work amendment into soil

Comprehensive Planting Chart for Zones 9 and 10

Seeds/Seed Library

Crop Decision Worksheet

Crop Planting Worksheet

iPads for researching recipes, 1 per member of Culinary Team

Recipe Card Worksheet. 1 per group member

Garden Bed Sketch Sheet, 1 per student

Pencils, 1 per student

Colored pencils, several to share

Tools from "Garden To Do List" (if applicable)

## DIRECTIONS

- Any time a class plants in the school garden, it is a good practice to split up into smaller groups and rotate through tasks, so the planting space doesn't get too crowded. Additional adult supervision is also helpful. Prior to the activity, refer to the Garden To-Do List, and then visit the garden to identify the maintenance tasks that you will assign to students.
- Several tasks will be accomplished in this activity:
  - **Soil Team:** amend soil based on class recommendations from previous activity
  - **Crop Decision Team:** research for seasonality and preference. Decide what to plant (Team 2)
  - **Crop Planting Team:** research planting requirements for the selected seeds (Team 3)
  - **Culinary Team:** research recipes to make with the harvest
  - All teams will do garden maintenance as part of their rotations
- Rotation 1 (10 min):
  - Soil Team - send to the garden bed and instruct students to work the selected amendment into the top 6-10 inches of the garden bed and then smooth the surface so that it's even
  - Crop Decision Team - read the worksheet and decide what crops to plant based on the season and preference
  - Crop Planting Team - assign a garden maintenance task from the Garden To-Do List
  - Culinary Team - assign a garden maintenance task
- Rotation 2 (10 min):
  - Soil Team - assign a garden maintenance task
  - Crop Decision Team - assign a garden maintenance task
  - Crop Planting Team - research the planting requirements and fill out the worksheet
  - Culinary Team - research recipes to make with the harvest and fill out a recipe sheet
- Rotation 3 (10 - 15 min):
  - All teams - Sketch a bird's eye view of the selected crops
  - Take the Crop Planting Team to the garden bed and plan out where to plant the seeds..
  - Rotate each team individually to plant seeds

## SOURCE

- BCK Programs



# Garden To-Do List

- 1. WEED.** Check for weeds inside and around the outside of garden beds, in the pathways, and around the perimeter of the garden. Use a trowel to pull weeds out from the roots. Collect weeds in one pile, and make sure it's out of the pathway. This will be the debris pile for the garden and will be collected by the grounds crew within a couple weeks.
- 2. WATER.** Fill up a watering can and check for thirsty plants. If there are rain tanks in your garden, use that water for any ornamental plants but not in the garden beds. Signs to look for are plants that are droopy, have yellow or brown leaves, or have leaves that are falling off. Water the soil around each plant for about 5-10 seconds, just enough to saturate the ground around them. If your garden has any potted plants, they will surely need a drink. Water potted plants for 5-10 seconds each, let the water seep in, and water for another 5-10 seconds.
- 3. RAKE UP LEAVES.** Check for areas in the garden where trees have dropped their leaves. Rake the leaves and place them in a pile next to the compost bins. The leaves will be combined with food scraps to make compost. You will be doing the composters a favor by collecting the leaves as they are essential for composting.
- 4. COLLECT SEEDS FROM SPENT PLANTS.** Check the garden beds and perimeter of the garden for plants with spent flowers. Spent flowers are flowers that have finished flowering and are dying off. The dead part of the flower usually contains seeds. If the plants produced obvious seeds, like sunflowers, sweet peas, or pea pods, collect the seeds and save them in a seed envelope. Ask your teacher for seed envelopes that are provided with the garden activities supplies. Label the seed packet with the name of the plant (if known) and any other information you can find. Place the remainder of the dead plants in the pile with the weeds, or make a new pile out of the pathway.
- 5. SIFT COMPOST.** Check the active stack compost pile (this is different from the worm bin, and should have a sign next to it). If the pile looks dark brown, does not have any visible food pieces in it, and no or very few noticeable leaves and twigs, it is ready to sift. Grab a black nursery tray and place a scoop of compost in the tray. Grab a bucket or wheelbarrow and sift the compost over it. Discard any trash pieces in the trash and return the larger objects and any insects (like worms) to the compost pile. Feed the plants with your sifted compost by spreading a handful around each plant in a garden bed. **NOTE:** Please do not sift all the compost to share this activity with other classes.
- 6. HARVEST WORM COMPOST.** Worm castings are the digested dark matter in the worm bin that does not have visible signs of food- the "Black Gold". To separate castings, grab 3 small paper trays for each small group of students (these should be located inside the worm bin). Place a small scoop (1-2 cups) of the digested compost in one tray (this will be from the side of the pile that has no visible signs of food and is a dark brown/black). Bring the trays to the tables and pick out the worms placing them in tray 2 and pick out any trash and placing it in tray 3. Place the worms back in the worm bin, throw away the trash and sprinkle the castings around the base of the plants in the garden beds. Use a watering can to water over the applied castings.
- 7. CLEAR AND ORGANIZE CLUTTER.** Sometimes things get left in the garden and need to be organized from time to time. Collect all buckets and stack them in one spot, do the same with nursery pots, organize the potting supplies and put away tools and gloves.
- 8. PICK UP LITTER AND EMPTY TRASH.** Grab a bucket and take a walk around the garden and pick up any litter you find. Be sure to check the perimeter next to fences, where litter tends to collect. Collect all the litter into one bucket and discard it in the nearest trash can. Return the bucket to the garden.
- 9. EXTRA TASKS:** Make a list of extra tasks that need to be done in the garden, like trimming trees, more weeding, etc. and give the list to your teacher so they can give it to the garden coordinator.



# Crop Decision Worksheet

Refer to the laminated color-coded planting chart titled “Comprehensive Planting Chart for Zones 9 and 10”.

1. Find the current month at the top of the chart.
2. Look for the O symbol in the rows below your month. Follow the row to the left to locate the “Crop Family.” These are varieties that you can plant from seed this month.
3. Working as a group, call out the name of the plant variety and have a partner check the seed library to see if you have that type of seed. If you do, pull the seed packet and set it aside.
4. From the seeds you identified, decide on four varieties that you would like to plant. Consider if you want to grow a themed garden. Some ideas include:

Herb Garden

Pizza Garden

Salad Garden

Salsa Garden

Soup Garden

Stir fry Garden

5. Provide the four seed packets to the Crop Planting Team.



# Crop Planting Worksheet

Refer to the planting instructions on the seed packet and record the information in the table below.

<b>Plant Name</b>	
Planting Depth	
Plant Spacing	
Plant Height	
Other Planting Tips	

<b>Plant Name</b>	
Planting Depth	
Plant Spacing	
Plant Height	
Other Planting Tips	

<b>Plant Name</b>	
Planting Depth	
Plant Spacing	
Plant Height	
Other Planting Tips	

<b>Plant Name</b>	
Planting Depth	
Plant Spacing	
Plant Height	
Other Planting Tips	

Based on the Plant Spacing of all the selected crops, visually layout where each seed will be planted and assist your classmates in planting seeds at the correct locations and depths.





# Garden Bed Sketch

Make a sketch of what your garden bed will look like when all the plants are growing. Imagine you are looking down on the garden bed from above; this is a birds-eye view. Try your best to sketch the bed "to-scale." This means to draw the size of the bed and all the plants inside proportionally to one another. Use the squares in the graph paper to help you estimate the relative sizes and shapes.

