

BUDDING BOTANISTS

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Introduction:

MUN Botanical Garden is committed to providing research and education which supports the conservation of plant diversity and its sustainable use. Integral to the research and education is a knowledge, understanding, and concern for plants, their habitats, and the threats they face. Yet it is evident that as our world becomes more modern, our relationship with the plant world weakens. Within communities around the world, local skills and knowledge of plant lore, including its uses, properties, and even basic identification are all but disappearing.



This fact is alarming, considering that the implementation of biodiversity conservation and sustainability depends upon an informed, concerned community of citizens promoting these principles. How many of us think of plants when we eat? Yet all the food we eat, directly or indirectly is derived from plants. Our air, medicine, clothing, and building materials depend on plants. Today, more than ever, our leisure and recreation is linked to our natural environment. Simply put, will the children of today grow up to be a generation of policy makers and decision-makers that neither know nor care about our environment? Will they be unaware of the link between human survival and sustainable development?

Unfortunately, the answer could be yes unless our attitudes on plant education change drastically. While it is acknowledged that the need for change starts in the classroom, what steps have been taken to effectively enhance and increase botany in the curriculum? More importantly are teachers, particularly early childhood, primary and elementary, adequately trained in this field of science? Feedback from teachers, youth group leaders and even parents indicate that they are not. School administrators are already faced with such overwhelming concerns as decaying infrastructures, teacher shortages, overcrowding and loss of music and art programs. Plant education is just not a priority.

As educators, what can we do? Start with the basics. Utilize an activity that can teach us, the teachers, and open the eyes of many students, from pre-school onward. The following activity has been a mainstay of the Botanical Garden's education program for almost 40 years. It is easy, simple, inexpensive and can use materials recycled from home, work or school. While using this activity in the classroom may not make a budding botanist out of every student, it will certainly be a good first step in creating a generation of conservationists.

BUDDING BOTANIST ACTIVITY: Springing Into Leaf (&/or Flower)

Materials:

- A pair of sharp hand pruners or secateurs
- Jars or containers of various sizes
- I also highly recommend obtaining a copy of *Native Trees and Shrubs of Newfoundland and Labrador*, by A. Glen Ryan

Procedure:

Cut some small branches or twigs from a tree or shrub. Put a wet rag or paper towel around the end until you get it into water. Simply re-trim the twig edge if it dries out. If possible, make a note of where you found the plant, its height, width and general characteristics (i.e. drooping stems, bright red branches, etc.). A photograph of the entire plant will enhance the classroom follow-up.

In The Classroom:

Place the branches in a jar filled with room-temperature water. Place the jar near a window if possible. Check the water levels daily. If the water gets sour, wash the jar with hot, soapy water, rinse well and add the water and plant again. It's that simple! Observe what happens daily.

Some Advice on Collecting Plant Materials:

When cutting a branch from a tree or shrub, it is important to minimize damage to the plant. Using sharp hand-pruners, remove branches to their points of origin or attachment. When you prune the branch back to another branch, or prune a branch from the trunk, you are thinning. This can actually encourage growth throughout the tree and can help with better air circulation, improved sunlight penetration, and less wind resistance. Never remove several branches from a single plant (unless you are an experienced pruner). If the plant is young and/or it is the only one of its kind in an area, I usually leave it alone. Also, do not try to cut large branches. Smaller twigs are easier to handle and their removal will cause less damage to the plant. Never twist or snap off the branch, as this will also damage the tree.

Plants should never be tampered with in any parks, nature reserves, public gardens, or private property without prior permission. Let your friends, neighbours and co-workers know you will accept donations. When collecting plants, sketches or photographs of the original plant can enhance the learning later on in the classroom.

What Is Happening?

The students will see some cone-shaped knobs or buds sitting at the tip of each branch (the terminal buds) and sometimes along the sides of the branches (lateral buds). Explain to the students that these contain “spring”, or this season’s leaves and stems and sometimes flowers. They were actually formed on the tree in the fall.

Have the students look closely under the bud. You should see a leaf-scar, or mark left when the leaf fell off last fall. Buds and leaf scars vary from plant to plant and can help you identify the plant, even before the flowers and leaves emerge. This bud-opening process is something magical that happens on tree and shrub limbs every spring. Each day, re-examine the twigs. Over time, the buds which are usually small and dark, will swell, turn green and open to reveal an emerging leaf or flower. Continue to make observations, measure and record results. Don’t forget to stand back and admire “spring” as it blooms in your classroom. Ask the students to express how it makes them feel – verbally, through poetry, drawings, etc.

Let The Fun Begin!

Let the children spend time every day examining each branch. Encourage touching, smelling, sketching, measuring, tabulating and graphing the data. Digital photos are a wonderful way to record the changes. Magnifiers make it even more interesting.

At first glance the description of one twig will match the description of another (i.e. brown, woody, etc.). As they look closer and start making comparisons, their observational skills will greatly improve. Do plants and animals depend on each other? Find out by placing a white sheet of paper under the jar to see if your branch had any hitchhikers (you may see tiny dark specks called frass or insect droppings).

Some European and Scandinavian countries celebrate spring traditions by decorating branches of deciduous trees placed in water. Have the students investigate these customs as part of social studies. Do different countries use different trees? Create decorations for your branches in the classroom. These decorations can make lovely gifts.

Freshly emerged leaves and flowers on a chuckley pear or other common Newfoundland shrub or garden plant look beautiful, especially after a long winter and they can brighten any room. As the leaf and flower buds swell and open, ask the students to describe how this makes them feel. Do the fresh green leaves remind them of spring? Name the four seasons of the year, identify characteristics of each season and compare them. If these buds formed last year, has the tree been ready and waiting for spring all this time?

Ask the students if we can manipulate how the buds open. Temperature (of the room and water), light, and the amount and quality of water are just some factors that can be varied. Positioning the branches in different parts of the classroom may also affect results. For example, if new leaves open on a branch placed in a hot window, will the leaves shrivel? Will it do better or worse if you vary the amount of water in the jar? What if the water quality varied? If we add tiny amounts of salt or oil to the water, does this affect the plant? Do you think the salt and oil spilling off roadways

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affects plants in the wild? Collect and decorate “vases” for the classroom using recycled materials. See how creative the containers and the decorations can be. The sky is the limit here.

Identification of your Plant:

Compile all the data once the leaves and/or flowers have emerged. (The plant piece will eventually die and can be discarded into a compost bin.) When analyzing the data, see if the plant can be named or identified from your observations. If not, do not worry. The main objective of this project is to learn to be skilled plant observers, not memorize names. The students will actually get to know their branch quite well.

Ask the students to speculate (i.e. hypothesize) on how the entire plant really looks. Is it tall, short, and bushy, etc? If you have photos of the plant growing outside or can bring the children to the tree or shrub, so much the better. You may find that they will get quite excited, like meeting an old friend. Play nature detectives: if you trimmed branches from several plants, let the students compare the photos to the branch to see if they can make the correct match. Compare sketches or photographs taken the first day the branches were immersed in water and compare with the plant once the leaves have emerged. Can they match them correctly?

If you cannot identify your plant, feel free to assign your own common name, based on its physical characteristics, where you found it, feedback from the students, etc. The class can even hold a vote. You can explain that all plants have two sets of names: its scientific name, which is its official name; and common names, which vary from community to community. In Newfoundland and Labrador we have many unique common names that are understood only by the local people. If you have a native tree or shrub, it will be depicted in the book “Native Trees and Shrubs of Newfoundland and Labrador” by A. Glen Ryan.

How will you know if it is native or an introduced plant? There is no simple answer to this question. If it is growing in a garden, there is a good chance the plant is not native (but there are no guarantees). Similarly, if it is growing behind your cabin, it might be native. Having said that, garden escapes are common, even from one hundred years ago, so any plant growing near an old settlement, graveyard or cow pasture could be introduced. Local gardening centers, gardening clubs and botanical gardens can help you identify your plant. Try to supply a synopsis of your data, including sketches and photographs if available to aid in identification. The good news is, you and your students will quickly become skilled observers and you will learn each plant’s identity as you go.

The Botanical Garden will be developing local resources during 2011. An excellent on-line reference source is “The Digital Flora of Newfoundland” website (<http://www.digitalnaturalhistory.com/flora.htm>)

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