

Self-Guided Tour

K to 2nd Grade

Plants and the Plant Life Cycle



Time Required: 60 min
April to October

Topic:

Observing plant life cycles
in the Garden

Materials:

For each student:

- Pencil or crayons
- Clipboards
(recommended)
- Comparison Worksheet
- Colored dots
(recommended)

For each teacher/leader:

- Leader Sheet
- Garden Map

Locations:

- South Field
- Home Production
Garden
- Children's Garden
- Jones Rose Garden

Student Outcomes:

- Students will learn how to identify the six basic plant parts
- Students will understand the basic plant life cycle
- Students will gain observational skills in identifying similarities and differences among living things

Standards Reached:

Nat. Sci: K-4 Science as inquiry, abilities necessary to do scientific inquiry
Nat. Sci: K-4 Science as inquiry, understanding about scientific inquiry
Nat. Sci: K-4 Life Science, the characteristics of organisms
Nat. Sci: K-4 Life Science, life cycles of organisms

Preparation:

Cut out enough colored dots for each child to have at least one. This lesson will work best with one classroom of no more than 30 students. It is not recommended that one teacher/leader attempt to conduct the lesson for more than one classroom, simply because the size and outdoor environment make it difficult. The Gardens' areas, however, are big enough to have multiple classrooms concurrently take the tour.

Background Information:

Plants are an essential part of everyday life for many different organisms, including humans. They are the base of the food chain and understanding how plants live and reproduce is important. To understand the plant life cycle you must first be familiar with plants. The six basic plant parts are:

1. Seed – contains a small embryonic plant and usually some stored food
2. Root – provides an anchor for plants in the ground and conducts water and other nutrients to the other parts of the plant
3. Stem – serves both as structure for the plant's leaves, flowers, etc. and as a place for water and other nutrients to be transferred to other parts of the plant
4. Leaf – contains a majority of the chloroplasts which convert energy from the sun into energy the plant can use through a process called photosynthesis
5. Flower – the reproductive part of the flower where pollination occurs to form a seed

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Background Information (continued):

6. Fruit – a sometimes fleshy covering developed from the flower that contains seeds.

Botanically speaking a fruit is anything with seeds inside.

Many are confused by the distinction between fruit and vegetable. In culinary terms, fruit is typically any plant served as a dessert and a vegetable is any plant served during the meal. However, “vegetable” is not a botanical term and is not used by botanists and biologists when studying in their field. Confusion comes in because the term fruit is used in both the culinary field and the botany field but have a different definition in each context. Botanically speaking a fruit is anything with seeds inside of it.

The plant life cycle is the period of life for one particular plant that ends with the reproduction of a new plant. The length of this period of time varies depending on the species of plant, but the sequence of events is always the same.

1. Seeds are planted by people or scattered by wind, water, and animals
2. A hard outer shell, or seed coat, splits and a plant sprouts
3. Roots, stems, and leaves begin to develop
4. Flowers bloom on the plant
5. A fruit forms with seeds inside
6. The cycle starts over at # 1

Pre-Visit Activity:

Have the students sort seeds based on various characteristics. Give students in small groups a small pile of various seeds. Have them develop a way to separate them into as many groups as they think are needed. Bean soup mixes are an easy way to get a large amount of various types of seeds. Other seeds can be purchased and mixed together.

Read one or several of the following titles *Wacky Plant Cycles* by Valerie Wyatt , *Jack’s Garden* by Henry Cole, *Planting a Rainbow* by Lois Ehlert and *Growing Vegetable Soup* by Lois Ehlert

Post-Visit Activity:

Plant seeds in the classroom. Using small disposable cups, pierce a hole in the bottom of the cup, fill with potting soil, and plant seeds according to directions on packet. Place in sunny window and keep moist (not wet). Have students make regular observations in a journal to document its growth. Suggested plants include sunflower, pea, or bean.

Create a list of plants we eat , categorizing them by one of the six plant parts. Then use the plants on the list to draw “Veggie Monsters” by using various vegetables and other plants we eat for the different body parts. For example, the monster may have a watermelon body, celery legs, tomato head, broccoli hair, peas for eyes, green beans for arms, etc.

Notes:

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Leader Sheet



Station 1: Parts of a Plant—South Field

Note: The group can be divided in half with one half starting at station 1 and the other starting at station 3 and then rotating around. Smaller group size will aid with the activities.

Station 1: Parts of a Plant – South Field

Today we are going to use our eyes to explore the many different plants in the Gardens. Plants are made up of many of the same basic parts.

What are those plant parts?

Pass out the colored dots – one per child, or if shirts have enough variety in color, use the student's shirt color

Take a moment, using your eyes explore this area of the Garden and find plant parts that match your color. When you find a match, determine which plant part it is.

Let students wander and find matches, when they have found a match or two gather them back up.

- All of the (red, pink, green, blue, etc.), what plant parts did you find?
- How do you know it is that plant part? *If they answer, because it looks like a leaf for example, ask what about it makes it look like a leaf.*
- What plant parts did we not find? Why did we not find them?

Lets move on to the next area and find more plant parts.

Station 2: Similarities & Differences in Plant Parts—Home Production Garden

This vegetable garden also has plants with good examples of many different plant parts that we eat. *Choose one of the six plant parts to discuss. Leaves, flowers (if present), and fruit (if present) will be easier for the younger children. Stems and seeds (if present) will be more challenging for this activity. Take a group to a location that has two different plant parts close to each other.*

Here are two (leaves, stems, etc.) from different plants. Looking at these two...

- What about them is different?
- What about them is the same?

Repeat with other examples of the same plant part or a different plant part. Reinforce the act of observing carefully and comparing.

Everyone did a great job discussing how plant leaves are the same and different.

Station 3: Plant Live Cycle—Children's Garden

Start in the grassy area by the Tumble Mounds or the Amphitheater behind the Corn Crib.

Plants germinate from seeds, grow, flower, make more seeds, and then die. Those new seeds then start the whole process over again. This is called a life cycle because it keeps repeating itself over and over again.

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Leader Sheet



Station 3: Plant Life Cycle—Children’s Garden (continued)

Go through the five stages of the plant life cycle having the students act out each part.

• Now that you know the different stages in the plant life cycle, what stage are the plants around us in?
Walk around the Children’s Garden and look for plants in various stages of the life cycle.

• What about this plant makes you think it is in that plant life cycle stage?

After exploring gather in the Hideout or Corn Crib to discuss what you saw

• Why do we not see some of the five plant life-cycle stages today?

• Why do we not see all five stages at the same time?

Now lets move to another area with many different plants.

Station 4: Shapes & Color in the Garden—Town & Country Garden

Have students spread out around 2 or 3 of the raised beds in the Jones Rose Garden. Distribute Comparison worksheet.

In front of you are many different plants. Pick two different plants that are next to each other. Describe each plant in each of the two large circles. Putting what is different about them in each of their respective sides and what they have in common in the middle. *If student cannot write, have them draw their plants, one on each side and circle the parts that are similar.*

Gather the group together and choose a few students to present their findings

• What about your plants is different?

• What other differences do some of you see in his/her two plants?

• What about your plants is the same?

What other similarities do you see in his/her two plants?

You have all done an excellent job of observing today and learning about the plant life cycles.

You are highly encouraged to visit the many other areas of the Garden before returning to the bus. Ask students to find different plant parts in certain garden areas or to observe plants in various life cycle stages. Additional information on life cycles can be discussed by visiting the Butterfly Wing. The insect life cycle is illustrated on the video monitors above the Emergence Cases. Some other areas that might be of particular interest for extending and re-enforcing this lesson include: Conservatory, Campanile Garden, Stafford Garden, North & South Mixed Borders

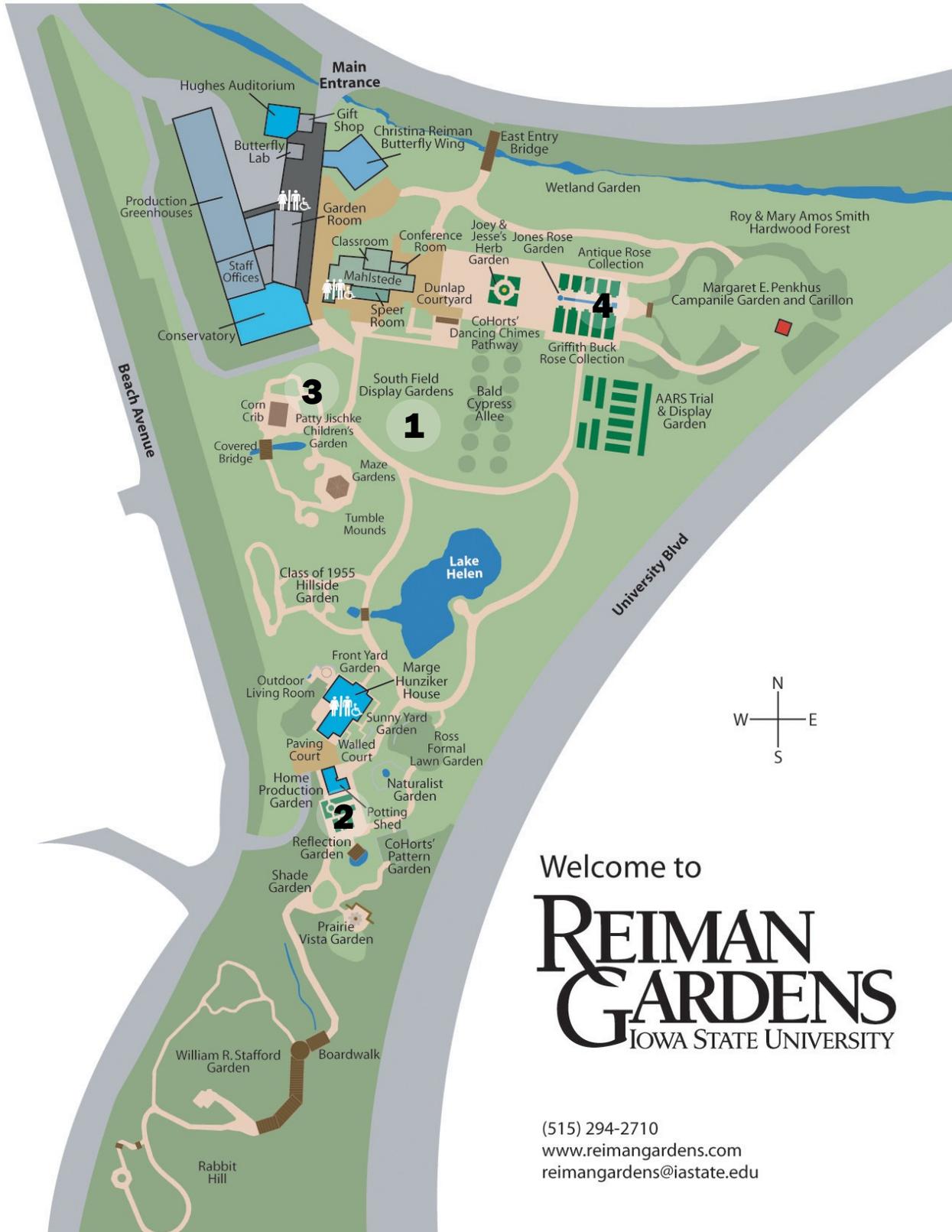
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Map

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GARDENS
IOWA STATE UNIVERSITY



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GARDENS**
IOWA STATE UNIVERSITY

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Compare two plants by writing or drawing the differences in each oval and their similarities where the ovals overlap.

