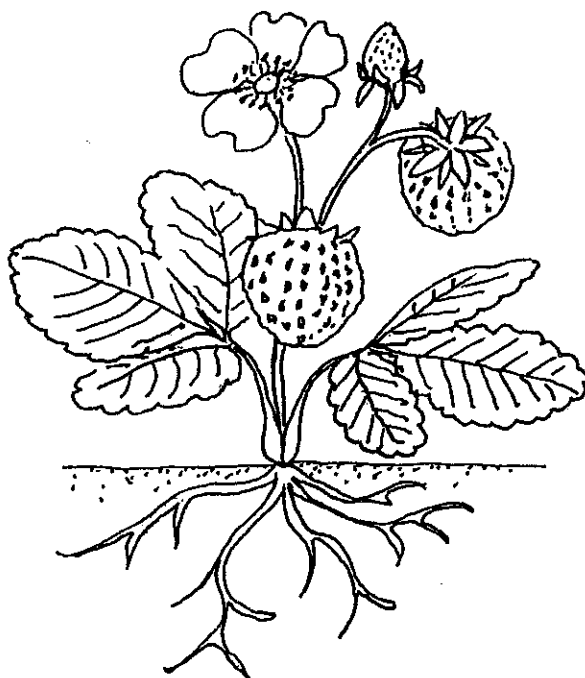


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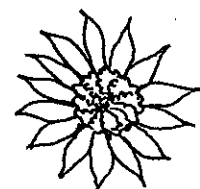
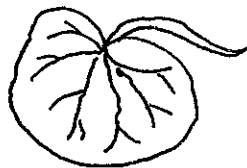
A First Look at Plants

The San Francisco Botanical Garden (SFBG) in Golden Gate Park contains over seven thousand different kinds of plants from around the world. We look forward to helping your students observe and learn about the basic structures and functions that these plants share.

This teacher's guide is designed to help you and your students make the most of your visit. It includes some general background information for you to share with your class before your visit, activities to help prepare for the walk, other activities to extend the experience back in the classroom, and an annotated bibliography of useful materials. We strongly encourage you to prepare your class by making use of these materials, especially if you are just beginning your exploration of these concepts.

The garden walk is designed to illustrate four key concepts:

- 1. Everyone needs plants.**
- 2. Plants come in many different shapes, colors and sizes.**
- 3. Plants have different parts, and each part has a special job to do for the plant.**
- 4. Most plants make seeds. When a seed finds a good place to grow, it can make another plant.**



My Seed - to be read aloud

One spring day, my neighbor, Ms. Green, gave me a seed. It was small and round and hard and wrinkly. "What kind of seed is this?" I asked. "How do you think we could find out?" she asked right back. "Well, maybe we could make it grow, then we could see what kind of a plant it turns into," I said.

"Good idea" said Ms. Green. We went back to her house and she gave me a small pot. "Let's put some dirt in the pot to make a home for your seed. And then we'll give it some water, not too much! Take the pot home and put it on the sunny window sill in your bedroom. When you're finished, why don't we take a walk in the big garden in the park, to see what kind of plant your seed might turn into?"

That afternoon we went to the garden in the park. Ms. Green told me that they have plants from all around the world growing there. Everywhere we looked we saw GREEN, and everywhere we looked we saw plants - tall plants, short plants, plants growing in the dirt, and plants growing in the pond. I wondered what my seed would look like when it grew up. "Now don't forget to watch the seed you planted!" said Ms. Green when we went home.

So I watched. And I watched. Every morning I looked at the pot, but nothing happened. Finally I decided to dig up my seed to see if it was still there. It was! But it had a funny little thing sticking out of it, so I ran over to Ms. Green's house to show her my seed. "Quick, put it back in the pot - your seed is growing! That part that is sticking out is a root. It is taking in water from the dirt so the seed can grow. Cover it up and keep watching. While we wait for it to grow, how about another trip to the garden?"

So we went to the big garden in the park, and Ms. Green helped me find the roots of lots of different plants. We saw a gardener pulling up weeds that had little roots like threads. Some trees had roots so big, they were breaking the sidewalk! Ms. Green brought a snack for us - carrots, yum. She told me that we were eating roots!





The next few days I watched my pot. I put a little water in it and made sure it was in the sun all day. Finally, one day I saw a little bit of green in the middle! "Look Ms. Green, my plant is growing!" I shouted as I ran over to her house. "Ah, that is the stem starting to grow," said Ms. Green. "It will hold up the leaves that are so tiny right now. Shall we go to the garden and see what we can see?"

So we went to the big garden in the park. We saw trees with great big trunks holding their leaves way up in the air. We saw vines with their stems twisting and turning as they climbed into the trees. There were plants with soft stems bending over in the wind and plants with short stems holding their leaves as high as they could.

I kept watching my plant. Every day it got a little bigger, and soon it had lots of leaves growing on it. I took it over to show Ms. Green. "Your plant is doing very well. All those leaves are making food for the plant. They use the sunshine and water and air to help the plant grow. But your plant is getting so big, we better give it a bigger home." She helped me dig a hole in my back yard and we put the plant in the ground to grow.

Then we went to the garden in the park. We saw furry leaves and smooth leaves, round leaves and pointy leaves, dark green and light green and even yellow and red leaves. Ms. Green and I found some leaves that were as big as me growing down by the pond! I never knew there were so many kinds of leaves, but still, none of them looked just like the leaves on my plant.

Now every morning I went down into the backyard to look at my plant. It grew and grew and grew! One day I noticed some funny bumps on the plant, and just a few days later they turned into flowers! Ms. Green came over to look at my plant. "Those bumps you saw were flower buds. They were baby flowers, and when they grew up they turned into the white flowers you see here."



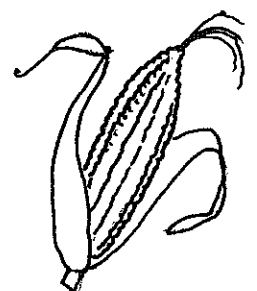
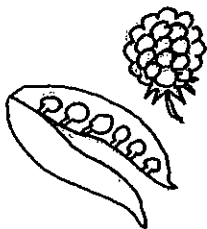
We decided to go to the garden in the park. Everywhere we looked, we found flowers growing. Some were as small as my fingernail and some were as big as my hand. There were flowers that smelled good and a few that were stinky! We saw all kinds of different colors – red, yellow, purple, pink, orange, blue. I think we saw every color in the world!

A few days later I ran out to look at my plant. But something terrible had happened. The flowers were dying! Their petals were falling off onto the ground. I ran over to get Ms. Green. “Don’t worry” she said, “the flowers are growing up and changing. Just keep watching and you’ll see.” So I kept watching.

A few days later I noticed that the flowers looked really different. The petals were all gone, but there were long green things growing right where the flowers used to be. “What are those things, Ms. Green?” I asked. “Why, those are the fruit growing on your plant. All the fruits that we like to eat grow on plants, and before they were fruits, they were flowers! Shall we go to the garden and see what kind of fruits we can see?”

So we went to the garden in the park, and Ms. Green showed me all kinds of fruit. She showed me juicy red berries and hard brown nuts. She showed me fluffy fruit that could fly and sharp fruit that could stick to my clothes. She told me we couldn’t eat them, though. “But Ms. Green, why do you call these fruit if we can’t eat them?” I asked. “Because ‘fruit’ is the word we use to talk about the part of a plant that has seeds inside it,” she explained. I thought about that for a minute. “Then that must mean that the fruit on my plant will have seeds inside it too! Let’s go home right now and look!”

We went home to look at my plant. Ms. Green helped me pick the fattest fruit on my plant. It was long and green and as big as Ms. Green’s finger. She opened it up for me and inside there were ... PEAS!!! Bright green shiny peas, all lined up in a row! “My plant is a pea plant!” I shouted as I jumped up and down. “That’s right, and you can eat your peas if you would like. But you might want to save a few for next spring...”



Vocabulary

botanical garden – a place where different kinds of plants are grown to be studied and enjoyed

cone - a hard, woody seed holder that some plants make

flower - the part of a plant that can make a fruit with seeds inside

fruit - the part of the plant that holds a seed

leaf - the part of a plant that makes food for the plant

plant - a living, growing thing, usually green, which makes its own food from sun light, water, and air.

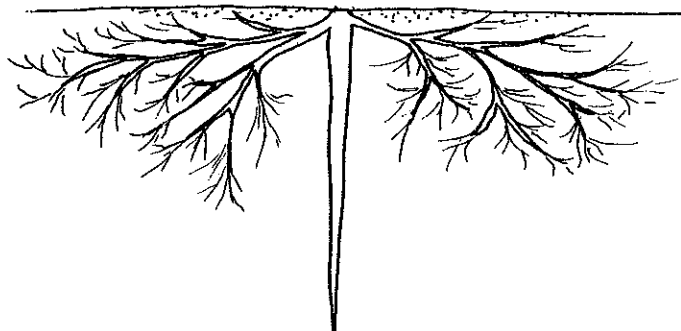
pollen - a special dust made by a flower which helps it make seeds

root - the part of a plant that holds it in the ground and sucks up water and minerals

seed - a tiny plant and its food, tucked in a seed coat, waiting to grow

stem - the part of a plant that holds up the leaves and flowers and carries water and food

tree - a large plant with a hard stem



Pre-visit activities

Becoming a nature detective



A visit to the SFBG is a chance for students to become nature detectives, exploring and discovering the wonders of the natural world around them. Help your students get ready to make the most of their trip with the following activity.

Introduce the concept of a "nature detective" to your students – a nature detective is someone who explores the natural world by using their different senses to learn about the world. Every one of us can be a nature detective – every one has special tools that can help them learn about the world.

Ask children to think about what tools we have *on our bodies* that we can use to explore the world around us. How can we use our different tools? Each child can draw pictures illustrating their ideas. Encourage children to share their drawings with the class, and compile their ideas in a large list or drawing.

Here are some suggestions – you and your class may think of others

eyes - look closely
noses – smell
fingers –feel
hands- hold things
brain – remembers
ears – listen closely
feet – move us around
skin – feels hot or cold

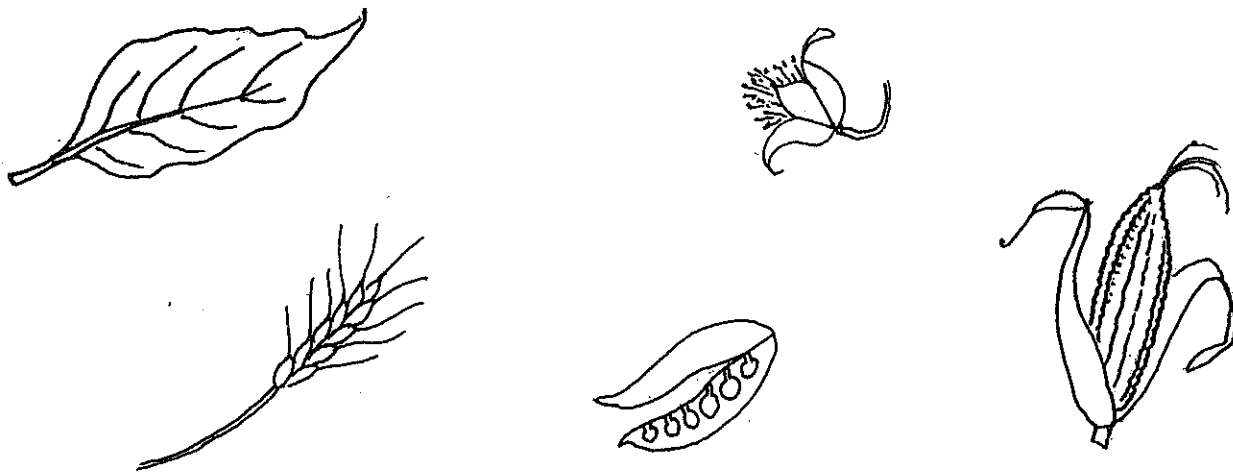
How do we use plants?

Young children care most about things that relate directly to their lives. Use this activity to help children see how important plants are to them.

Ask children if they can see a plant from where they are sitting. Perhaps you have some indoor plants, or plants may be growing outside your window. Ask them to describe what they see. Ask them if they have any plants growing at home, either indoors or outside.

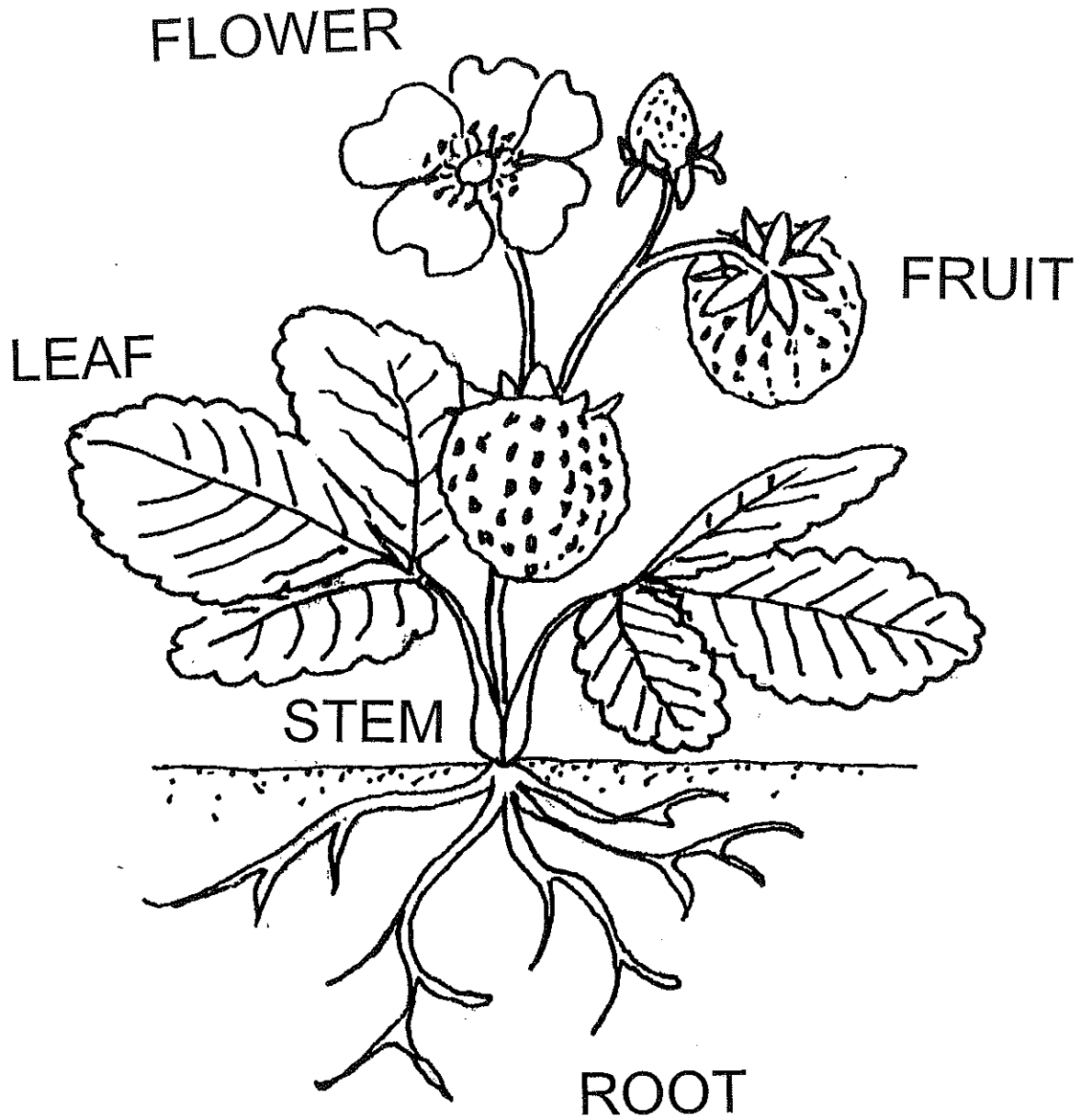
Sometimes we like to have plants indoors for decoration or to make a room cheerier. There are other ways we use plants too. Usually we use just part of a plant. Can students think of any ways that we use plants? Does anyone have a part of a plant in their lunch? If possible, examine a real lunch to see what came from plants. Do you have anything made out of a plant in your desk? Do we have anything in our classroom that is made out of a plant or a part of a plant? Look for items made of wood. Is anyone wearing anything made out of a plant? Look for labels that say "cotton."

Distribute a sticky note to each child. Ask them to draw a plant on the sticky note. Then ask each child to stick their note on a plant or something made out of a plant. After everyone has placed their picture, go over the items as a group. How many things did you find that are made out of plants? Aren't you glad we have plants?!



PLANT WORDS AND PICTURES

Color this picture and say the words!



Post visit activities



What part of a plant do we eat?

This activity builds on the learning experience in the botanical garden by encouraging students to think about the parts of plants in their daily lives. Prepare by bringing in an assortment of fruits, vegetables and herbs representing the different parts of plants. Some suggestions are:

Leaves - lettuce, bok choy, cabbage, bay leaves, mint, parsley

Stems - celery, asparagus, cactus pads, sugar cane, ginger

Flowers - broccoli, cauliflower, artichoke, (these three are actually flower buds) nasturtium flower

Roots - carrot, beet, turnip, radish

Fruits - apple, string bean, strawberry, cucumber (anything with seeds)

Seeds - peanuts, sesame seeds, pine nuts

Review the parts of a plant with your students, using the folder you made at the botanical garden to help you remember. Ask students to describe what job each part of the plant has. Tell them that many plants do an important job for us - they give us food!

Either as a large group or in smaller groups, allow children to examine the food items you have brought in. Encourage them to think about what part of a plant each item represents. After they have had a chance to look closely, give each one a sticky note and ask them to draw one part of a plant.

Now hold up one plant part and ask students to name the item. Ask if any of them have eaten this item before. Ask them what part of the plant they think this is. When you have identified it, have one student put an appropriate sticky note on the item. Continue with the other items until all are identified. The class can enjoy a plant snack when they're done!

THE LIFE OF A PLANT

Draw pictures to go with the words

SEED

PLANT WITH
A FRUIT

BABY PLANT

PLANT WITH A FLOWER

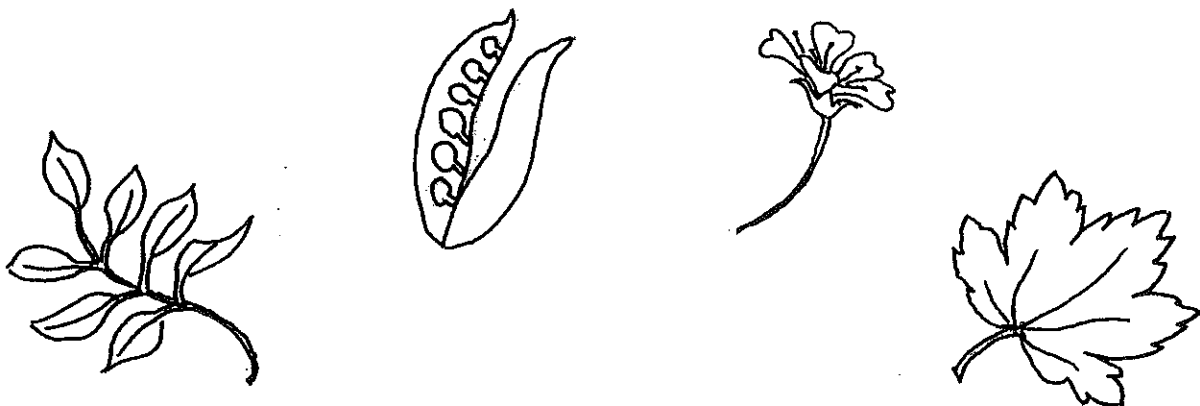
Make a plant

This activity combines art and science as students make their own plant model. You will need various art supplies, including colored construction paper, yarn, glue or paste, crayons and scissors. You can also use assorted recycled materials such as cloth, egg cartons, and toilet paper rolls - anything that is available and manageable for your students.

Begin by reviewing your visit to the gardens. Ask students to describe some of the plants they saw - size, color, texture, anything they can remember. If you still have a folder or collection from the visit, use it to review the parts of a plant. Tell your students that they will now make their own plant, not a real one, of course, but a model. But just like a real plant, it needs to have all its parts.

Distribute the art supplies. Depending on your children's abilities, you may wish to take one of two approaches. The simplest is for each child to get a piece of construction or manila paper on which they can glue their flower. They can use pieces of construction paper, yarn, and crayons to create their plant. Slightly more complicated is for each child to construct a three dimensional plant, using mostly recycled material (for example, toilet paper stem, cloth leaves, yarn roots, egg crate flower). In either case, be sure to have an example or examples to demonstrate.

When students are finished, have each share their art work, and ask them to point out the different parts of their plant, or have their classmates identify the parts. Be sure to display these models for parents and other students to see!



Suggested Reading

If these books are not available in your library, you can find them at the Helen Crocker Russell Library at the SFBG. The library has an extensive collection of children's books, including a number of bilingual texts.

Eating the Alphabet: Fruits and Vegetables from A to Z. Ehler, Lois. New York, NY: Harcourt Brace Jovanovich, 1989.

Colorful watercolor collages introduce a wide variety of clearly labeled fruits and vegetables.

Counting Wildflowers. McMillan, Bruce. New York, NY: Lothrop, Lee and Shepard, 1986.

Photographs of a wide variety of common flowers to count.

Flower Garden. Bunting, Eve. New York, NY: Harcourt, Brace and Co., 1994.

Rhyming story of a girl bringing home a window box of flowers.

The Reason for a Flower. Heller, Ruth. New York, NY: Grossett and Dunlap, 1983

Colorful illustrations and rhyming text explain why flowers exist, displaying a wide variety of plants.

Sunflower. Ford, Miela. New York, NY: Greenwillow Books, 1995.

Simple text, attractive illustrations show a child planting and tending a sunflower plant.

The Apple Pie Tree. Zoe Hall. New York, NY: Blue Sky Press, 1996.

Lively illustrations follow the seasons of an apple tree, revealing the life cycle of a flowering tree.

