



Brooklyn Children's Museum  
School Adventure Program  
**Urban Botanist**  
Pre-visit and Post-visit Activities

**Dear Teacher,**

We are excited about your upcoming visit to the Brooklyn Children's Museum, the world's first museum for children! We are looking forward to working with you and your students during your visit. The enclosed pre/post-visit materials are provided to help you prepare your students for participating in and getting the most out of the workshop. It includes learning concepts, vocabulary, discussion questions and activities that you can use before your introduction to the **Urban Botanist** program. In addition, we have included post-visit activities that will help you to reinforce and extend the learning back in the classroom.

If you have any questions about your visit or these materials, please contact Group Reservations at (718) 735-4400, extension 118. We look forward to working with you.

**Urban Botanist**

Leaves that ooze sticky glue, leaves that prick, leaves that snap shut or shy away from your touch -- visit the museum greenhouse to learn about weird and wonderful ways plants have adapted to their environments. Learn what plants and animals need to grow and thrive, then design your own plant or feed the museum's collection of carnivorous plants.

**Meets the following standards:**

- K. Unit 1: LE 4.2a: Needs of plants to live and thrive (e.g. air, water, light)  
LE 3.1c: Observe adaptations of plants
- Grade 2 Unit 3: LE 1.1b: Describe the basic life functions of plants: grow, take in nutrients, reproduce
- LE 5.2: Observe that plants respond to changes in their environment
- Grade 3 Unit 4: (Whole unit) How are plants and animals well-suited to live in their environments?
- Grade 4 Unit 1: (Whole Unit): What roles do plants and animals play in their environments?

**During the program your students will:**

1. Discuss the role of adaptation as a strategy for animals and plants to change over time to live and thrive in particular environments
2. Discover plant adaptations through hands-on investigation and observation of coconuts, cactuses, sensitive plant, African spear plants and/or carnivorous plants
3. Invent and draw a plant that's well adapted to a particular environment OR feed the museum's carnivorous plant collection

**Learning Components**

1. Unlike animals, which can run from danger or migrate away from harsh environments, plants are stuck where they are.
2. Plants use special adaptations to allow them to survive and thrive in harsh environments.
3. Plant seeds have adapted over time to travel in ways that are suited to their environment: floating, gliding, hitchhiking, etc.

**Vocabulary Words**

**adaptation:** a change made over time to better live and thrive in one's environment

**reproduce:** to create a new generation of organisms of the same kind as the parent or parents.

**resource:** a naturally-occurring material of use or value, such as fresh water, sunlight, or mineral deposits.

**Discussion Questions**

- How would we have to adapt if we all moved to a place with a different climate?
- How can the parent tree get her seeds to grow far away, so they don't compete for resources?
- What adaptations make a coconut perfectly suited to grow on a sandy island, or make a cactus suited to live in the desert?



### Pre-Visit Activities

1. Review plant parts. What is the purpose of a stem, a leaf, a flower, a seed? Read *The Tiny Seed*, by Eric Carle.
2. Start a classroom seedling garden. Start from seeds or seedlings from a hardware store or nursery. In a sunny window, plant hardy herbs (mint, rosemary, sage). Assign rotating plant care jobs, i.e. Weekly Waterer to water two mornings a week and a Plant Monitor to record observations about wilting, new leaf growth, insect problems, etc.
  - a. Use the class herb garden (or bunches of herbs from the supermarket) to experiment with blind taste tests. Can students correctly guess the tastes when they are blindfolded? Can students match a leaf's smell with its taste? Can students correctly identify an herb's taste when they pinch their noses closed as they chew? Explore the relationships between sight, touch, taste and smell. Upper grades: Discuss how humans and plants have evolved together over time to suit each other's needs.
  - b. Explore the role of sunlight in photosynthesis. Cover a few leaves with a small envelope of dark paper or plastic. Make predictions about what will happen. After a few weeks, remove the envelope to show students how the leaf has turned white. Explain how leaves use green chlorophyll to convert sunlight, carbon dioxide, and water into energy, oxygen and water vapor, and when the leaf is denied sunlight, the chlorophyll can't make energy.
3. Start a class conversation about adaptations. How have we adapted to new conditions in our families? How do we adapt to changing environments when we visit family members in other countries or other climates? Have students interview family members or neighbors about how they had to adapt to a new country when they moved to New York or to the United States.

### Extend the Learning

1. Make a class seed collection. Starting in the fall, encourage students to bring in seeds they find on the way to school. Study the varying seed forms and ask how the seed forms allow the plants to spread their seeds far and wide and make new successful plants.
2. Host a seed engineering contest. Using set materials (tin foil, paper, tape, pipe cleaners, etc) challenge students to make "seeds" to fulfill different environmental challenges:
  - a. Seeds must float across water to and move to a new island
  - b. Seeds must fall from a certain height without breaking
  - c. Seeds must catch a ride on a furry animal moving past
  - d. Seeds must travel as far as possible in the wind

Explore how real seeds have adapted to meet these challenges: Coconuts float, maple samaras "helicopter" from trees, burrs grab on to passing animals, dandelions float on passing breezes.

3. In the fall, take the class on a Sock Walk. Have each student bring in one tube sock that's lost its partner in the wash, and pull the sock over one of their shoes and pant leg. Take a class walk through the wilder parts of a local park where weeds are growing. Back in the classroom, plant the socks in soil or just fill them with soil and hang them in a window in plastic baggies. Water twice a week, and see what grows!



## ADDITIONAL READINGS

### For Teachers

Mannes, Judy, and Marsha Rehns. *Seeds of Change: Learning from the Garden*. Parsippany, NJ: Dale Seymour, 2001.

Olien, Rebecca. *Exploring Plants*. New York: Scholastic Professional, 1997.

Dietl, Ulla. *The Plant-and-Grow Project Book*. New York: Sterling, 1992.

### For Students

Carle, Eric. *The Tiny Seed*. Natick, MA: Picture Book Studio, 1987.

"How Do Seeds Travel? | Scholastic.com." *Teaching Resources, Children's Book Recommendations, and Student Activities*

*Scholastic.com*. Web. 14 Oct. 2010. <<http://www2.scholastic.com/browse/article.jsp?id=3212>>.

## PORTABLE COLLECTION SUITCASES (Rented from BCM)

Urban Naturalist: Exploring the New York Environment

Grades K to 5

By examining a squirrel, a bird, insects, and leaves collected right here in Brooklyn, students learn how to look for evidence of nature in the big city. Case includes a teacher's guide, books, binoculars, and a birdsong identifier.

**Rental fee: \$100.00 for two weeks. Please contact our Scheduling Secretary at (718) 735-4400, extension 118.**