

Problem Solvers Activity SE 6: What Is the Wind?

CHILDREN ARE LEARNING...¹

Science Content:

- Wind is air in motion.
- Air is all around us, even though we can't see it.
- The force of the wind can move objects and things.

CHILDREN ARE DOING...

Science Practices:

- Make observations
- Notice patterns in the natural world
- Explore cause and effect
- Collect and analyze data
- Make predictions
- Use a model (to represent relationships in the natural world)

MATERIALS NEEDED:

One small tray (with sides) per child and one for teacher demonstration. You can substitute shallow boxes, like the top of a shirt box. The goal here is to contain the painting experiment children will be doing within the box (see the **EXPAND** section).

One straw per child (reusable plastic straws are ideal)

One small plastic cup per child

Liquid watercolor paint

One eye-dropper

One piece of paper (that fits inside the tray/box) per child

Small electric fan or hairdryer

Open Ended Materials—for the wind experiment:

- Ball (e.g., tennis ball or wiffle ball)
- Paperback children's book
- Toilet paper tube
- Wooden block
- Feather

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

- Tissue
- Scarf (light, silky) or plastic grocery bag
- Paint or glue bottle
- Stapler
- Tray to carry these materials
- 1 piece of chart paper
- Red and green markers

PREPARATION:

- **For the EXPAND activity:**
 - Children will be doing a painting project. Prepare a tray/box for each child with: a piece of paper inside the tray, a small cup filled with liquid watercolor paint, and a straw. Prepare one tray of materials for the teacher demonstration as well. Keep the eye-dropper close by for teacher use.
- **For the EXPLORE activity:**
 - Have the fan or hairdryer handy (only for adult use; keep out of children's reach when activity is complete). Place the testing materials (ball, book, toilet paper tube, block, feather, tissue, scarf, paint bottle, stapler) on a tray.
 - Prepare the chart paper by making a table with two columns, like the one below. Have tape available to hang it at the children's level. Keep the markers handy.

Our Wind Observations	

Activity Instructions

ENGAGE

Gather a small group of 4 children in a circle on the floor. (Note: Groups of 6 children work well if you are teaching 4-year-olds. Adjust materials as needed.)

ASK: Today we are going to be Problem Solvers and investigate the wind. What do you all know about the wind? Have you ever been outside when it's windy? What happens?

EXPLAIN: Invite the children to share their experiences with and knowledge about the wind. Additional discussion questions, if needed, are below:

- Have you ever seen the wind blow something outside (a leaf, a branch, a piece of paper, a flag, your hair)?
- What does the wind feel like?
- What sound does the wind make?
- How can you tell if it's windy outside if you look out the window?
- Do you like the wind? Why or why not?

EXPLAIN: Today we are going to discover more about what the wind is and what it does. We'll learn more about how the wind moves the things it touches.

EXPAND

ASK: Let's look out the window and see if we can tell if it's windy. (*Ask children how they can guess if it's windy or not outside—for example, are branches moving? Is a flag shaking on a flagpole or leaves moving along the grass?*)

EXPLORE: Can we see the wind? No? But then how do we know the wind is there? (*Explore children's thoughts about how they can sense the wind's presence—for example, by feeling it on their face or hair, or by seeing it move leaves or branches.*)

EXPLAIN: The wind is air that's moving. Air is all around us, even though we can't see it.

EXPLAIN: Today we're going to explore ways that wind works. We are going to make some windy art to see how the wind moves the air.

Take out the demonstration tray you prepared with watercolors, eye-dropper, straw, and paper.

DEMONSTRATE: Watch me make some windy art. Here's what you'll do.

- First, I'm going to use my eye-dropper to get some watercolors. I'm going to drop the paint in a little puddle on my paper.
- Then I'll get my straw. I'm going to blow air from the straw onto your hand and you tell me when you feel the air. We can't see the air but when it blows on our skin, we can feel it! (*Gently blow air onto each child's hand.*) Remember, wind is air in motion.
- We are going to make our own wind, by blowing air through the straw.
- Now I'll hold the straw above the paint. See—it's not touching the paper. Now I'm going to blow and make wind! (*Blow.*) Watch what happens! What did you see? (*The paint moves, is blown, and spatters all over the page.*)
- You can also try different ways to blow your paint. You can blow hard, or you can blow softly. See if the paint moves in different ways.

DISTRIBUTE: Give each child a prepared tray of materials.

- Encourage children to practice blowing OUT the straw before they begin. Show them they can hold their hand up at the end of the straw to see if they are blowing OUT, instead of sucking in.
- Use the eyedropper to place a generous drop of paint on each child's paper.
- Encourage the children to blow the straw from different directions (by moving to all sides of the tray to blow on their paint) and notice how the paint moves in different directions based on where they are standing/blowing.
- Remind children to experiment with blowing hard and with blowing softly to see if there is a difference in how the paint moves.

TEACHER'S NOTE

If you are working with toddlers (age 2 ½ to 3 years), you can do this activity with them, blowing through your straw at the same time they are. Children this age are still learning how to use a straw so may need your co-participation.

ASK: As children work on their windy art, encourage them to share their experiences and observations by using questions like those below:

- What did you see happen when you blew on your paint?
- When we blow through the straw, the air is in motion. What happens to the paint?
- What happens to the paint when you blow as hard as you can?
- What happens to the paint when you blow softly?
- What did you notice when you blew on the paint from different directions? *(Point out how the paint spatters change based on where children are standing when they blow through the straw. Help children try this on their own.)*

SUMMARIZE: Highlight the points below:

- We discovered that wind is air in motion.
- When we move the air by blowing through the straw, the paint is pushed across the page. This is what happens when the wind blows outside and moves things like flags, leaves, and branches.
- We found out that the harder we blow, the farther the paint moves.
- We also learned that the paint will move in the same direction as the air.
- Now we are going to do some more exploring about how the wind moves objects.

EXPLORE

PREPARE: Hang the prepared chart paper up where children can see it during the activity.

EXPLAIN: Now, we're going to explore what the wind can move! I have some materials here *(show children the prepared tray)*. Today we are going to test each of these materials to see if the wind can move them. You will each have a turn to test our materials!

SHOW: Problem Solvers, we are inside – how will we get any wind? I have a fan today to make some wind inside. *(Show children.)* Are you ready to feel the wind from our fan? Do you feel the moving air? Wind is air that's in motion! *(Turn the fan on briefly so children can feel it.)*

TRY IT: With the fan off, give each child a turn to choose a material to test.



- Have the child show the material to peers.
- Ask the children to think about this material (it's size, weight, etc.) and predict whether the wind can move it.
- Ask the child to place the material on the table about 18" away from the fan. Turn the fan on briefly to test whether it will move.
- Ask children what they observed: Could the wind move this [object name]?
- Read the title on the chart paper. Record children's observations on the chart (see sample below). On one side of the chart, draw a simple image of the object. On the other side of the chart, write YES in **green** or NO in **red** to indicate whether the wind could move the object.

TEACHER'S NOTE

The book is an interesting object to experiment with, because if the book is set flat on the table, the fan will not move it.

But what if you show the children how to stand the book up? Can the wind knock it down then?

Often the answer is yes, if it's light enough! This is because the force of the wind pushes the side of the book when it's standing upright, like how the wind pushes a sail to move a sailboat. The wind "slides over" the book that's lying flat on the table.

Our Wind Observations		
Toilet Paper Tube		Yes
Wooden Block		No

REFLECT

To close the activity, use a reflective question/s - like those below - to prompt children's thinking about the wind.

- What did we discover about the wind?
- What do you think made it easy for the wind to move (the toilet paper tube, feather, scarf, tissue)?
- What do you think made it hard for the wind to move (the block, the book, the paint bottle, the stapler)?
- Which made stronger wind—the fan or blowing through our straws? What makes you think that?
- What will you tell your grown-ups about the wind today?

SUMMARIZE:

- Today, we discovered that the wind is air in motion.
- The wind can apply a force to objects and move them.
- The weight of an object—how heavy it is—affects whether the wind can move an object. The lighter an object it is, the more likely it is that the wind can move it.
- The strength of the wind matters too. If the wind is very, very strong, it can move even large objects, like a tree. Today, the wind from our fan was strong enough to move some things but not others.

Individualizing the Activity

Make it more challenging:

- In the **EXPLORE** activity, put children in pairs and give them each a paper fan. Let them test the materials by making “wind” with the paper fan. Help them discover that the force of the wind (strong in the case of the electric fan and weaker in the case of the paper fan) determines what objects move or don’t move.
- Explore wind direction by changing where the fan is pointing to see if it can still blow down the testing objects. Ask children to show you where to position the fan in order to blow down the various objects.
- In the **EXPLORE** activity, make smaller versions of the chart and let pairs of children fill it in themselves with a green line for YES and a red line for NO.

Make it less challenging:

- Simplify the **EXPAND** activity by focusing on just one learning objective: helping children see the connection between wind (their breath) and the movement of the paint.
- In the **EXPLORE** activity, omit the charting portion of the activity.

MAKING CONNECTIONS ACROSS THE DAY:

- Give children scarves to take outside on a windy day and a calm day. Notice the force (strong or weak) of the wind. By holding scarves in the air, see if children can discover the direction the wind is coming from. Let children explore the wind with the scarves.
- Place paper fans and the set of “testing materials” from this activity in a free play center. Let children add items to the testing materials to see how new objects behave in the wind.
- If you discuss weather in your morning circle, let children take turns looking out the window to see if it is windy. Point out how the wind can be helpful (keeping us cool or blowing the sails on a sailboat) or harmful (in big storms, blowing down branches/trees or power lines).

Song: *Dancing in the Wind*

Materials Needed: Room to move freely in one spot and around the room

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

Verse 1

Take a look outside.	(Hand over forehead, look out the window)
Can you see the trees?	(Arms up like a tree)
Dancing oh so gently	(Wiggle arms and hips)
in the breeze?	

Their big leaves shake and quake	(Wiggle fingers like leaves)
Like little hands saying hello!	(Wave hello)
The branches bend and sway,	(Move arms like branches)
Sometimes fast, sometimes slow	(fast and slow arms)

So pretend that you're a tree	(Arms up like a tree)
Rooted in the ground,	(Firmly "plant" feet on the ground like the trunk)
Waving your green leaves	(wave arms and hands)
all around.	

Verse 2

Take a walk outside.	(Walk around the room)
Can you feel the wind?	(Rub arms together)
Our kites blow up and down	(Move body up and down
And round again.	and around)

Bobbing, swaying in the wind	(Model moving around room
Kites wiggle to and fro.	moving body in curvy pathways
Their tails all slip and slither	up, down, around like a kite)
Here and there, as they flow.	

So pretend that you're a kite	(Continue moving as before
Dancing on a string,	encouraging children to move like you)
Riding on the wind	
In early spring.	

Or pretend that you're a tree	(Stop and "plant" your feet on the ground)
Rooted in the ground,	
Waving your green leaves	(Wave arms and hands around like tree branches,
all around...all around...all around.	strong, then slower, then stop)

Making Literacy Connections

Share the following book with children as an opportunity to deepen their understanding of the wind.

Suggested Book: *Gilberto and the Wind* by Marie Hall Ets

AS YOU READ:

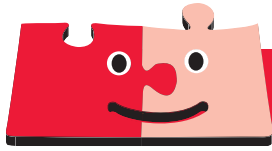
- **Note:** The main character in this story refers to the wind as a person. This may be confusing for children. You can help to prepare them by explaining that Gilberto is talking to the wind like it's his friend. The wind is not *really* a person; Gilberto is just pretending. **For younger children who might be confused**, you can tell the story in your own words, using the illustrations as a guide.
- When the wind whispers, "You-ou-ou," can the children whisper like the wind too? What sound do they think the wind makes?
- When the wind blows Gilberto's balloon away, how do you think he feels? Have you ever lost a balloon? How did that feel?
- Have you ever seen clothes on a clothesline? What do you think happens when wet clothes are in the sun and wind?
- Notice how the force of the wind could blow the gate. But when Gilberto gets on, the gate weighs too much and the wind can't move it—just like in today's activity, some objects are too heavy to be moved by the wind.
- Gilberto sees the wind blow apples down from the tree. What else can the wind blow down from trees (leaves, branches)? Tell us about a time you've seen the wind blow trees—what happened?
- Have you ever experienced a windy storm? What was that like? How did you feel? (*Be sensitive and responsive to children who may have encountered severe weather such as hurricanes or tornadoes.*)
- Wind is part of the weather. Sometimes it is a windy day, sometimes there is no wind at all—like when Gilberto takes a nap with the wind. What is the weather like today?

BUILD ON THE BOOK: BUBBLES IN THE WIND

Materials: Bubbles and bubble wands, enough for each child to have some

On a windy day, go outside and blow bubbles with the children just like Gilberto does. Can the children chase their bubbles as they are pushed away by the wind? Explore how the wind applies force to the bubbles and moves them through the air. You can use the prompts below for this discussion:

- Is the wind moving your bubbles? Where are they going?
- What happens to your bubbles if you stand facing the wind?
- What happens to your bubbles if you stand facing away from the wind?
- What happens to your bubbles when there is NO wind?
- Can you find a place to stand where you are hiding from the wind? What happens to your bubbles then?



What Is the Wind?

This week, children learned that the wind is moving air. The wind can move objects. Objects that are lighter are easier for the wind to move. You can help children learn about the wind at home by trying the activities below.

- **Experience a windy day together:** Go outside with your child on a windy day. Take a light scarf or pillowcase with you. Let your child hold the scarf up in the wind, run with it like a kite, and notice the direction and strength (strong/weak) of the wind.
- **Test the power of the wind.** Gather a toilet paper tube, tissue, fork, stuffed animal, and paper cup. Try blowing on each item or using a fan made of paper to make “wind.” See whether the wind can move each object. Talk about how the wind is air in motion—and, if the wind is strong enough, it can move objects.
- **Use a straw to make wind.** Using a straw, show your child how you can blow a tissue across the table. Give your child a turn to blow through the straw and blow the tissue too. Maybe you can have races to move the tissue the length of the table. Explain that when we blow through the straw, the direction of the air (like the wind) affects the direction of the tissue.





Solo para familias

¿Qué es el viento?

Esta semana, los niños aprendieron que el viento mueve el aire. El viento puede mover objetos. Los objetos más livianos son más fáciles de mover por el viento. Puede ayudar a los niños a aprender sobre el viento en casa con las siguientes actividades. :

- **Vivan juntos un día con viento:** Salga con su hijo un día de viento. Llévase una bufanda ligera o una funda de almohada. Deje que su hijo levante la bufanda al viento, que corra con ella como un papalote y que se fije en la dirección y la fuerza (fuerte/débil) del viento.
- **Ponga a prueba la fuerza del viento.** Reúna un tubo de papel higiénico, un pañuelo de papel, un tenedor, un peluche y un vaso de papel. Trate de soplar sobre cada objeto o de agitar un abanico de papel (hecho con papel doblado) para hacer "viento". Compruebe si el viento puede mover cada objeto. Explique que el viento es aire en movimiento y que, si es lo bastante fuerte, puede mover objetos.
- **Utilice una pajita para crear el viento.** Con una pajita, muéstrela a su hijo cómo puede mover un pañuelo de papel por la mesa. Dele a su hijo un turno para soplar a través de la pajita y soplar también el pañuelo. Tal vez pueda hacer una carrera moviendo el pañuelo a lo largo de la mesa. Explíquele que cuando soplamos a través de la pajita, la dirección del aire (como el viento) determina hacia dónde va el pañuelo.

