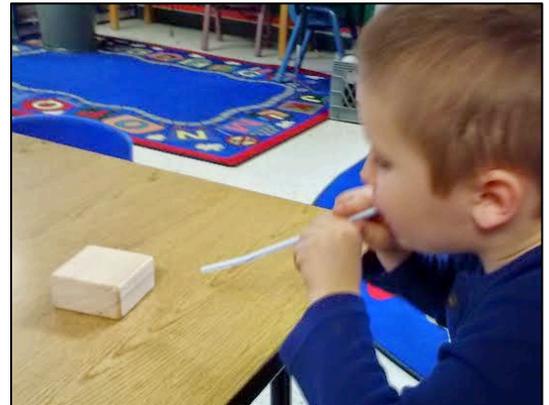


# Physical Science: Air and Wind

## Activity Overview

Children **explore** how air can be used as a force to move things. They **predict**, **experiment** and **compare** what happens when they use straws and other tools as air pushers to move small objects. As they **investigate**, they notice **cause and effect** relationships related to the weight and shape of the objects and the distance they can be moved using different tools.

\*science process skills are in bold



## Underlying Science Concepts:

- Air is all around us
- Wind is moving air
- Air can be used as a force to move objects

## Materials:

- Assorted small objects for air blowing (Provide objects of various weights and shapes, including a few that won't move. See suggestions in the table below.)
- Empty squeeze bottles and tools for air pushers (See suggestions in the chart below.)
- Masking tape (in several assorted colors, if available.)
- Markers
- Butcher paper or easel paper

## Getting Ready:

Collect assorted objects and tools for testing. Suggestions:

Suggestions for Objects	Suggestions for Air Pushers
<ul style="list-style-type: none"><li>• Feathers</li><li>• Pennies</li><li>• Pom-poms</li><li>• Cardboard tubes</li><li>• Small wooden blocks</li><li>• Small toy animals</li><li>• Pieces of streamers or tissue paper</li><li>• Plastic spoons</li><li>• Cotton balls</li><li>• Packing peanuts</li></ul>	<ul style="list-style-type: none"><li>• Straws (you can label them with tape and children's names)</li><li>• Empty squeeze bottles (such as emptied and cleaned ketchup bottles, dish soap bottles, etc.)</li><li>• Turkey basters</li><li>• Balloon pumps</li><li>• Paper fans</li><li>• Syringes</li></ul>

## → Engage

- Tell the children that they will be exploring air. Encourage them to share their prior knowledge and experiences with air by asking them questions such as:
  - *What do you know about air?*
  - *Can you see air? Feel it? Hear it?*
  - *Why is air important?*
- Ask the children how they know that the air is there if they can't see it? Have them wave their hands like fans in front of their faces. If the children have not already mentioned it, ask the children what air is called when it's moving (wind).
- Ask them how they know when the wind is blowing outside. Ask them what kinds of things they've seen move in the wind.
- Show the children a cotton ball. Place the cotton ball on the floor in front of you and ask the children how you can get the cotton ball to move without touching it. Children will likely tell you to blow the cotton ball. Say something like, "Oh! I can use the air from my body like wind to push the cotton ball." Blow on the cotton ball while the children watch how far it moves.
- Explain to the children that they are going to explore with air and how it can be used to push or move objects.
- Introduce the different tools that they can use as air pushers (see suggestions on page 1). Ask them for their ideas about how each air pusher can be used to make wind. Squeeze one of the bottles so that the air moves your hair, or direct it at the children's hands so that they can feel the air coming out of the bottle.
- Show the children a collection of items, some light and some heavier, that they will be exploring. Ask them to predict which objects the air will, and will not, be able to push and why. You may choose to record their predictions.

## → Explore

- At the activity tables, invite children to choose an object and an air pusher and try to blow the object across the tabletop. Allow children to freely explore with the different objects and tools.
- As the children test different objects and air pushers encourage them to predict, observe, compare, and talk about their discoveries.
- Ask the children questions such as:
  - *How can you get the object to move?*
  - *Which objects do you think will move the farthest? Why?*
  - *Which objects do you think will be difficult to move? Why?*
  - *Did the tool you use make a difference?*



## More Ways to Explore Air

Here are some suggestions for activities and materials to enhance the children's explorations and play over a longer period of time. The more experiences children have to observe and play with air and how it moves, the more they will discover about the properties of air and how it can be used as a force.

**Tracks:** Draw a path on a large sheet of paper and try blowing through a straw to make an object follow the track. Children will have fun exploring with changing the pressure and direction they are blowing to try to get the object to stay on the path. Note: straws are recommended for this activity, because they provide the most focused stream of air. However, you could provide a variety of tools for the children to test and compare or even have them just try blowing directly on the object.

**Races:** Make two parallel lines (drawn on butcher paper, or made with masking tape) as the race track. Children can race a friend to see who can move an object from one end of the line to the other first, just using the force of air! Provide a variety of tools and objects for children to choose from. Children can race objects across the table to discover which air pushers and objects are best for racing.

**Recording:** Define a starting line, and then mark several lines with colored tape or markers. Children can choose an object, place it on the starting line, and select an air pusher. Children should use just one push (or blow) of air to see how far the object moves. They can measure, record, and compare how far different objects travel depending on which air pusher they chose to use.



## → Reflect

- Encourage the children to share about their experiences using the different air pushers and objects. Ask them questions such as:
  - *What did you try? What happened?*
  - *What did you discover?*
  - *Which was your favorite air pusher? Why?*
- If children are interested, let them find objects in the classroom to further experiment with.
- Sing one of the songs or poems about the wind on page 4.
- Read a book about the wind. See suggestions on page 4.

## Ideas for Further Explorations

- Make kites using paper bags, streamers, and string. Children can run with their kites and watch the streamers as they flutter in the wind.
- Make "wind-catchers" by tying each end of a piece of yarn to the two handles of a plastic grocery bag. Take it outside on a windy day to "catch the wind".
- Make air paintings using a straw as an air pusher to blow liquid watercolors or watered-down paint on a piece of paper. Use the straw to blow the paint across the paper from different directions. The liquid will flow and mix with other colors.
- Play with air by making bubbles! Children can explore making bubbles both by blowing air from their bodies, and by waving their bubble blowers to capture air.
- Children can make sailboats out of foam board and then blow across the surface of the water table (or tubs of water) using different air pushers.

## Books about Air and Wind

- *Like a Windy Day* by Frank Ash
- *The Wind Blew* by Pat Hutchins
- *Gilberto and the Wind* by Marie Hall Ets
- *Who Took the Farmer's Hat?* by Joan L. Nodset
- *Feel the Wind* by Arthur Dorros
- *I Face the Wind* by Vicki Cobb
- *Kite Flying* by Grace Lin

## Key Vocabulary

During the activities integrate the words below into your conversations. Children's vocabulary will build with practice.

- Air
- Wind
- Heavy
- Light
- Push
- Blow

## Songs and Poems

### Riding the Wind

(Tune: "5 Little Ducks Went Out to Play")

I sometimes sit and wish that I  
could jump up high into the sky.  
And ride upon the breeze and go  
whichever way the wind did blow!

### Wind Poem

Feel the strong wind, it almost blows me down.  
Hear it whistle through the trees and all around.  
Try to see the wind as it howls and blows.  
But what does the wind look like? Nobody knows.

### The Wind

The wind came out to play one day,  
It swept the clouds out of its way,  
It blew the leaves and away they flew,  
The trees bent low and their branches did too.  
The wind blew big ships in the sea,  
The wind blew my kite away from me.

## Background Information for Teachers

Earth's atmosphere covers our planet in air. Thanks to Earth's gravity, the air is most dense near the surface of the planet. Air is actually made up of a mixture of several different types of colorless gases. The air is approximately 78% Nitrogen, 20% Oxygen, and about 2% of other gases such as carbon dioxide. Air is vital to the survival of life on Earth. Humans and other forms of life need oxygen to survive. All things that fly need air. Air has power to push and pull on birds, kites, planes, etc. Simply put, wind is moving air. It is caused by differences in air pressure within our atmosphere. Air under high pressure moves toward areas of low pressure. The greater the difference in pressure, the faster the air flows. Wind is invisible, just as air is. However, we can see the things that are moved by wind, and the effects of it. Wind can do damage when it blows too hard. It can also help us by providing wind power, which is an important source of renewable energy.