



EDUCATORS GUIDE

Dear Educators,

The Arbor Day Foundation has created a national traveling exhibition combining its knowledge of trees and the environment with that of the Dimensions Educational Research Foundation, experts in the ways children and adults learn to make more personal connections with the world around them.

Vision Statement:

Throughout the United States there is a growing need to engage both adults and young people in opportunities to explore and appreciate their natural environment. The Arbor Day Foundation has recognized this need and has developed the Nature Explore Program in partnership with Dimensions Educational Research Foundation. Nature Explore is a comprehensive program with a cadre of components, all designed to help connect children, their families and educators with the natural world. This Traveling Exhibit has been developed as one of these Nature Explore components. Exploring Trees Inside and Out Traveling Exhibit is a new interactive experience where fun and learning about trees and the natural environment connect.

Themes:

The Traveling Exhibit is designed to provide a powerful, holistic, sensory experience designed to develop an awe-inspiring memory of participation in the interactive opportunities for both children and adults. Major themes are intertwined throughout the exhibit and allow the visitor to “Explore Trees Inside and Out”.

I. Perspectives: Seeing Things Through Multiple Lenses: Viewing nature through multiple lenses will enable the students to discriminate and interpret everything that they encounter in their environment in a richer way. The exhibit contains pieces and parts of a tree -- in larger-than-life scale -- enabling one to take a walk through the inside of the tree trunk and crawl through the veins of the leaves. In this way, the participant can actually see light filter through leaves or hear water move from the roots to the leaves. It’s amazing how far out the roots extend!

II. Sensations: Experiencing With All the Senses: Seeing through our eyes as well as through our body and senses is integrated throughout the exhibit and is fundamental to human learning and appreciation. Students will experience trees as an indicator of changing seasons, light, temperature, color and smell. An experience with changes in light makes us a part of the transformation that takes place during photosynthesis. In the “sensation” stations, touch the bark, and notice scents of cedar and the cinnamon. A blue screen activity allows more immersion—students can dress as a tree, watch how different trees move on video, imitate their movement and see their own reflections. They can crawl through a log and experience it as a habitat for other living things.

III. Trees as Community: The third theme reveals trees as a part of our daily lives. Students will begin to understand and appreciate trees for the role they play in our own “reality”. Experience trees enhancing our communities, trees as food, trees as shelter for other living things, and trees as the basis for much of the materials we use in our homes today. A construction area workshop is provided for hands-on building and creating.

Overview:

Students visiting the “Exploring Trees Inside and Out” traveling exhibit will be provided with an innovative visual-spatial experience designed largely for whole body, open-ended participation and to raise awareness and understanding of trees. Students will have the opportunity to explore and discover many aspects of trees from multiple perspectives...from the inside out...from the roots to the leaves... as a habitat for other living things... and as a resource for people.

Please note that the exhibit is not intended to be a driver of informational facts and statistics but rather an “experience” about trees that students will be able to transfer to the out-of-doors at home, at school, in the park or on a hike in the woods. We strongly encourage an outside visit to explore the trees in your community as a part of this exhibit visit.

For those educators wishing to extend learning about trees to the outdoors, two activities are included that can be used before or after a visit to the exhibit.

- ✿ **Make A Tree “Body Sculpture”** is a research-based Nature Explore Club Activity designed to strengthen observation skills and support positive personal connections with the natural world. (Recommended Activity: Allow 20 – 30 minutes)
- ✿ **The Trees Where I Live** is a more science based activity that helps children observe diversity in trees and recognize the differences between broadleaf trees and conifers. (Optional Activity: Allow two 30-minute class periods)

Also included is a summary that educators can use to introduce students to the exhibit prior to the visit as well as some open-ended questions designed to encourage students to explore more deeply during their visit to the exhibit.



**A special thanks to Roger Milliken for his generous support of
Exploring Trees Inside and Out
and for bringing this exhibit to the children of Spartanburg**



The Trees Where I Live

This activity can be used as an introduction or follow up to Exploring Trees Inside and Out Traveling Exhibit. The goal of the Exhibit is to let young children experience trees in a whole new way...from multiple perspectives. It is hoped that, as a result of visiting the Exhibit, children are inspired to take a closer look at the trees where they live and develop appreciation for the value they provide to the world.

Getting children outside to experience and explore the trees in their neighborhood or community is critical for inspiring an ongoing sense of wonder in nature and a true appreciation for trees. Before introducing more cognitive concepts, this activity takes students outside to become familiar with patterns and shapes of the trees where they live. As a result of this science-based activity, students will understand how different types of trees look, grow, and react in different conditions and seasons.

Activity

Grade Level:

Primary & Elementary Grades

Classroom Time Recommended:

One or Two 25-30 minute class periods

Objectives:

- Students will gain knowledge about the trees in their own communities and neighborhoods.
- Students will be able to identify conifer and broadleaf trees.

National Education Standards Correlation:

- Science K-4: Students should develop an understanding of characteristics of organisms.

Materials Needed:

- Handout: one leaf shape card per child
- Leaf and pine cone samples collected in advance

Advance Preparation:

- Select a nearby location your students can visit where they will find examples of several different kinds of trees. A location with a mix of conifer and broadleaf trees is ideal. If it is necessary to leave the school grounds and permission slips are required, send forms home with students in advance.
- Collect examples of a needle-like leaf, scale-like leaf, a pinecone, and several broadleaf leaves. (Tip: leaf examples hold up better if placed in plastic page protectors.)



Instructions:

DAY 1

- Take students to the pre-selected location. Explain that they are going to explore the trees where they live.
- Pass out a leaf shape card to each child
- Tell children that they are going on a leaf hunt. Point out the boundaries of where they are allowed to go.
- Explain they get to see how many examples of their leaf shape they can find in the designated area. Let them know some might find many examples of their leaf shape, some might find only a few, and some might not find any.
- Allow 5-10 minutes for children to hunt for their leaf shapes.
- Gather students back together and allow them to share their discoveries. Help the children determine what the most common leaf shapes were. What were the least common?
- Next have each child each pick a tree he or she thinks is interesting or beautiful.
 - Ask the child to make the shape of the tree leaf with their fingers.
 - Have them mimic the shape of the tree with their bodies.
 - Have them feel the texture of the bark gently with their hands.
- Bring the group together again and have the children make the shape of their special tree all together as a group.
- Explain they have just been introduced to the trees where they live.

DAY 2

- Remind students of their encounter with their community trees from the class period before.
- Explain to students that a scientific process – called taxonomy – exists that scientists use to organize, or **classify**, plants and animals. This process looks at how things are alike and how they are different to sort them into groups. Give examples by grouping your students in several different ways (i.e. by color of shirts, by height, etc.)
- Write the words “**conifer**” and “**broadleaf**” on the board. Tell students that, when scientists classify trees, they start by sorting trees into these two groups. You may wish to list the following characteristics of conifers and broadleaf trees on the board.

- **Conifers** – Point out that conifers are trees that grow their seeds in cones. Pass around the pinecone. Some conifers have leaves that look like **needles**. Some conifers have leaves that look like **scales** (tiny little leaves that overlap each other like they might see on a fish). Have students closely examine the two conifer samples. Explain that most conifers keep their leaves through the winter, which is why people often call them **evergreens**.



- **Broadleaf** – Point out that broadleaf trees grow their seeds in many different kinds of containers...fruits, nutshells, pods, etc. Broadleaf trees have thin, flat leaves that come in all shapes and sizes. Explain that most broadleaf trees are **deciduous**, which means they lose their leaves in the winter and bud in the spring. Pass around the broadleaf examples.



- Show students examples of the leaf shape cards they used the day before.
 - Ask if they can identify which card showed the conifer. How could they tell? (Needle-like leaves.)
 - Ask students if they saw more conifers or broadleaf trees on their adventures the day before.
- If possible, go back to the pre-selected neighborhood site.
 - Divide students into small groups and count the coniferous and broadleaf trees.
 - Encourage students to find at least one new thing about their tree that they had not noticed before.
- Help them make observations.
 - Where are trees planted?
 - Can they find any cones, flowers or fruits?
 - How are the leaves attached to the twig?
 - If time permits, have students make a map showing the trees they observed.

Community Forests

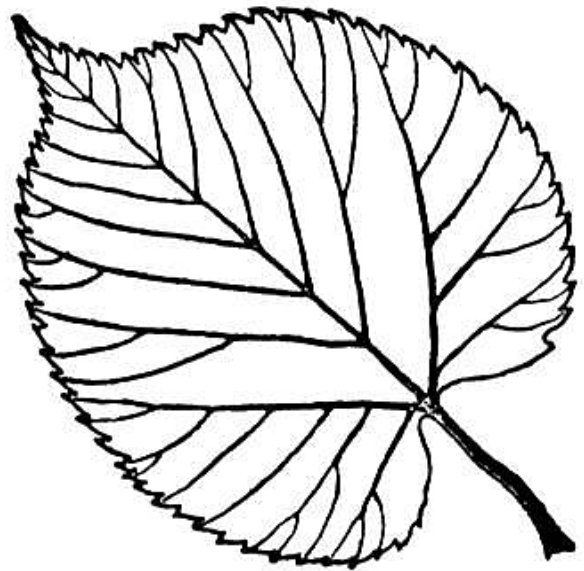
Explain to students that individual trees are wonderful and important, and, when added together, they can be seen as part of something much bigger and greater – an urban ecosystem, where many organisms live together and benefit one another:

- Every tree provides a place for many types of animals to live: songbirds, squirrels, bees, and tree frogs, just to name a few.
- As part of an ecosystem, trees provide many things that are vital to our health and well-being.
 - Trees produce oxygen for us to breathe.
 - Trees remove carbon and other pollutants from the air.
 - They create shade that makes our summer days more comfortable and reduce our need for energy to run air conditioners and fans, saving money and protecting our atmosphere.
 - Trees release water that cools the air, and they even regulate the force of rain and hold soil in place.
 - When leaves fall to the ground, they restore elements to the soil that are essential for its own growth and the growth of other living organisms.

Science Content and Enrichment Ideas

- Find an area with a variety of trees. Look for leaves on the ground. Have each student collect and study one leaf. Encourage students to get to know their leaf by studying the colors, feeling the top and bottom surfaces, feeling the veins, smelling the leaf, etc. Then gather all the collected leaves and mix them up in a pile. Let children see if they can find their leaves in the pile.
- Read *My Mother Talks to Trees* by Doris Gove – a charming story that encourages youngsters to take a closer look at the diversity of trees in their own neighborhoods.
- Take pictures of the trees on the school grounds or in the neighborhood. Do bark rubbings, gather leaf, fruit, and seed examples and display them with the photos. Have students identify these trees as conifers or broadleaf trees.
- If working with upper elementary students to help identify the trees using a tree key. Visit arboday.org/trees/wtit/ for an introduction to classification and the basics of tree identification.

The Trees Where I Live Handout













STUDENT INTRODUCTION TO THE EXHIBIT PRIOR TO THE VISIT

You will be visiting a new exhibit called Exploring Trees Inside and Out. This will be a fun day... full of adventure! We'll be exploring an imaginative world of trees where you can climb inside an acorn, dress up and watch yourself move like a tree in the wind, pretend you're a bird sitting on the eggs in your nest, and much, much more. We'll also be exploring real trees in our own city.

As you explore the exhibit, I am going to ask you to do 3 things:

1. **Use your senses.** (Ask students what the 5 senses are. Responses may vary. Write the following senses on the board as they are mentioned: touch, smell, hearing, sight and taste.)
When we get back, you'll should be able to describe to the class, in words or in a drawing, ...
 -  *A tree sound*
 -  *A tree smell*
 -  *Something beautiful about a tree that you see*
 -  *Something interesting about a tree that you touched*
 -  *Something you see that is BIGGER than in real life*
 -  *Some way the real trees are like the exhibit...some way the real trees are different from the exhibit trees*

2. **Use your imagination.**
 -  *Can you look at a tree, or part of a tree, and see it in a whole new way?*
 -  *What kinds of shapes and patterns do see?*
 -  *What animal can you pretend to be that might live in a tree?*

3. **Be respectful of the exhibit and of each other...and have fun!**



FOCUSED OBSERVATION STUDENT PROMPTS (OPTIONAL)

We encourage you to allow your students to explore and discover the exhibit on their own. But for educators who want to use the exhibit to focus on some specific science details, below are some prompts that can be used to help children explore more deeply. Since a class may be divided into smaller groups and the groups rotated through different exhibit elements, the prompts are listed by the exhibit element.

Central Climbing Tree

- 🌿 What do you notice inside the leaf? What can you hear, feel, and see? What do you think all that might represent?
- 🌿 How do you feel resting in the hammock looking up at the trees? What do you notice?
- 🌿 What can you discover inside the trunk of the tree? Describe how the system of tubes work...what goes up and what comes down?
- 🌿 How do the bark samples feel? How many different barks can you find? Can you find other trees with similar bark patterns?
- 🌿 Look at the leaves. Can you describe them? Can you find other trees with similar leaf shapes?

Dancing With Trees

- 🌿 What will you imagine you'll be? Can you move like a tree in the wind? Can you scamper up a tree? Can you camouflage yourself in the forest?

Sounds of Nature

- 🌿 Did you find a sound that was new to you?
- 🌿 What other sounds of nature do you like?

Scents of Nature

- 🌿 Did you find a smell that was new to you?
- 🌿 Are you surprised all those smells came from parts of trees?
- 🌿 What other nature smells can you think of?

Giant Acorn

- 🌿 What can you discover inside?
- 🌿 What do you notice when the little acorn starts to grow?

Wood Works

- 🌿 Why do you think this area is in the Tree Exhibit? (Wood comes from trees.)
- 🌿 What do you notice about the wood?
- 🌿 What else can you create?

Art in Nature (children may take their picture with them or place it in one of the acrylic frames.)

- 🌿 What do you think is beautiful in nature? Can you draw it?

Larger than Life

- 🌿 What was the coolest thing you saw magnified? How are all those things connected to trees?

Giant Nest

- 🌿 What does it feel like to be in a nest? What can you imagine you'd see from your nest?

Tree through the Seasons

🌳 What did you notice about the tree in different seasons?