



# Problem Solvers Activity SE 4: Tree Observations

## CHILDREN ARE LEARNING...<sup>1</sup>

### Science Content:

- Activities humans can do to help the environment

## CHILDREN ARE DOING...

### Science Practices:

- Ask questions
- Make careful observations
- Create a model

## NOTE TO TEACHERS:

**Misconception 1:** Children sometimes believe that **damage to the environment can't be remedied**.

This misconception can be connected to children's understandings that something broken cannot be fixed. To help overcome this idea, it is helpful to talk to children about the things they can do to help the environment. Throughout this activity, you can correct this misconception by talking about the positive steps the class is taking to help the environment: *Yes, you can put that paper into the recycle bin. That's a great way to help the trees!*

## MATERIALS NEEDED:

Clipboard or hard-cover book, 1 per child  
Drawing paper, 1-2 sheets per child  
Pencils/markers, at least 1 per child  
*A Tree is Nice* by Janice May Udry  
Paper scraps, at least 1 sheet per child  
Popsicle sticks, 2 per child  
Paper straws, 2 per child  
Glue or masking tape, 1 per pair of children  
Tray to hold craft materials, 1 per pair of children  
Large piece of paper (about 11"x14"), 1 per pair of children  
Child-safe scissors, 2-3 pairs  
Optional: Pillow, blanket or towel, 1 per child  
Optional: Paper towel or toilet paper tubes, 1 per child

<sup>1</sup> Adapted from the Next Generation Science Standards (kindergarten): <https://www.nextgenscience.org/>

## PREPARATION:

- Look around your outdoor play area and your immediate community (within walking distance) to find a tree that has room at its base for the children in your class to sit, stand, and observe the tree.
- **For the EXPAND activity:**
  - Prepare a bag or basket with: 1-2 sheets of drawing paper per child; pencils/markers, and a hardcover book (1 per child). You'll need to carry these with you to the location you've selected for observing trees.
  - Optional: Bring a pillow, towel or blanket for each child to sit on during the **EXPAND** activity.
- **For the EXPLORE activity:**
  - Have *A Tree is Nice* by Janice May Udry handy.
  - Prepare trays of materials for children (one tray for every 2 children). Trays should include a selection of paper scraps, 4 paper straws, 4 popsicle sticks, paper towel or toilet paper tube (optional), markers/crayons, glue or tape. Each pair of children should also receive one large piece of paper.
  - Keep the scissors handy for teacher use/assistance.

## Activity Instructions

### ENGAGE

Gather the children as a whole group.

**EXPLAIN:** Today we are going to explore trees. What do you all know about trees? *Use the questions below to facilitate a conversation about trees.*

- Can you tell me something you know about trees? *(Listen for children's use of words like **roots**, **trunk**, **branches**, and **leaves**. Use these words yourself in the conversation.)*
- Do you think a tree is alive? What makes you think so?
- Is a tree a plant or an animal? What makes you think so?
- What do we think trees need to have in order to grow?
- Think about the seeds we planted as a class. What did our seeds need in order to grow? Do you think trees need the same things to grow?

**TRY IT:** Invite the children to stand and use their bodies to become trees. Encourage them to use their legs as a strong tree trunk and their arms as the tree's branches. Their hands can be the leaves.

**SAY:** Look at all of these tall, strong trees. Can you make your leaves blow in the wind *(demonstrate by gently moving your hands and arms)*? Let's discover more about trees together!

### 5 FACTS ABOUT TREES

1. Trees need sunlight, food (nutrients), and water in order to grow.
2. Trees are a kind of plant. Trees grow from seeds.
3. Trees are alive. The living and growing parts of the tree are the leaves, buds, roots, and a tiny layer under the bark. The tree's tough outer covering of bark protects it from bugs, extreme weather, and other threats.
4. Trees make their own food—and it's a kind of liquid sugar! Trees make sugar using energy from the sun, water from the roots, and even part of the air (carbon dioxide). *(For teachers, this process is called **photosynthesis**.)*
5. Trees can live for many, many years. Trees can live longer than human beings. Some trees can live for thousands of years!

## EXPAND

- **ASK:** Let's talk about a new word: **Observe**. Have you ever heard the word *observe* before? (*Take children's ideas about what this word means.*) Observe means to look very carefully at something. For example, in our classroom, I observe that [*share something that you see in the classroom*]. We can make careful science observations to learn about the world.
- **EXPLAIN:** After scientists make observations, they can share those observations with others by drawing a picture of what they see, taking a picture of what they see, or writing down what they see. Or they can do all of those things!
- **EXPLAIN:** We are going outside today to observe trees in our community. Then we'll use our observations to draw a picture of trees. We're going to draw just what we see with our eyes—using our **observations**.
- **TRY IT:** Take the class outside – you can choose to work with the whole group or small groups. You can also complete the tree observation and drawings during outdoor play time.
  - Let children sit on towels or blankets and look at the tree. They may also like to lie on their backs and look up at the umbrella formed by the tree's branches (called the **crown**).
  - Point out and name the different parts of a tree: the **roots**, the **trunk**, the **leaves**, **branches**, and **twigs** (small branches).
  - Explain that the job of the **roots** is to collect nutrients (food) and water for the tree. Roots also hold the tree in place. The job of the **trunk** is to support the tree and move water and nutrients from the roots to every other part of the tree. You can think of the trunk like a road (or transport system) for moving food and water from the roots up to the branches.
  - Point out and **name the parts of a leaf**. The pointy end of a leaf is called the **tip**. The ridge going down the middle of the leaf vertically is called the **midrib**. The lines from the midrib to the edge of the leaf are called **veins**. Veins have an important job! They transport water and nutrients to every part of the leaf.
  - You can explain **why trees have bark**. The bark is the outer layer of the trunk. It is like a shield that protects the tree from insects, animals, and diseases. The bark also protects the tree from weather like snow, ice, or the hot sun.
  - Children may want to **touch the tree's bark, leaves, or roots**. Ask them to describe what they observe (how the tree looks and feels). You can add rich, descriptive language like: *rough, bumpy, smooth, ridged, rippled, scaly, peeling, curved, crooked, sharp, sticky (with sap), etc.*
  - **You can prompt observations** by asking questions like:
    - What does the trunk feel like? Look like?
    - What colors do you see?
    - What do you see on the leaves?
    - Do you see any birds, animals, or insects (bugs) on the tree?
- **TRY IT:** Provide children with drawing materials (crayons, pencils, etc.) and paper. Give each child a hard-backed book to press on while they are drawing outside. Give children time to draw the tree to their own ability. Follow children's lead—older children may have more sustained attention for this activity, while younger children may initially spend less time on drawing. You can help to focus their attention by asking questions ("What colors will you use for the bark? Shall we hold the gray crayon and brown crayon up to the trunk to see what color matches the best?") or by making observations ("The trunk is a little bumpy"). **Collect the pictures to help with the EXPLORE activity.**

## EXPLORE

- **SHARE:** Read *A Tree is Nice* to the class (either small or whole group). If possible, share the story outside under or near a tree. As you read, pause to ask children:
  - What is your favorite thing about trees?
  - Why are trees so important for people?
  - Why should people plant trees?
  - How can people help trees stay healthy?
- **ASK:** Does anyone know what paper is made of? (*Take children's ideas.*) Paper is made of trees. When we re-use paper, it means fewer trees are cut down to make more paper.
- **EXPLAIN:** Today we are going to re-use scrap paper to make a **model** of a tree. We can also use other art materials, like craft sticks and markers, to help us make our **model** of a tree. We will use our observation drawings to help us remember what a tree looks like.
- **DISTRIBUTE:** Distribute children's observation drawings. Place the prepared trays of art materials on tables for children in small groups of 2-3. Show children the paper scraps, craft sticks/paper straws, watercolor paints or markers, and glue or tape. Provide each pair with a large piece of paper to use for their model.
- **EXPLAIN:** You can work with your group to re-use these paper scraps in your tree model, instead of just throwing them in the trash. Talk with your group about how you want to make a model of your tree. You can use your observation drawing to give you some ideas.
- **OBSERVE:** Support children's work by asking questions, encouraging them to look at their drawings, and offer assistance with gluing/cutting as needed.
- **SHARE:** When the tree models are done, display the drawings and the tree models side by side in the classroom at child-level. Use the new vocabulary from this lesson—**observation** and **models**—when you talk about this posted work.

## REFLECT

To close the activity, bring the children back together. Use a reflective question/s - like those below - to prompt children's thinking about trees.

- What did you learn about trees today?
- What did you do to make your model? What was fun about making a model? What was tricky about making a model?
- What can you tell your grown-ups about trees?
- What is important about trees?
- What did you observe when we looked at trees outside?

**SUMMARIZE:** We practiced scientific observation today. We observed trees. Then we used our observation drawings to make a model of a tree. We reused scrap paper to make our model. Paper is made from trees so the less paper we use, the more trees we can save. Reusing paper can help save trees.

## Individualizing the Activity

### Make it more challenging:

- Observe several different trees with children and do different drawings. Let children choose which tree/drawing they want to use for their model.
- Help children label the parts of their tree. Prepare four index cards with the different tree parts written down clearly (roots, trunk, branches, leaves). Read the card and ask children to show you that part on their model. Give children the card label to copy with a pencil or marker.
- Challenge the children to use the paper scraps in creative ways. For example, help the children think about how the paper can be folded, crumpled, or twisted to create strong trunks and branches, or roots.

### Make it less challenging:

- Bring a large piece of chart paper with you to the **Expand** activity. The teacher can lead the drawing activity, while asking for children's input on how, where, and what to draw. The teacher should pause and ask questions like: "What color should I use?" "Where should I put the trunk? How long should I make it—show me on the page."
- Take photos of the trees you observed (or use photos that you have printed out) to prompt children's planning when working on tree models. Sometimes children need a realistic representation in order to make a model.
- Children may have difficulty getting started. You can prompt them by suggesting they start at the bottom with the roots: *What materials can we use for our roots?* If they aren't sure what materials to use, you can offer choices: *Does the paper or popsicle stick look more like a tree trunk? What should we use?*
- Alternatively, you might choose to make one tree model together as a group.

## MAKING CONNECTIONS ACROSS THE DAY:

- Create a classroom recycling center for paper scraps in your classroom.
- Encourage children to make outdoor observations of other trees and plants in your playground or community.
- Offer tools (like magnifying glasses) for children to make observations indoors and outdoors. Use the word **observe** when you do, so that children hear this word across the day.
- Suggest children make a **model** of a tree in the block area. This helps children understand that scientists can use different media to create models. Snap a photo of these models and post at child-level.
- At meal time, consider serving a salad one day. If possible, make the salad together as a class. Talk about how lettuce in their salads are leaves. Can they see the veins on the lettuce leaves?
- Let children participate in recycling (if safe): putting paper in the classroom recycling bin, sorting plastic containers and putting them in the center's recycling bin, etc.

## Song: *Beautiful Trees*

Model the motions suggested in the song. Encourage children to do what you do!

### Verse 1

Out in the forest there are so many trees.  
It's peaceful and still,  
Quiet canopies.

(Hand to forehead, looking around)  
(finger to lips)  
(make a big circle overhead with both hands)

I like to relax, lie down on the ground,  
Look up through the branches to see what's around.

(lie down on the floor)  
(point upwards)

### Verse 2

Under the ground are roots I can't see  
They bring up the nutrients that nourish the tree.

(tap the ground with hands)

I see the trunk at the base of the ground  
So solid, so sturdy, so big and so round

(make a big circle in front of you)

### Refrain

Trees, trees, beautiful trees  
Trees, trees, beautiful, beautiful trees...

(rock gently side to side on the floor)

### Verse 3

I feel the rough bark protecting the tree  
I look even farther, and what do I see?

(rub fingers together)  
(point upwards)

The branches reach out so far and so wide  
The leaves are so green, so blue is the sky.

(reach arms outward)

### Refrain

Trees, trees, beautiful trees  
Trees, trees, beautiful, beautiful trees...

(rock gently side to side on the floor)

### Verse 4

The sunshine is sparkling, the clouds are so white.  
I feel the wind blowing; Oh what a delight!  
smile!)

(spread fingers out to sparkle)  
(waves arms side to side;

Have you ever spent time lying down on the ground,  
Observing the trees to see what you found?

(lie still)  
(palms up like asking a question)

### Refrain

Trees, trees, beautiful trees  
Trees, trees, beautiful, beautiful  
trees...beautiful trees...beautiful trees!

(rock gently side to side on the floor)  
  
(breathe in, out, and smile!)

## Making Literacy Connections

Share the following book with children as an opportunity to continue their explorations of how humans impact the natural environment.

**Suggested Book:** *10 Things I Can Do to Help My World* by Melanie Walsh

A similar title is *Counting in Green* by Hollis Kurman (also spotlighting ten things children can do to help the environment.)

### AS YOU READ:

- Every other page gives children ideas for what they can do to help their environment (like turn off the lights when leaving a room, turn off the water while they are brushing their teeth). After each suggestion, pause and ask the children if they have ever done that action. If not, would they like to try it?
- For younger children, you may choose to only read the portion of text in large print (the simplest message). For older children, you may choose to also read the explanatory text in smaller print.
- Ask children if they know what the *tap* is. Explain that it is another word for *faucet*. Ask children if they know where the faucet or tap is in their classroom.
- On the page with the litter bin, point to and read the word *litter*. Ask children if they know this word. What do they think it means? Explain that *litter* is garbage or waste that hasn't been put in a can or bin. Ask if children have ever seen litter—where?
- On the page where the author talks about using “both sides of the paper,” you can explain that this is one way of **reusing** paper, just like the children did in today's activity.
- Ask children if they have ever walked to school or to a friend or family member's home. How did they like walking in their neighborhood?
- Pause on the page about planting seeds. If you have already completed the planting activity, remind children about their experience. Prompt them to share what they remember about planting seeds.
- On the page that shows various recycling bins, you can show children the recycling bins in your classroom or program and help them make the connection between the book and world around them.

### BUILD ON THE BOOK: MAKING TOYS FROM BOXES

1. Collect a variety of cardboard boxes for children. Offer masking tape and markers.
2. Show children the page in the book about constructing items from boxes. Ask children what they might want to make.
3. Let children lead the way and build toys, sculptures, towers or other items from the boxes. Offer assistance with cutting/taping as needed.



### All About Trees

This week, children are observing trees and learning about the different parts of a tree, like the **roots**, the **trunk**, the **branches**, and the **leaves**. Children are also learning that paper is made from trees, so recycling or reusing paper helps to save the trees.

Here are some ideas for exploring trees at home:

- Find some trees in your community. Look at them with your child. Find and identify the trunk, branches, and leaves. (Check if you see the roots.) Talk about what the two of you observe—like the colors and textures of the leaves and trunk.
- Bring some paper, crayons or markers with you when you look at trees. Encourage your child to draw the tree you are observing.
- When you get home, make a model of the tree. Using your child's drawing, talk about the different parts of the tree. Find materials at home to create a tree model. For example, you could use a toilet paper tube to be the trunk. You could use scrap paper to be the leaves and string for the crooked roots. You could cut up a straw for the branches. Be sure to help your child with gluing and cutting. When you're done, have your child tell you about the tree model they created.





## Solo para familias

### Todo sobre los árboles

Los niños observan los árboles y aprenden sobre sus diferentes partes, como las **raíces**, el **tronco**, las **ramas** y las **hojas**. Los niños también aprenden que el papel se fabrica a partir de los árboles, por lo que reciclar o reutilizar el papel ayuda a salvar los árboles.

Estas son algunas ideas para explorar los árboles en casa:

- Busque algunos árboles en su comunidad. Obsérvelos con su hijo. Busque y nombre el tronco, las ramas y las hojas. (Compruebe si ve las raíces). Hable de lo que ambos observan, como los colores y las texturas de las hojas y el tronco.
- Tenga a mano papel, lápices de colores o marcadores cuando están observando los árboles. Invite a su hijo a dibujar el árbol que está observando.
- Cuando lleguen a casa, hagan una maqueta del árbol. Utilizando el dibujo de su hijo, hable de las distintas partes del árbol. Busque materiales en casa para crear la maqueta del árbol. Por ejemplo, puede utilizar un tubo de papel higiénico como tronco. Puede utilizar papel de desecho para las hojas y cuerda para las raíces torcidas. Puede cortar una pajita para las ramas. Asegúrese de ayudar a su hijo a pegar y cortar. Cuando haya terminado, pídale a su hijo que le hable de la maqueta de árbol que construyó.

