Hudson Explorers

Let’s Get Growing!

Activity Guide

THE HUDSON GARDENS
& EVENT CENTER
Dear Educator,

Welcome! Today you and your group will learn all about plants and how they grow at Hudson Gardens.

You will find an Activity Guide, map, and all of the tools you will need to complete each activity in your Hudson Explorers Activity Pack. As you read through the Activity Guide, you will notice that educator instructions and prompts are written in **bold italics**. The rest of the text found throughout the Activity Guide is meant for you to read aloud with your students.

Using the Activity Guide and the map provided in the Activity Pack, you will proceed in sequential order to each of the following five Activity Stations located throughout the Gardens:

- **Activity Station #1** – Garden Lookout, Location: Amphitheater
- **Activity Station #2** – The Wonderful World of Plants, Location: Plant Zoo
- **Activity Station #3** – From Seed to Vegetable, Location: Vegetable Garden
- **Activity Station #4** – Plant Partners, Location: Oval Garden
- **Activity Station #5** – The Traveling Dandelion Seed, Location: Oval Garden

Your journey today will start at the Welcome Garden (the area behind the Gift Shop). You can access the Welcome Garden by entering the Gardens through the wooden gate to the left of the Gift Shop.

✧ **Proceed to the Welcome Garden now.**

Restrooms are available in this area. Once your group is ready to begin its journey locate Activity Station #1 on your Map.
Let’s Get Growing!

Activity Station #1

Garden Lookout

**Educator Instructions:**
* Find an open spot anywhere on the lawn in the Amphitheater area for your group.

**How Many Different Types of Plants Do You See?**

- Raise your hand if you have ever visited a garden before. What do you remember seeing at the garden? What kind of feelings did you have when you were in the garden?
- Look around at all of the plants growing at Hudson Gardens today. How many different kinds of plants do you think live at the Gardens?
- How many different kinds of plants do you think there are in the world?
- Although no one really knows for sure how many plants there are in the world, scientists think there are more than 300,000 different types (species)!
- Hudson Gardens is home to many different kinds of plants. Some of these plants are from Colorado, but some of the plants you will see are from different states and even from different countries!
Garden Lookout

Educator Instructions:

♦ **Hand out one plant frame (found in your Activity Pack) to each student.**
♦ **Have each student find a spot on the lawn and set their plant frame flat on the ground.**
♦ **Ask your students to look carefully at the plants they see in only their plant frame.**

**What Kinds of Plants Grow at the Gardens?**

How many different plants do you see through the plant frame on the ground? What types of plants do you see? Can you see any other living things in your plant frame?

♦ **Now ask students to hold out their plant frame in front of them (looking out at the Gardens).**

How many different plants do you see through your plant frame now? What is the biggest plant you see? Do you see any plants with flowers?

You may notice that the plants around you are many different sizes, shapes, and colors. Some plants look like each other because they are the same type of plant. Other plants may look like each other because they grew up in the same home (or habitat).

Today you will learn how many plants, including some of the vegetables you eat, begin growing from a small seed into a plant with flowers. You will also discover why plants need special animal partners to help them make more seeds.

♦ **Collect plant frames from students; you will not need them again.**

Go to Activity Station #2 at the Plant Zoo.
The Wonderful World of Plants

_Educator Instructions:_
- Make sure that you are in a spot with many different types of plants nearby.

**What is a Plant?**

- Plants are alive... just like us! Like us, plants grow and need food to survive.
- Did you ever wonder what exactly makes a plant a plant? Even though plants may grow to look very different, all plants have one thing in common - they make their own food! Plants use the green parts of their leaves, the air, and sunlight to make food to survive.
- Plants come in many different forms. Plants can be trees, shrubs, grasses, and even colorful flowers. Some plants we may like to eat, like vegetables and fruits. Other plants, like trees, give us wood and paper. Some plants grow high up in the mountains and other plants grow only under water!

- **Distribute a magnifying glass to each student and have them place it around their neck.**
- **While pointing to a nearby and accessible plant, ask students whether they think the plant is alive or dead and how they can tell.**

Now use your magnifying glass to take a closer look at all the plants around you. How would you describe those plants?

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Let's Get Growing!

The Wonderful World of Plants

- Do you see any plants with flowers? *(If so: What color are they? How many petals do they have? What do you see inside the flowers?)*
- Do you see any plants with very smooth leaves? Very rough leaves? What other words would you use to describe the leaves you see?
- Can you find a tree with needles? Are the needles pointy or are they flat?
- How would you describe the bark of the tree? *(Encourage children to touch, smell, and even listen to the bark.)*
- Can you find two leaves on the ground? Do the two leaves look like they are from the same plant? Why or why not?

**Educator Instructions:**

- Encourage your students to find two plants that are the same type (species). Discuss what plant characteristics they compared to come to their conclusion.
- Have your students hold on to their magnifying glasses for the remainder of the program.

Activity Station #2

Go to Activity Station #3 at the Vegetable Garden.
Let’s Get Growing!

From Seed to Vegetable

Educator Instructions:

♦ Find an open spot in the Vegetable Garden area for your group. Feel free to use the picnic tables if they are available.

♦ Remove the Vegetable Garden Supply Bag (contents: bag of kidney beans, dissected bean box, anatomy of a seed diagram, seed map, and four seed specimen boxes) from your Activity Pack. Please remember to return all materials to the Activity Pack.

♦ Please remind your group while in this area to only look at, and not pick, the fruits and vegetables in the Vegetable Garden.

How is a Plant Born?

Look around you - plants are everywhere! But does anyone know how plants are born? Many plants start off as small seeds that when planted in the soil, grow into new plants.

♦ Distribute one kidney bean to each student and have them examine it with their magnifying glass, without telling them what it is.

Do you recognize the object that is in your hand? *(Wait for answers.)* Do you think it’s a plant? *(Wait for answers.)* If so, what kind of plant?

The object you are holding in your hand is a bean seed. Everything that a new bean plant needs to begin growing is stored inside this seed. The seed is a small package that provides food (cotyledon) and protection (seed coat) to the new plant (embryo) inside.

♦ Pass around the dissected bean box to each student. Use the anatomy of a seed diagram to point out the cotyledon and embryo of the dissected kidney bean.

Continue to the next page.
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From Seed to Vegetable

How Do Vegetables Grow?

All the plants that you see today in the Vegetable Garden began as small seeds. The seeds needed soil, water, and sunlight to grow.

As these plants grow, their stems get taller and thicker and they add more leaves to their stems. Eventually buds on the plants will open into flowers where new seeds will grow.

The gardeners will collect the seeds in the fall and save them to plant again next year!

- Pass around the seed specimen boxes. Explain that each box contains the seeds of one of the plants shown on the seed map and growing in the Vegetable Garden.
- Using the seed map, have your students guess what vegetable each seed will become. Ask your students what clues they used to come to their conclusions. Do not reveal the answers yet (answers are found on the back of the seed map).
- Walk around the Vegetable Garden looking for the vegetables on the seed map. As you find each vegetable, reveal which box contains the corresponding seeds.

Now it’s time to see if we can find our favorite vegetables or fruits in the Vegetable Garden.

- Let your group explore the Vegetable Garden to find their favorite fruit or vegetable. Encourage your students to make general observations about the plants. For example: Does the plant smell like its vegetable/fruit? Can you tell if a vegetable/fruit is ready to eat (ripe)?

Go to Activity Station #4 at the Oval Garden.
Let’s Get Growing!

Plant Partners

Educator Instructions:

♦ Find an area with many flowers and bees visiting flowers. Because bees can sting if they feel threatened, remind your students to move slowly in this area.

How Are Seeds Made?

All the seeds that you saw today will grow into the same kind of plant that made them. But many plants can’t make seeds on their own - they need help from animals like bees, butterflies, and birds!

New seeds begin in the flower of a plant. Take a close look at the inside of a flower and you will see it is made up of many parts.

♦ Remove the artificial flower and flower parts diagram from the Activity Pack and point out the different flower parts as you continue reading below.

In the center of the flower there is a sticky part called the stigma. Around the stigma you will see the parts of the flower called the stamens topped with yellow pollen grains.

Before a seed can begin to grow from this flower, a grain of pollen must land on the stigma of a flower like itself.

Does anyone know what this process is called? Pollination!

♦ Pass around the artificial flower so that everyone has a chance to look at the different flower parts.
♦ Ask your students how they think pollen moves from one flower to another (in the wind, on an animal). What animals do they remember seeing around flowers (honeybees, bumblebees, butterflies, flies, hummingbirds, beetles)?

Continue to the next page.
Plant Partners

Some animals are very important to flowers, because they help move around the pollen they need to make new seeds. Let’s see if we can spot some of these animals in the garden.

- Gather your group in a grassy area near many flowers. Please remind your students to only observe and touch the flowers and not to pick the flowers or walk in flower beds.
- Allow your students to observe the flowers for a few minutes. Encourage them to look for animals visiting the flowers and to observe the flowers with their magnifying glasses.

Did anyone see a bee? A butterfly? A hummingbird? These animals like to visit flowers to drink their sweet juice called nectar.

While a bee is visiting a flower, pollen rubs off onto its body. When the bee visits another flower, some of that pollen will fall off onto the sticky stigma of the new flower helping it make seeds!

- Remove the bag containing the pipe cleaner bees from the Activity Pack and distribute one to each child. Please return all the bees to the bag when you are finished.

Now it’s your turn to be a bee! Using your bees, help move pollen from one flower to another.

Gently rub your bee on the stamen of one flower to pick up pollen and then drop off pollen on the stigma of another flower. Remember that to make a seed, you have to move the pollen from one flower to another flower just like it.

Remain at the Oval Garden for Activity Station #5.
The Traveling Dandelion Seed

Educator Instructions:
♦ Remain in the Oval Garden area and find a spot for your group to sit (e.g., the grass, along the stone walls bordering the gardens).
♦ Remove the book, The Dandelion Seed, from your Activity Pack.
♦ Read the book aloud to your group using the reading guide below.

Before Reading
♦ Have students identify what is shown on the front cover (dandelion seed) and what it is doing (floating through the air).

Have you ever picked a dandelion and made a wish while blowing the white feathery fluff into the air? Did you know that you were actually blowing seeds into the air and helping to make a new dandelion plant?

♦ Ask your students where they think dandelion seeds travel to when they blow them into the air and what happens once the seeds land.

While Reading
♦ Before proceeding to each new page, ask your students where they think the seed will travel to next.
♦ As you reach each new page, ask your students if any of the places look familiar and have them name and describe those places.

After Reading
♦ Ask your students if they think all the dandelion seeds will grow into a new plant and what they think happens to the seeds that don’t grow into a plant.
♦ Take some time, either at the Gardens or when you get back to school, to explore the environment for dandelions. When you find a dandelion, encourage your students to observe the different parts of the dandelion plant and to see if any insects are visiting the flower.
Congratulations!

You have completed Let’s Get Growing!

- Remember everything you have learned today about how plants grow!
- In your pack you will find an envelope with seeds and growing instructions. These seeds are for you to take back to your classroom so that you can watch them germinate and grow. Remember that you will need to give your seeds water, warmth, and sunlight!

- Please collect all materials and magnifying glasses from your students and return them to your Activity Pack.
- Please return Activity Packs to the Gift Shop before leaving Hudson Gardens.

Thanks for visiting and come see us again soon!