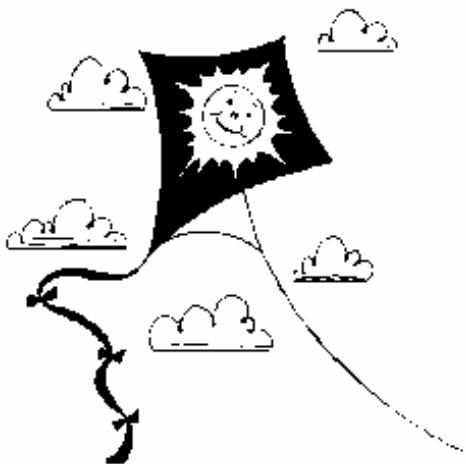




Science/Technology

Making Air Work



OBJECTIVES

Stimulate curiosity about how air power works. Learn how air can be used to make our lives easier.

GROUP SIZE

6 to 8 children per adult volunteer.

TIME FRAME

This lesson is designed for a group meeting between 30 and 60 minutes.

BACKGROUND

Help children become more aware of what a wonderful resource air is. Encourage them to discover for themselves the many different jobs air can do — not only to make our lives easier, but to help us have fun, too! The hands-on activities will help them experience firsthand how valuable air can be.


LIFE SKILL AREAS

There will be opportunities for decision-making and building social skills when working together in teams as well as in group discussion and sharing. Eye-hand coordination and fine motor skills will be promoted by cutting and using markers to decorate the pinwheels.

HELP FOR VOLUNTEERS

Try these suggestions:

- Choose one or two of the following activities from each section.
- Try to create appropriate atmosphere by decorating the room with posters and props, using costumes related to the activity, pre-meeting preparation by the 4-H members, thinking about special seating arrangements, and playing back-ground music.



Molly Gregg and Chuck Hill,
4-H Specialists

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Getting Started

ACTIVITY *What Am I? Riddles About Air and Wind* (4 - 5 minutes)

Materials: none.

Invite the children to sit in a circle around you. Explain that air is everywhere and there are lots of things air can do. Ask them to put on their thinking caps and try to figure out these riddles about air and wind:

- I use wind to fly through the sky; I have a long tail and a very long string. What am I?
(A kite)
- I am a machine that uses warm air to tumble wet things inside me around so they will dry. What am I?
(A clothes dryer)
- I am part of a living thing and depend on the wind to blow me to a new place so I can grow. What am I?
(A seed)
- I float through the clouds. I am very big and colorful and full of warm air. I use the wind to take me places. What am I?
(A hot air balloon)
- Sometimes you see me in fields. I have paddles that turn in the wind. What am I?
(A windmill)
- When I am plugged in and turned on, I help keep people cool. What am I?
(An electric fan)
- I cruise up and down rivers and lakes and use wind power to get me where I'm going. What am I?
(A sailboat)
- I am an electric appliance that people use in the bathroom. I am very loud and blow something to get it dry. What am I?
(A hair dryer)
- I make a loud noise when air is blown in me. Lifeguards and sports coaches some-times wear me around their necks. What am I?
(A whistle)
- I can be seen up in the sky. I use jets of air and gasses under pressure to push me where I'm going. What am I?
(A jet airplane)

- I can be found in the kitchen. I am used to make a special treat by using very hot air. What am I?
(A hot air popcorn popper)

Ask the children if they can think of other things the wind does.

ACTIVITY *Spinning Pinwheels* (7 - 9 minutes)

Materials: pinwheel patterns, scissors, markers, pins, straws, tape.

Give each child the materials needed to make a pinwheel. Ask them to cut the pinwheel out, cutting only on the solid lines. Invite them to decorate their pinwheel with markers. Encourage them to use bright colors and to cover all of the paper on both sides. Because the paper will be folded, geometric designs work better than drawing people or things. As the children finish decorating, help them bend the blades into the center, on the fold lines. Remember not to crease the blades or the pinwheel will not spin. Help them place a straw directly in the back of the center where the four corners meet. While they hold it, stick a pin through the corners and the straw. Bend the point down and wrap with tape. Now take it for a spin! After the children have made a "test spin," talk about the following:

- Sometimes pinwheels don't work at first. What might make this happen?
- How many different ways can you think of to get it to spin? (Blow on it, wave it through the air, hold it in the wind, put it in front of a fan)
- Why do you think the pinwheel can spin?
- Can you make your pinwheel spin in the opposite direction? How?
- Do you think the pinwheel will spin if only two wings are pinned down? Try it and see.



ACTIVITY Song *"The Strong and Blustery Wind"* (7 - 9 minutes)

Materials: none.

Have the children form a circle. The circle should rotate as the children sing. Randomly fill in a child's name at the appropriate time. The child then "blows away," into the center of the circle. Repeat until all children are in the middle.

The Strong and Blustery Wind
(Sung to the tune of "The Farmer in the Dell")
 The strong and blustery wind,
 The strong and blustery wind,
 It chose (child's name) today, and blew him
 (her) away,
 The strong and blustery wind.

DIGGING DEEPER

ACTIVITY *Balloon Rockets* (6 - 8 minutes)

Materials: six foot pieces of string, scissors, balloon, straw, tape.

Explain that you are going to try an experiment using air under pressure. Divide the children into teams of three. Give each team the materials needed. Have one team member blow up the balloon and pinch it closed (do not tie it). Have the other two team members lace the string through the straw. (If the string is moistened and straightened, it will thread more easily). While the first team member continues to pinch the balloon closed, the other team members will tape the straw (with the string through it) lengthwise to the top of the balloon. The two team members should each take an end of the string and pull it taut. The child pinching the balloon closed can now slide it (pinched end first) down to the end of the string. Now the fun begins! Let the balloon go and see what happens! After each team has had an opportunity to launch the balloon rocket, discuss the following:

- Did the balloon do what you thought it would?
- If your rocket had problems, were you able to repair it?
- Did anything different happen when the balloons had different amounts of air in them?
- What do you think would happen if only one end of the string was being held?
- What would happen if you blew a balloon up (with no straw or strings) and let it go?

ACTIVITY *Blow Painting* (6 - 8 minutes)

Materials: white construction paper, straws, spoons, liquid tempera paint, cardboard box lid (8 1/2 " x 11" or larger), newspaper.

Demonstrate for the children how air can be used to create a blow painting. Place a piece of paper in the box lid and drop a spoonful of paint on the paper. Using a straw, carefully blow the paint around the paper. Invite the children to create their own blow painting. Remind them to use only a small spoonful of paint, and that straws may be used for blowing paint only on the inside of the boxes. Encourage the children to experiment with different colors, strength of air blown, placing the paint in different spots on the paper and the direction that the air is blown from.

As the children create their works of art, ask them the following questions:

- What do you think might happen if you blew through two straws?
- Can you think of a way to make a new color from two colors already on your paper?
- What happens if you put spoonfuls of paint in two different places on the paper?
- Can you cover the whole page?
- Use your imagination. Can you "see" anything in your painting?
- What happens when you blow without using a straw?

Note to the Volunteer: Have the children make extra paintings to use in an Art Exhibit.



LOOKING WITHIN

ACTIVITY

Creative Movement - Moving in the Wind

(5 - 7 minutes)

Materials: a record or tape player and a recording of classical music; "Escape from Witch Mountain," from Disney's "Fantasia" is a good choice.

Set the stage by having the children imagine they are trees in the forest. Begin the music. Ask them to pretend they are blowing in the wind. Use the tempo of the music to determine how the wind is moving. Ask the children the following questions:

- How would a tree move in a gentle breeze?
- What if the rain began to fall and the wind became stronger?
- How would trees look in a tornado?

ACTIVITY *Hot Air Popcorn* (9 - 10 minutes)

Materials: hot air popper, popcorn, large bowl, napkins, extension cord.

Use this snack time activity as an opportunity to find out how hot air can make a great treat!

Gather the children in a circle around the popcorn popper. Let the children help prepare the popcorn. As the popper warms up, let the children feel the warm air. As the popcorn is popping ask the children why they think the corn pops (when the moisture in the kernel of corn heats up, it explodes). After the corn has stopped popping, examine the bowl of popcorn. Are there any un-popped kernels of corn? Ask the children why they think it didn't pop (some kernels have too little moisture to pop and because they are not heavy like the other kernels, the hot air is able to blow them out of the popper). As the children are eating, ask the following questions:

- How do you think this hot air popper works? (A fan blows very hot air on the popcorn causing it to move around until it is hot enough to pop and light enough to be blown into the bowl.)
- What other ways are there to make popcorn?

- Why do you suppose people think using a hot air popper is better than other kinds of poppers? (No oil is needed; less fat and is healthier.)

Reaching Conclusions

After the children have finished their popcorn, have them join you in the following finger play about wind:

The Wind Came Out to Play Today

The wind came out to play today
(stand up quickly from a crouched position)

It swept the clouds out of its way
(wave arms in the air)

It blew the leaves and away they flew
(flutter fingers)

The trees bent low and branches did too
(bend over, stretch arms)

The wind blew the big sailing ships at sea
(stand up, wave arms in the air)

That wind blew my kite away from me.
(look up and wave good-bye)

Reading Adventures

This listing of reading materials can be used by you as background, or for sharing before to set the stage for the lesson or for sharing afterwards to reinforce the lesson.

Gilberto and the Wind, by Marie Hall Ets, 1963

The Wind Blew, by Pat Hutchins, 1974

The Hat, by Tomi Ungerer

When the Wind Blew, by Margaret Wise Brown

The Winds That Blow, by Brenda Thompson

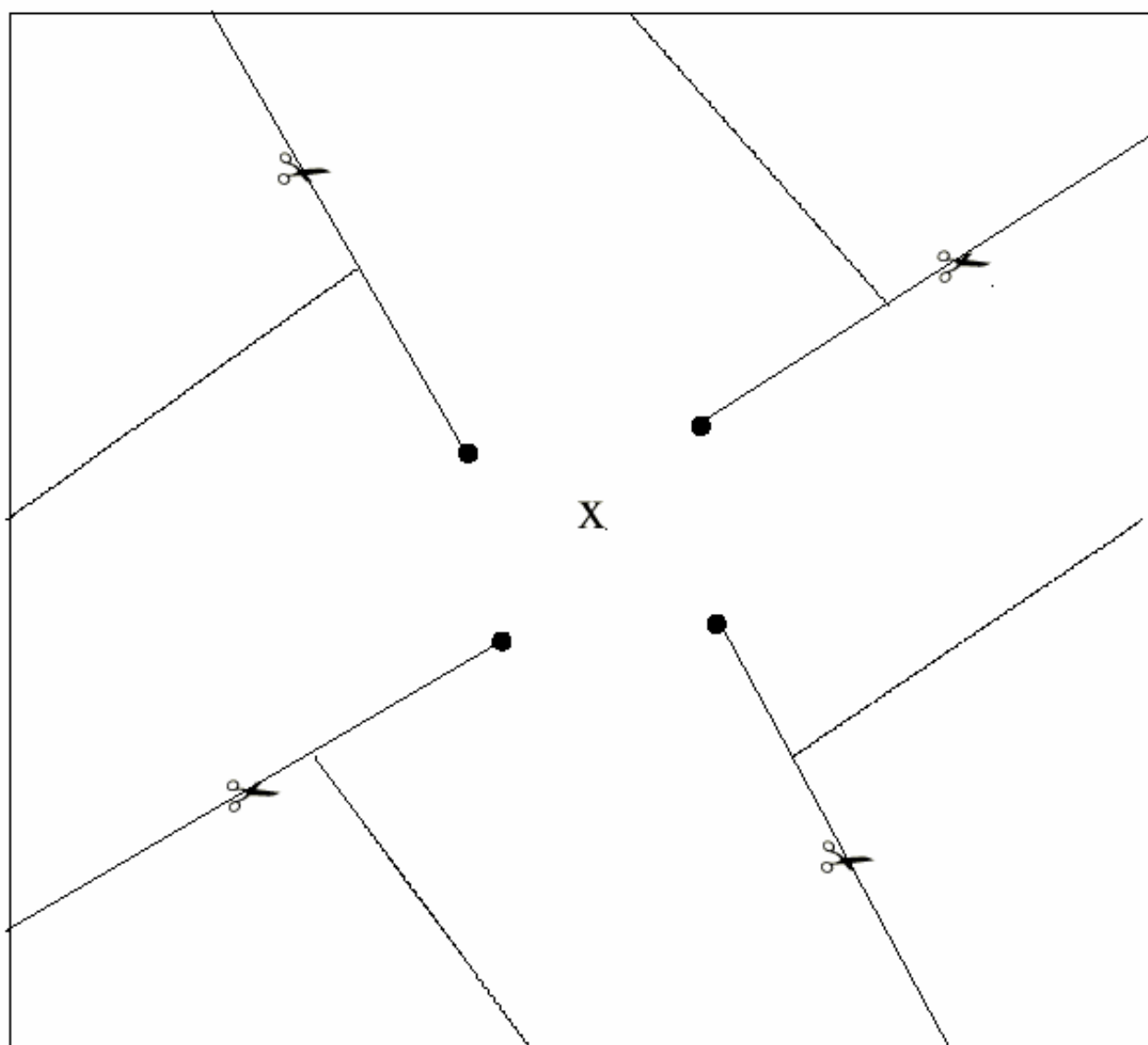
Adapted from materials developed by Ohio State University Extension and Penn State University Cooperative Extension.



Pinwheel Pattern Directions

Note: Try a slightly heavier paper.

1. Cut out square.
2. Cut the four solid lines, stopping at the perpendicular line near the center.
3. Fold the dotted lines, securing all four points in the middle with a straight pin.
4. Mount on a straw, bend pin, and secure with tape.



Note to the Volunteer: Have the children make extras for the Cloverbud Display lesson in the subject area of Community Expressive Arts.