

Going out to Observe Plants

Priscilla Spears, September 2019

“To name and describe you must first see, and science polishes the gift of seeing.”

- Robin Wall Kimmerer, in *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*.

“Having words for these forms makes the differences between them so much more obvious. With words at your disposal, you can see more clearly. Finding the words is another step in learning to see.”

- Robin Wall Kimmerer, in *Gathering Moss*

Introduction: When we sow the seeds of knowledge in our classrooms, we include plants as a vital part of the biosphere. However, as our society has become more urban, many people, including guiding adults, have lost basic knowledge and connection to plants. Fortunately children enjoy observing many features of plants, but they need **an informed guide** to help them find and understand plant structures. Guides can inspire children in a variety of environments, with indoor plants, horticultural and agricultural plants, and weeds, as well as native plants. Even a bouquet of flowers is an opportunity to help children see the developmental sequence of plant parts. The most effective guiding adults are able to identify plants, to see and understand plant structures, to anticipate the seasonal appearance of those structures, and to help children find further information about plants.

Why do we go out? Why observe plants?

- Elementary children are assembling their view of the world and need to experience it firsthand.
- Plants are much more interesting and memorable in real life than in abstract.
- There are likely to be many more kinds of plants than animals near your school.

What preparations do we need to make?

- Give the children a framework in which to file their observations.
 - Tree diagram of the plant kingdom
 - An introduction to flowering plant families
- Give the children tools to help them observe
 - Hand lens
 - Notebook and drawing materials
- It may be helpful to give a list of characters to remind students of what structures they may see.
Examples: simple vs. compound leaves, connate vs. distinct petals.

How can teachers prepare themselves to guide botany studies?

Model how to learn about plants for your children. This is important no matter your level of knowledge.

- Tell them what plants you are investigating.
- Tell them what sources of information you use and share your discoveries.
- Call the plants you know by name and share your observations of their life cycles and other changes.

What follow-up opportunities do we need to provide?

- Share findings – via reports or perhaps a white board to post recent findings
- Record findings for a file or data collection

- Further research and reports about the plants observed – provide resources such as local plant guides, weed guides, and horticultural guides. Do what is practical to identify the plant. Sources of help include experienced gardeners and nursery personnel, and naturalists from native plant societies or wildlife conservation groups.
- Information that may be gathered includes the following. (Beware that lists of questions can take on a life of their own and impede observation.)
 - Is the plant native, horticultural, or introduced? USDA plants website can help with this. [<http://plants.usda.gov/>] You can search by common or scientific name.
 - What is the plant's form or habit? (prostrate, shrub, vine, etc.)
 - What is the plant's family or where does it belong in the plant kingdom?
 - What is the plant's duration – annual, biennial, or perennial?
 - What is the plant's phyllotaxy, its leaf arrangement on the stem?
 - What are the characteristics of the leaves? Describe the margins, venation or other notable features.
 - Describe the plant's flower, fruit, and seed. When does it bloom?
 - What would it take to grow more of this plant?
- The class may wish to start a herbarium or other record of plants that can be used by all students. The record can include a photocopy of the plant, pressed and mounted plants (lamination helps preserve dried, pressed plants), students' photos or drawings or other information gathered by students.

Some questions to focus observations of the plant

Start with general questions, such as “What can you observe about this plant?” and follow as needed with further direction, such as “First, let's look at the leaves.”

- Are the leaves simple or compound? How can you further describe the leaves?
- Are the stems herbaceous or woody? Is there any other distinguishing feature of the stems?
- Is this a seed plant, a seedless plant, or a bryophyte?
- Does this plant have flowers or fruit?
- If so, is it likely a monocot or eudicot?
- If there are flowers, can you tell how many petals, sepals, or stamens it has? Does it have tepals?
- If there is a fruit, can you tell how many sections it has?

Remember to use the questions as guides, not as an end to themselves. If you give a list of questions, the activity may shift to answering the questions instead of observing the plant.

Other projects

- Make labels for the landscape plants. Include the common name, scientific name, and family name. You may wish to add the country of origin for imported species.
- Find out more about the care and cultivation of plants around the school.
- Find out more about the native plants and their preservation.

Plant Naming

“If you do not know the names of things, the knowledge of them is lost.” - Linnaeus

Quoted in: Crane, Peter. 2013. *Ginkgo: The Tree that Time Forgot*

Practical plant naming

- Genus and species may not work for horticultural plants because of hybrids and cultivars.
- Genus names typically allow one to find further information and these alone may be enough.
- Try to place the plant in a family. It is often easier to find more information if you know the family, and placement in a plant family is a good way to organize botanical knowledge.
- Common names work well for food plants although scientific names may also be useful.

Attempt to name all plants – ALL PLANTS COUNT!

- Horticultural (ornamental and edible) plants, weeds, indoor plants, native plants, cut flowers
- See the listing of books and resources below for help in naming plants.

Naming plants does not have to be an overwhelming task

- Learn a few plants at a time, but keep working on the task.
- Try to find the main lineage and family. Example: eudicot, rosid, fabid, Cucurbitaceae for squash. See Wikipedia for help.
- If you can't identify a plant, set it aside. You or your children may discover its identity later.
- Make sure you record the names of new plants purchased or donated for your landscape or classroom.

Classroom activities to help children become acquainted with plants

- Name labels for plants in the child's environment, which include common and scientific names, as well as the plant family if possible.
- The visiting plant – introducing plants from the child's environment one at a time
- Study of the flowering plant families – introduce a family and its familiar members every few weeks
- Cataloging plants around the school – keep a record that may include photos, scans, and drawings, as well as when and where the plant was observed. *No Child Left Inside* by Jane Kirkland gives technical help.
- Observing and recording the appearance of leaves and flowers, as well as other happenings in the cycles of plant growth. For example, *Alstroemeria* (Peruvian lily) has stamens that mature first, followed a few days later by the opening of the stigma lobes. This helps children understand that plants are living organisms.

“Two things are required to truly see: love and knowledge. Without love, we don't look. Without knowledge, we don't know what it is that we are seeing.” - Chet Raymo, *Natural Prayers*