

High Flying Fun

Aerospace Stories and Activities

Presented by the
Education Division
National Museum of the United States Air Force

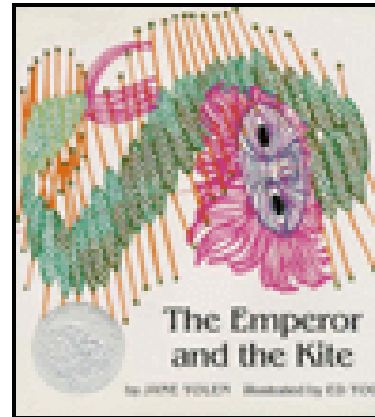
www.nationalmuseum.af.mil



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The Emperor and the Kite



By Jane Yolen

This story about a Chinese emperor who is saved by his youngest and most insignificant daughter won a Caldecott Honor Book in 1968 for illustrator Ed Young.

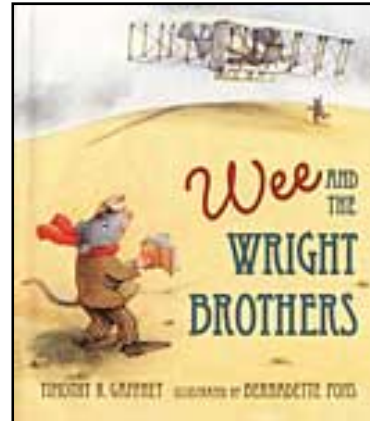
Mouton's Impossible Dream



By Anik McGrory

All Mouton, the sheep, can think about is learning how to fly. Her one track mind will lead her and her friends on the adventure of their lives. Based on the true story of the invention of the hot air balloon in France in 1783.

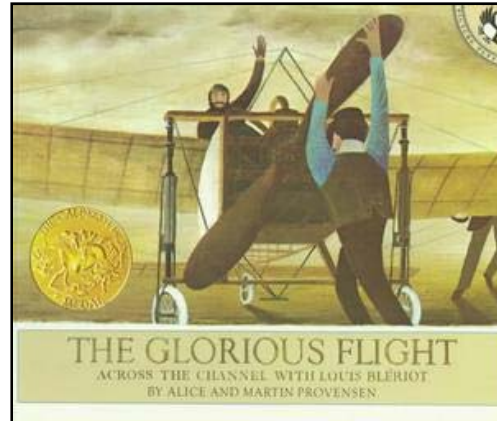
Wee and the Wright Brothers



By Timothy R. Gaffney

Wilbur and Orville began packing the Flyer into a wooden crate. Wee's little heart skipped a beat. "They're getting ready to go to Kitty Hawk," he told his family. "If only I could go and watch them fly. What a story it would make."

The Glorious Flight



By Alice and Martin Provensen

A biography of the man whose fascination with flying machines produced the Bleriot XI, which in 1909 became the first heavier-than-air machine to fly the English Channel.

Ruth Law Thrills a Nation



By Don Brown

This book recounts the great day in 1916 when Ruth Law set a nonstop cross-country flying record and thrilled a nation! Her plane was tiny -- the manufacturer had refused to give her a bigger one because he didn't believe that a woman could fly one!

Nobody Owns the Sky



By Reeve Lindbergh

The story of Bessie Coleman is told as a poem in which Bessie replies to every negative suggestion that she won't realize her dream with the haunting and inspiring question "Why? Nobody Owns the Sky!" She did realize her dreams and became the first licensed black aviator in the world.

Mercedes and the Chocolate Pilot



By Margot Theis Raven

This is the true story of a seven-year-old girl named Mercedes who lived in West Berlin during the Airlift and of the American who came to be known as the Chocolate Pilot, Col. Gail Halvorsen.



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One Giant Leap



By Don Brown

When Neil Armstrong was six he flew in a plane. It was bumpy and noisy and it worried his father; Neil loved it. He started making airplane models.

He watched the planes at the airport; then he washed the planes and finally he had enough money to take flying lessons. But he got his pilot's license before he was old enough to have his driver's license. From then on he was unstoppable -- until he stepped on the moon on July 20, 1969!

Plane Song



By Diane Siebert

Rhymed text and illustrations describe different kinds of planes and their unique abilities.

Kite Activity

Big Wind Kite Factory, Moloka'i, Hawai'i, presents

20 Kids * 20 Kites * 20 Minutes

Uncle Jonathan's Easiest Classroom Kites Ever!

For over 25 years the Big Wind Kite Factory has been giving kite making classes for the children on the island of Moloka'i in Hawai'i. These are the complete time tested instructions to get 20 kids making their own kites and flying them in 20 minutes.



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Kite Activity

Material List:

- 20 sheets of brightly colored 8-1/2" x 11" multipurpose printing paper, 20 lb., bond is good
- 20 8" bamboo bar-b-que shishkabab sticks
- 1 roll of florescent surveyor's flagging plastic tape (available at any hardware store); a plastic bag cut in a 1" wide spiral all around will also make a great tail
- 1 roll 1/2" wide masking tape or any type of plastic tape
- 1 roll of string (at least 200'; 6 to 10 feet for each child)
- 20 pieces of 1"x 3" cardboard on which to wind the string
- Scissors
- Hole punch (optional)



Kite Activity

Directions:

- 1) Fold a sheet of 8 1/2" x 11" paper in half to 8 1/2" x 5 1/2".
- 2) Fold again along the diagonal line A in Fig. 2. This diagonal line can be determined by making a mark at the top 1/2 in. from the fold and a mark at the bottom 3 in. from the fold and drawing a line between these marks.
- 3) Fold back one side forming kite shape in Fig. 3 and place tape firmly along fold line AB. (No stick is needed here because the fold stiffens the paper and acts like a spine.)
- 4) Place bar-b-que stick from point C to D and tape it down firmly.
- 5) Cut off 6 to 10 feet of plastic ribbon and tape it to the bottom of the kite at B.

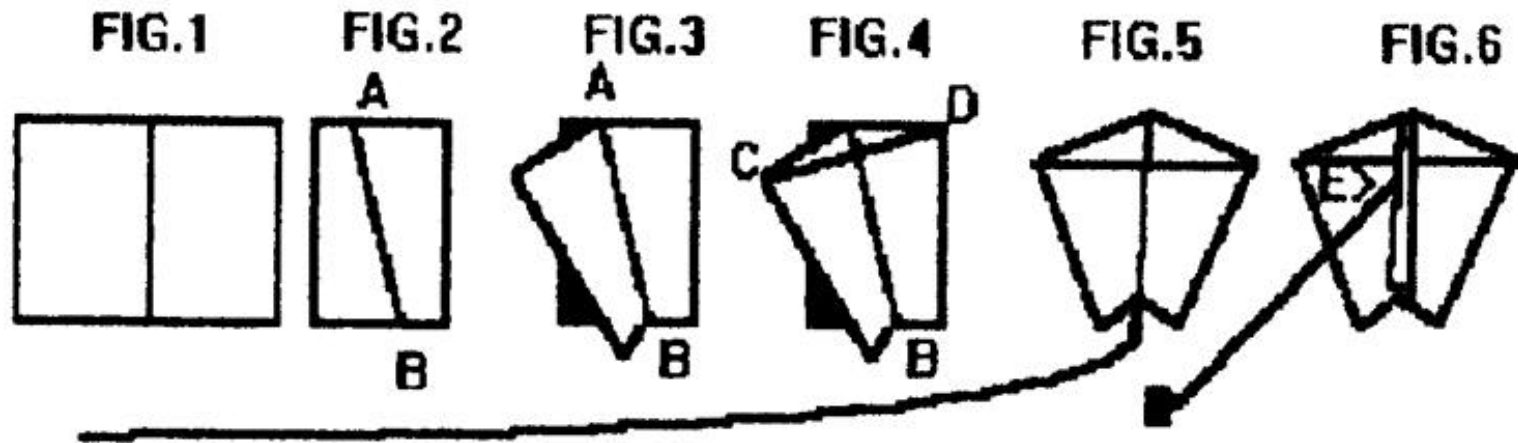
Kite Activity

Directions (continued):

- 6) Flip kite over onto its back and fold the front flap back and forth until it stands straight up. (Otherwise it acts like a rudder and the kite spins around in circles.)
- 7) Punch a hole in the flap at E, about 1/3 down from the top point A. This hole can be reinforced with an additional piece of tape.
- 8) Tie one end of the string to the hole and wind the other end onto the cardboard string winder.



Kite Activity



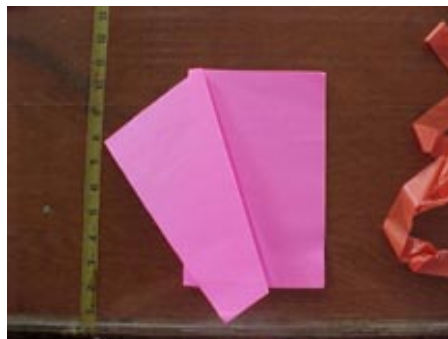
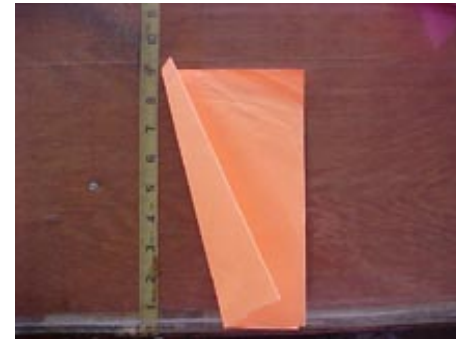
Courtesy of Big Wing Kite Factory



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Kite Activity



A special thank you to the Big Wind Kite Factory for permission to provide the instructions, and step-by-step photos featured here.

<http://www.molokai.com/kites/20kidskites.html>

**No federal endorsement implied.*

Parachute Activity

Material List:

For each parachute, you will need:

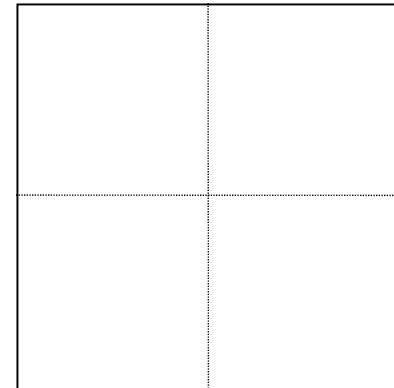
- One paper dinner-sized napkin
- String (160 cm long)
- Ruler
- Scissors
- 5 small stickers or tape
- 5 large paper clips
- Chart paper
- Markers



Parachute Activity

Directions:

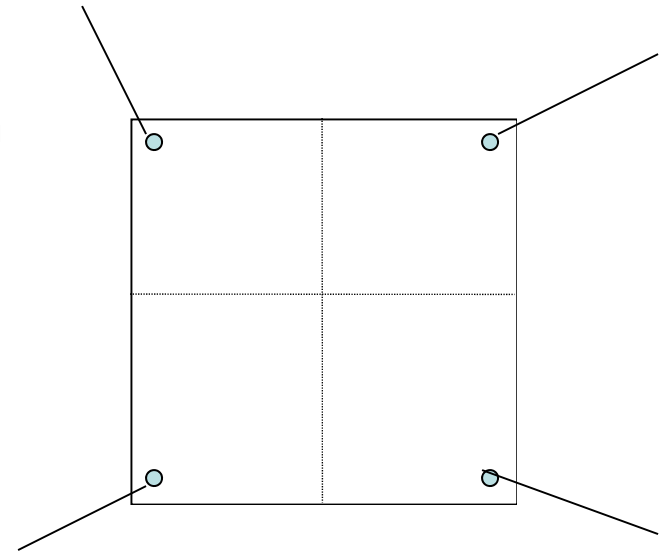
- 1) Open the napkin completely and place on table.
- 2) Measure and cut string into for 40 cm lengths.



Parachute Activity

Directions (continued):

- 3) Lay one string at a diagonal on the each corner of the napkin and seal in place with a sticker or piece of tape.
- 4) Follow these same instructions for the other three corners of the napkin.
- 5) Gather up the ends of the strings carefully and lift the napkin into the air by the strings just above the table.
- 6) Make sure the strings are equal in length and attach to a paper clip with a piece of tape.

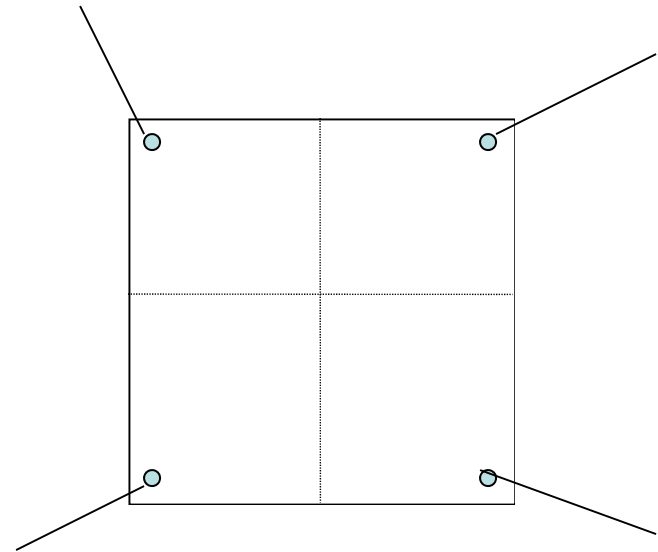


Parachute Activity

Directions (continued):

Students will drop the parachute gently and observe it as it floats to the ground. Why does it fall? What force is acting upon it? Why does it float rather than drop straight down? Discuss these questions with the class. Record class observations on chart paper.

The students will add one paper clip at a time and observe what happens as the parachute floats to the ground. Time and record how long it takes the parachute to reach the ground.



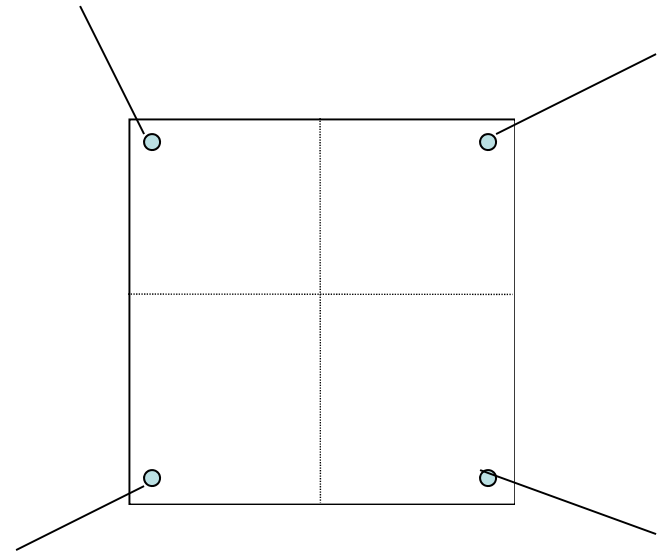
Parachute Activity

Directions (continued):

Continue to add paper clips (one at a time) and record time of descent.

Discuss what happens each time more mass (a paper clip) is added to the paper napkin parachute.

To create a candy parachute similar to the ones in the book, *Mercedes and the Chocolate Pilot* by Margot Theis Raven, use miniature candy bars or hard candy instead of the paper clips.



Airplane Activity

This classic paper airplane has control surfaces. Students may experiment to determine how the control surfaces change the flight.

Material List:

- Paper (8½" x 11")
- Paper clips
- Tape
- Scissors
- Tape measure (metric or standard)
- Notebook paper
- Pencil
- Graph paper
- Paper dart pattern (download from the Project SOAR™ curriculum guide at www.nationalmuseum.af.mil)

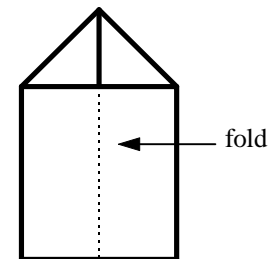
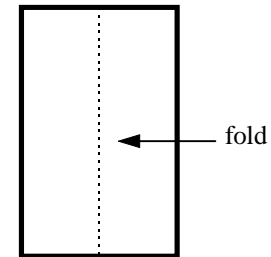


Airplane Activity

Directions:

Using the paper dart airplane pattern, construct a paper airplane using the following instructions:

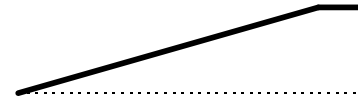
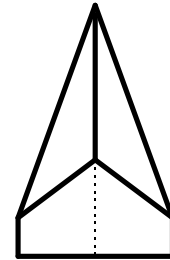
- 1) Fold the pattern in half lengthwise and open.
- 2) Fold down the top two corners of the paper so they meet together at the center line. Make folds as neatly as possible. Rub with the side of a pencil to make the fold nice and crisp.



Airplane Activity

Directions (continued):

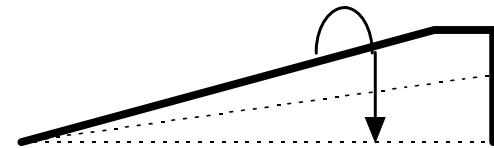
- 3) Fold the entire right-hand top edge to the center line. Now fold the entire left-hand top edge to the center line. The two folds will meet in the middle.
- 4) Fold plane in half along the center line.



Airplane Activity

Directions (continued):

- 5) Now take one of the open edges and fold it back to the “folded” center line.
- 6) Turn the paper over and repeat. Gently pull up on the wings and tape them into place.
- 7) To make the ailerons, cut on the solid lines and fold on the dotted lines, as indicated on the master pattern.



Airplane Activity

Directions (continued):

- 8) Go to a large indoor area (gymnasium) and practice flying the paper dart airplanes.
- 9) Using masking tape, mark a line for the students to stand behind when flying their darts.
- 10) Students will fly their darts a total of four times, each time with a different aileron configuration.
 - 1st flight - no ailerons
 - 2nd flight - both ailerons up
 - 3rd flight - both ailerons down
 - 4th flight - one aileron up and one aileron down

Airplane Activity

Directions (continued):

- 11) Measure the distance flown during each flight. Note: You may want to mark the gym floor (with masking tape) at 1 meter intervals to make it easier for students to measure.
- 12) Record distance flown during each flight.
- 13) Students will determine which aileron configuration provided their paper dart the longest flight distance.

On a delta wing airplane, the elevator and the ailerons are combined to create an elevon. When both are in the same position, the control surfaces work as an elevator, controlling motion along the lateral axis. This axis is an imaginary line running from wingtip to wingtip. This motion is called pitch. When the elevons are in opposite positions, they work as an aileron, controlling motion along the longitudinal axis. This axis is an imaginary line that runs from the nose to the tail. This motion is called roll.

More Resources

Additional Teacher Resources
are available online at

<http://www.nationalmuseum.af.mil/education/educators/index.asp>



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