

GEORGIA AG EXPERIENCE

A MOBILE CLASSROOM POWERED BY



LESSON TITLE: "Horticulture"

Subject: Horticulture	Grade Level: 3 rd -5 th grade	Estimated Time: 50-60
Resources & Materials: Activity 1: Living Plants - Thick banded tape, not clear (Masking Tape, Painters Tape, Duct Tape) Activity 2: Gardening Plan 12" x 12" white paper (per student) - Dry beans or paper punch circles (+500) - Variety of seasonal seed packets - Gardening area - String (+50 ft) - Craft sticks (+100) - Markers (per student) - Toothpicks (+100) - Snack size zip lock bags (+100) - My Square Foot Garden Plan (per student) - Square Foot Planting Guide (per student) <u>Resources</u> Captain Planet Foundation. (1992, October 06). Retrieved November 10, 2020, from https://captainplanetfoundation.org/programs/project-learning-garden/ Rose, S. (2019, April 15). Square Foot Planting Guide. Retrieved November 10, 2020, from https://gardentherapy.ca/square-foot-planting-guide/ Square foot garden plan. (2016, April 06). Retrieved November 10, 2020, from http://www.garden365.com/container-gardening/square-foot-garden-plan/		
Standards: AFNR-FA: 3FA1. Describe how agriculture impacts your daily life. AFNR-FA: 3FA3. Identify commodities based on the different geographic regions of Georgia and determine how environmental factors affect agriculture production in each region.		

AFNR-FA: 4FA2. Identify the impact weather has on agriculture and how it affects the quality of a crop.

AFNR-FA: 5AS7. Differentiate and understand parts of plants and how they are utilized in agriculture.

Learning Objectives:

1. The student will be able to complete their square foot garden plan, individually, with 100% accuracy.
2. Using the garden plan, the student will be able to plant their garden, individually, at a novice level.

Guiding Background Knowledge & Fun Facts:

Guided Discussion to determine background knowledge and information to share with class and engage learners.

INTEREST APPROACH:

Estimated Time: 1-5 minutes

“What types of vegetables do you like to eat, or your parents serve at dinner?”

Answers may include (green beans, peas, broccoli, potatoes)

“What about some other types of fruits or vegetables you can think of?”

Answers may include (carrots, squash, okra, peppers, lettuce, strawberries, watermelons, onions)

“Have you ever thought about how you can grow these at your own home or here at school?”

Answers may include (yes, no, I have a garden at my house, my grandparents grow vegetables)

“Well, over the next few days we will be learning how to plant our own garden and what different things a plant may need.”

“Let’s get started”

LEARNING ACTIVITY #1: LIVING PLANTS

Estimated Time: 1-30 minutes

Resources & Materials:

- *Thick banded tape*

Vocabulary:

Square Foot: a unit of area equal to a square one foot long on each side

Estimated: to judge tentatively or approximately the value, worth, or significance of 2.; to determine roughly the size, extent, or nature of 3.; to produce a statement of the approximate cost of

Instructor Directions:

Mark off a 5' x 5' square with the tape on the floor. (Smaller if you have a small class size.) This square will represent 1 square foot in our gardens, in reality 1 square foot is much smaller.

Have 10 students stand in the square, each student will represent a seed. If there is extra space, ask for more students to come forward.

"I would like 10 students to walk to the front of the class and enter that square and stand very close together, once you enter the square, squat down. Each of you will represent a seed. When I say grow, and only when I say grow, please stand up slowly and stretch out your arms over your head, while keeping your feet in the same spot." ***Demonstrate action***

Ask the 'seeds' to begin to grow with their arms stretching out with their palms up towards the ceiling, this may result in hands in faces and tangled arms.

"Grow! Stretch out your arms with your leaves, your hands towards the ceiling, the sun" (Students should begin to stand up very crowded, overlapping arms, hands in faces, etc.)

"With all the other plants around you, do you think you have enough space and light to grow?" (students should answer "no").

"Walk back to your seats"

Ask 5 students to stand in the square, each student will represent a seed.

"I would like 5 students to come to the front of the class and enter the square. This time when you enter the square, remain standing with your arms stretched out by your side. If your hands are touching another student, move so that you are not touching. Once everyone is spaced out, put your arms down and squat down to the floor. When I say grow, and only when I say grow, please stand up slowly and stretch out your arms over your head, while keeping your feet in the same spot."

"Grow! Stretch out your arms with your leaves, your hands towards the ceiling, the sun."

Ask the 'seeds' to begin to grow with their arms stretching out with their palms up towards the ceiling.

This time there should be enough room for each seed.

"With the other plants around you, do you think you have enough space and light to grow?"

Students should answer "yes".

“Walk back to your seats”

Being a class discussion about what was different when the ‘plants’ were spaced out or squished together.

“What was different when the ‘plants’ were spaced out or squished together? Which setting was more comfortable? During which time were the ‘leaves’ able to get more sun?”

Students should prefer the spaced out setting over the crowded setting.

Content/Procedure: Engage, Explore, Test and Improve

Engage:

Students will participate in an activity to demonstrate the amount of space and light plants need to grow. The instructor will space them out and ask them to “grow” towards the ceiling and spread out their arms as leaves and reach for the “sun”.

This activity will be conducted twice to show the difference between 10 plants in a small area verses 5 plants in the same amount of space.

Explore:

Students will be lead in a discussion to explore and discover the different space and light requirements of plants and why it’s important to know how far apart to plant seeds so they are able to grow as big and healthy as they can!

Test and Improve:

Students will continue this lesson by exploring which plants need more space and which can be planted closer together by looking at some sizing charts in following activities.

LEARNING ACTIVITY #2: GARDENING PLAN

Estimated Time: 1-25 minutes

Resources & Materials:

- 12” x 12” paper (per student)
- 16 dry beans or paper punch circle (per student)
- Snack bags
- Seeds

Vocabulary:

- **Square Foot** – a unit of area equal to a square one foot long on each side
- **Seasonal** – happening in a certain time of the year

Instructor Directions:

Lesson Prep:

Prior to the lesson, visit the garden area and mark off 1 square foot gardens for each student using string and a ruler. Once the plots are broken up, place two toothpicks in each section where students

will need to plant their seeds. Place a popsicle stick in each section with the students name on it so they know where to plant their seeds once you take them outside.

Classroom Instructions:

Ask the students to move their paper and their beans to the center of their desk.

"We will be using these materials to practice planting seeds based on the amount of space the plant will need when it is full grown. Do not touch the materials until I ask you to."

Project or provide the square foot planting guide to each student.

"This is a guide that tells you how many seeds can be planted in 1 square foot. By looking at the chart, who can tell me how many seeds of okra can be planted in one square foot?"

Students should answer "one"

"This guide is based on how large the plant will be once it is full grown, not how large the seed is. Just because a seed is small, does not mean a lot of seed can be planted together."

"While using your materials, show me how many seeds of peppers can be planted in 1 square foot. Your seed should always be in the center of the space you are providing"

One seed should be in the center of the paper

"Now show me how many potatoes can be planted in 1 square foot. If more than 1 seed can be planted, you can fold and unfold your paper to divide the paper in equal parts".

The paper should have two equal areas with one seed in each area, a total of two seeds.

"Now show me how many garlic plants can be planted in 1 square foot."

The students should have four equal areas with one seed in each area, a total of four seeds.

Write a list of available seasonal plant seeds on the board for the students to choose from.

Hand out a My Square foot garden -plan (per student)

"Using the My Square Foot Garden Plan handout, complete a plan for two 1 square foot gardens using the seasonal plants provided to you on the board. You can use the planting guide to help decide how many seeds or plants can be planted in your square foot. The plants you choose will be the plants you plant for our class's garden. You can choose more than one plant type if the space requirement allows for it. For example, 1 parsley and 1 fennel can be planted since both allow for 2 seeds in 1 square foot."

Review the directions and steps on the handout

"You may begin, if you get stuck or have any questions, raise your hand."

"Please circle which square foot garden you would like to plant and turn in your paper."

Rotate around the class to make sure students are on task and on the right track. Help when needed.

At the end of class go through the papers and assign the seeds to each student. Place each seed type in a separate bag if the student chose more than one. Write the student's name and seed type on each bag.

Give each student one or two popsicle sticks (one if they're planting the same type of seed, two if they're planting two types of seeds). Have them write each type of seed they're planting in their garden area on the popsicle sticks.

Each student should have their seed bags and popsicle sticks before heading outside to the garden area. Take the students outside to the garden area to plant their seeds!

Show each student where they're garden plot is and have them stand next to it. Instruct them to place their popsicle sticks in the plot to show where each seed will go. Once they have put their popsicle sticks in the soil. Instruct them to make a hole in the soil in front of the stick for their seed. (If seeds need to be buried a certain depth, make sure to instruct the students to make a hole that deep). Once they have made the hole for the seed, instruct them to take it out of the bag and place it in the hole. Then cover up the seed with the soil around it.

Repeat for the second seed.

Content/Procedure: Engage, Explore, Test and Improve

Engage:

Students will get to learn about the amount of space certain plants and seeds need in order to grow big and healthy using the *My Square Foot Garden Plan* handout. The instructor will ask students to look at the chart and identify how many seeds of that plant can fit into a one square inch garden. This activity is completed using beans and a sheet of white copy paper.

Explore:

Students will need to utilize the *My Square Foot Garden Plan* handout to plan out their square foot garden space.

Test and Improve:

Once the students have chosen their seeds, the instructor will help them decide if they can plant the two seeds together using the planting guide. Once each student is checked off and handed their seed bags, take the class outside to the garden area.

Each student should be shown their square foot garden area to plant their seeds. Have each student follow step by step on planting the seeds into their square.

SUMMARY:

Estimated Time:

- Progress and success of the plant
 - o Did the plant have enough space and resources available to it to survive?
 - o Did the student plant the seed in the appropriate space requirement?

Left to the teacher's discretion and choice.

EVALUATION:

Estimated Time: 1-5 minutes

Formative:

- My Garden plans
- Projected seed placement with toothpicks
- Observations of students completing tasks

Left to the teacher's discretion and choice.

My Square Foot Garden Worksheet

Name: _____

The type of seed I will plant in my garden square is:

For this type of plant, the number of seeds of that have room to grow in a square foot is _____

My drawing shows the number of seeds I will plant and how I will space the seeds equally apart, by marking an X for each seed.

My drawing shows the number of seeds I will plant and how I will space the seeds equally apart, by marking an X for each seed.

SQUARE FOOT GARDEN PLAN GUIDE

[garden365.com](http://www.garden365.com)

 Tomatoes 1	 Peppers 1	 Onion 9	 Head Lettuce 4	 Carrots 6	 Leaf Lettuce 16	 Cucumber 2
 Hot Pepper 1	 Winter Squash 1	 Sweet Potatoes 1	 Potatoes 2	 Pumpkins 1	 Cauliflower 1	 Corn 2
 Beets 9	 Eggplant 1	 Spinach 9	 Garlic 4	 Radishes 16	 Melons 1	 Celery 2
 Brussel Sprouts 1	 Kale 2	 Summer Squash 1	 Rosemary 1	 Cilantro 9	 Sage 1	 Chives 1
 Bush Beans 4	 Pole Beans 4	 Basil 2	 Bok Choy 1	 Parsnips 9	 Dill 9	 Oregano 1
 Cabbage 1	 Turnips 9	 Parsley 2	 Thyme 2	 Rutabagas 4	 Peas 8	 Okra 1

*Numbers represent the number of plantings per square foot

<http://www.garden365.com/container-gardening/square-foot-garden-plan/>

SQUARE FOOT PLANTING GUIDE

 Arugula 16	 Dill 9	 Leeks 6	 Rutabagas 4	 Fennel 2	 Bok Choy 1	 Melons 1	 Rosemary 1
 Carrots 16	 Onions 9	 Bush Beans 4	 Basil 2	 Kale 2	 Brussel Sprouts 1	 Okra 1	 Sage 1
 Leaf Lettuce 16	 Parsnips 9	 Pole Beans 4	 Calendula 2	 Parsley 2	 Cabbage 1	 Oregano 1	 Summer Squash 1
 Radishes 16	 Spinach 9	 Garlic 4	 Celery 2	 Potatoes 2	 Cauliflower 1	 Hot Peppers 1	 Winter Squash 1
 Beets 9	 Turnips 9	 Kohlrabi 4	 Corn 2	 Swiss Chard 2	 Chives 1	 Peppers 1	 Sweet Potatoes 1
 Cilantro 9	 Peas 8	 Head Lettuce 4	 Cucumbers 2	 Thyme 2	 Eggplants 1	 Pumpkins 1	 Tomatoes 1



Number denotes # of plantings per square foot

<https://gardentherapy.ca/square-foot-planting-guide/>