

# Roots and Shoots: Designing Your Dream Garden

## Lesson Overview

In this lesson, learners will transition from curious observers to active gardeners. They will explore the fundamental needs of plants, design a garden layout based on spatial requirements, and practice the hands-on skill of seed starting. This lesson is designed for a variety of environments, including home backyards, school containers, or community garden plots.

## Materials Needed

- Assorted seed packets (vegetables, flowers, or herbs)
- Potting soil or garden soil
- Containers (pots, egg cartons, or a designated outdoor plot)
- Rulers or measuring tapes
- Paper (graph paper preferred) and colored pencils/markers
- Small shovels or spoons
- Watering can or spray bottle
- Craft sticks and a permanent marker (for labels)

## Learning Objectives

By the end of this lesson, learners will be able to:

- Identify the five basic needs of plants using the "W.A.N.T.S." acronym.
- Interpret information on a seed packet, specifically planting depth and spacing.
- Create a scaled garden map that accounts for the mature size of different plants.
- Demonstrate the correct technique for sowing a seed and labeling a plant site.

---

## 1. Introduction: The Magic Within (Hook)

**The Hook:** Hold up a tiny seed (like a radish or poppy seed). Ask: "How can something smaller than a grain of rice turn into a giant plant that feeds us or makes our world beautiful?"

**Discussion:** Ask the learner to imagine they are a tiny seed underground. What would they need to feel safe and grow strong? Transition to the **W.A.N.T.S.** acronym to define plant needs:

- **Water:** For hydration and nutrient transport.
- **Air:** Plants need to breathe through their leaves and roots.
- **Nutrients:** "Food" from the soil (compost/minerals).
- **Temperature:** Not too hot, not too cold.
- **Sunlight:** The energy source for photosynthesis.

## 2. Instruction: Reading the Secret Code (I Do)

**Modeling:** Pick up a seed packet and show the learner that it contains a "secret code" for success. Demonstrate how to find the following key pieces of information:

- **Planting Depth:** How deep the seed goes (usually 2x the width of the seed).
- **Spacing:** How far apart the "adult" plants need to be so they don't crowd each other.
- **Days to Maturity:** How long until we can eat it or see flowers!

**The "Finger Rule":** Show the learner how to use their knuckles to measure depth. (e.g., the first knuckle is roughly one inch).

## 3. Guided Practice: Mapping the Masterpiece (We Do)

**Activity:** Before digging, we must plan. Using the graph paper, work with the learner to draw the boundaries of their garden space (whether it's a 12-inch pot or a 4x4 foot raised bed).

- **The Grid Method:** If using a square foot garden approach, divide the map into squares.
- **Decision Making:** Look at the seed packets together. "If the tomatoes need 18 inches of space, can we fit four of them in this small pot?"
- **Color Coding:** Have the learner draw where each plant will go. Use taller plants (like corn or sunflowers) on the north side so they don't shade the shorter plants (like lettuce).

## 4. Independent Application: Getting Dirty (You Do)

**The Task:** Now the learner takes the lead in the physical planting process following these steps:

1. **Soil Prep:** Fill containers or loosen garden soil. Ensure it is moist but not soggy.
2. **Measuring:** Use the ruler to create holes at the exact depth and spacing specified on the map created in the previous step.
3. **Sowing:** Gently place 2-3 seeds in each spot (this ensures at least one will grow).
4. **Tucking In:** Cover the seeds with soil and "pat-pat" gently—don't pack it too hard!
5. **Labeling:** Write the plant name and date on a craft stick and place it at the edge of the planting site.
6. **Initial Hydration:** Use the spray bottle or watering can to give the seeds their first "drink."

## Success Criteria

The learner has successfully completed the lesson if:

- The garden map accurately reflects the spacing requirements of the chosen seeds.
- Seeds are planted at the depth recommended on the packaging.
- The learner can explain why they chose a specific location for a specific plant.
- Each planting area is clearly labeled.

## 5. Conclusion: Growth Mindset Recap

**Summary:** Ask the learner to recap the W.A.N.T.S. acronym. Review the map and ask: "What is the very first thing we expect to see popping out of the dirt?"

**Reflection:** Gardening requires patience. Ask the learner: "What will you do if a seed doesn't grow the first time?" (Encourage the idea of troubleshooting water or sunlight rather than giving up).

**Final Takeaway:** You are now a steward of the earth! Your job is to provide the "W.A.N.T.S." while the seed does the hard work of growing.

## Adaptability & Differentiation

- **For Younger Learners (Scaffolding):** Focus on "Big Seeds" (beans, peas, sunflowers) which are easier for small hands to handle. Use pre-measured sticks to show depth.
- **For Advanced Learners (Extension):** Introduce *Companion Planting* (the idea that some plants, like marigolds and tomatoes, grow better together). Ask them to calculate the area and perimeter of their garden plot.
- **For Limited Space:** Use the "Vertical Gardening" concept—planting beans or cucumbers that grow up a string or trellis instead of across the ground.

## Assessment

- **Formative (During):** Ask the learner to "read" the seed packet to you and explain what "1/2 inch deep" means.
- **Summative (End):** Evaluate the garden map for logic and the physical planting for correct spacing/labeling. Provide a "Garden Log" where the learner will record observations over the next week.