

# In the Garden

## Activities + Lessons for 2nd Grade

### Arizona Life Science Standards:

2.L2U1.0 - Obtain, analyze, and communicate evidence that organisms need a source of energy, air, water, and certain temperature conditions to survive

### Essential Question

What do plants need to survive?

### Introduction

Like any living thing, plants have basic needs that must be met in order for them to survive. A simple acronym to help remember the basic plant needs of most plants is L.A.W.N.S: Light, Air, Water, Nutrients, and Space.

### Objectives

- Students will identify specific needs of a healthy plant
- Students will observe healthy and unhealthy plants and communicate the difference

### Pre-Trip Activities

- What plants need to survive song: <https://www.youtube.com/watch?v=dUBIQ1fTRzI>
- What plants need to survive video: <https://www.youtube.com/watch?v=gIRR-VdIP1M>
- Plants and Animals Can Live in a City! Interactive Online Activity: [https://lsintspl3.wgbh.org/en-us/lesson/ilwgbh17-plum-ilneeds/?as\\_guest=True&next=https://knpb.pbslearningmedia.org/resource/ilwgbh17-sci-life-plum-ilneeds/plants-and-animals-can-live-in-a-city/](https://lsintspl3.wgbh.org/en-us/lesson/ilwgbh17-plum-ilneeds/?as_guest=True&next=https://knpb.pbslearningmedia.org/resource/ilwgbh17-sci-life-plum-ilneeds/plants-and-animals-can-live-in-a-city/)
- What Do Plants Need To Grow Worksheet

### Echoing Hope Ranch Activities

- Observing Two Models: Healthy and Unhealthy Plants
- Sampling Healthy Produce
- Planting a Seed to Take Home

### Post-Trip Activities

- Plant Needs Fill in the Blanks Worksheet
- Plant Needs Garden Hunt Worksheet
- Plant Needs Scenario and Questions Activity
- Room to Grow Activity

### Echoing Hope Ranch

– supporting those with autism and/or other intellectual and development disabilities

## What do plants need to grow?

**Word Bank** – Each of these words will be used once.

Cross the word out after you use it.

**Air   Water   Soil   Sunlight**

Plants need

What do is one thing plants need?

Why?

Plants need

What is a second things plants need?

Why?

Plants need

What is a third thing that plants need?

Why?

Plants need

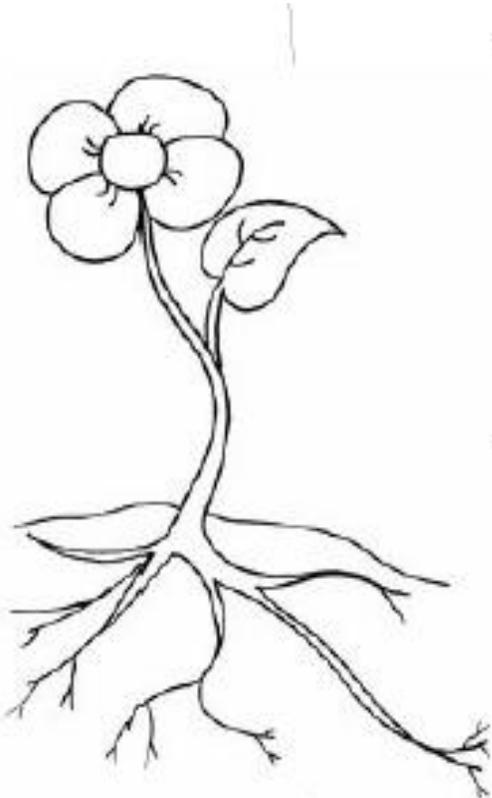
What is a fourth thing that plants need?

Why?

## Plant Needs

### Word Bank:

Light Air Water Nutrients Space



Leaves collect:

1.

2.

Color the leaf of the plant green.

Roots collect:

7.

8.

Color the roots of the plant yellow.

Plants need space and a place to grow.

Color the soil brown.

When you finish, color in the rest of the plant!

## Plant Needs Hunt

Walk around the garden and look at ONE plant.

Write the plant name below.

Decide if the plant has its needs met.

Mark either the NEEDS or HAS ENOUGH column with a + symbol.

**Plant Name:** \_\_\_\_\_

PLANT NEEDS:	NEEDS:	HAS ENOUGH:
 LIGHT		
 AIR		
 WATER		
 NUTRIENTS		
 SPACE		

## **Plant Needs Scenarios**

**Your plant has yellow leaves, which means your plant needs more nutrients.**

What nutrients could you give your plant?

Answers may include: compost, leaves, fertilizer

**Your plant is wilting (it looks droopy), it hasn't rained in days and you forgot to water.**

What can you use to give your plants water?

Answers may include: watering cans, little rainsclouds activity, hoses, hose bib on your building

**Your plant loves the sun but is planted in a shady corner of the garden.**

Where can you move your plant to give it more sunlight?

Answers may include: sunny locations in your garden

**Your plant is growing inside your classroom in a small pot.**

What can you do to give your plant more space?

Answers may include: Plant it in your garden, or in a garden at home, or in a larger pot

**Your plant loves clean air but it is planted near a busy road.**

Where can you move your plant to give it access to clean air?

Answers may include: any location in your garden, or in a garden at home

**Activity: Room to Grow**

Activity Length: 1-2 hours for activity, 4 weeks to see results

Plants need a place to call their own, where the roots can anchor, the stems can grow, and the leaves can capture light. Although the needs of all plants are the same, how much they need of each of these components varies. Some plants need a lot of light to grow; others are adapted to thrive in more shady conditions. Some plants use a lot of water on a regular basis, while others have features that conserve water and have lower water needs. Ultimately, each plant grows best when they have the space that provides the basic needs in their optimum amounts. Gardeners can use this information to design gardens that maximize the harvest within the space they have available.

In this activity, students will observe how plants grow when provided different amounts of space. They will learn that when competing for resources, plants may not be able to reach their maximum potential.

**Materials:**

- Drawing Paper
- 8 ½ x 11 in. White Paper (copy paper or computer paper)
- Crayons
- Tape
- Radish seeds
- Container, raised bed or in-ground garden space

**Directions:**

Divide your class into even numbers of small groups of 4 to 6 students. Ask each group to draw a mural of plants growing in a garden. Give half the groups the following supplies and space:

- A long sheet of drawing paper
- Enough crayons for each student
- An unlimited area to draw

Give the other half of the groups:

- A sheet of computer paper
- Half the number of crayons as the size of the group
- Restrict their group area to a 4-by-4 foot square taped on the floor

Give each group 5 minutes to draw. Display the resulting murals and then ask:

- How did you feel about your drawing experience?
- Did you have any problems? What were they?
- What do you think was different about the two groups' experiences?

Help the group focus on the contrast between having limited resources and having plenty of resources.

Ask,

- Besides lack of space, what else was in short supply? What might happen if you never got enough of what you needed? How do you think a lack of space might affect plants?

To further explore how space can impact plant growth, set up an experiment to examine how radishes respond to crowding. This can be done in containers, a raised bed, or in a ground garden where you establish plots of equal size.

1. Obtain at least 5 pots of equal size or measure at least 5 identical 1-by-1 foot plots in raised or in ground beds. The recommended spacing for radish seeds is to sow them approximately 1 inch apart and then, when they're an inch or two tall, thin the seedlings to approximately 2 inches apart. Use this information to plant your pots or plots with different numbers of radish seeds. For easy comparison, you could plant in multiples of 5 (5, 10, 15, 20, 25, etc.) or choose other amounts based on the space you have available. Record how many seeds were planted and, ultimately, how many plants you grow in the pots or plots.
2. Ask students to write down their predictions for how the spacing will impact the growth of their radish plants.
3. After 4 weeks, harvest your radishes, making sure to keep track of which plot or pot they came from. Measure your plants (both the foliage and the root), and weigh them. Also ask students to evaluate the health of each plant based on appearance. Discuss the following:
  - Did the measurements of the radishes vary based on the amount of space they had to grow?
  - Did this data match your predictions?
  - Which plants looked the healthiest?
  - Can you make any conclusions about plant needs based on this experiment?

### **Making Connections**

1. Repeat the experiment with different types of seeds and observe how different plants respond to varying space in terms of height and width. You may notice that some crowded plants will actually get taller as they compete for light.
2. Take a walk with your students around your schoolyard or a nearby natural space and see if they can find examples of overcrowding. Questions to ask: What do you think will eventually happen? How many plants do you find underneath?