



**Spark!Lab Indoor Kite**  
Photos by Steve Madewell  
Kite Modeling by Tanya Garner

## **IMAGINARY PLACES OF INVENTION: CREATE YOUR OWN INDOOR-KITE**

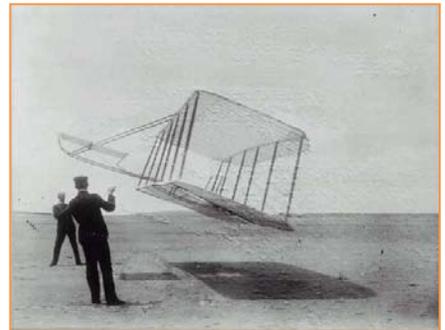
One of the biggest challenges every inventor must face is how to turn their idea into a successful invention. Throughout the process of creating a new invention, an inventor must imagine new and unexpected uses for the available materials and tools. One such tool, the kite, plays an important role in many famous inventions.

### **BENJAMIN FRANKLIN – KITES IN METEOROLOGY AND ELECTRICITY**

In June of 1752 Benjamin Franklin began to study the atmosphere with kites, including the famous and wildly dangerous kite experiment that proved that lightning is electrical. This experiment also contributed to Franklin's invention of the lightning rod. Kites continued to be used in meteorological research for the next 150 years.

### **ALEXANDER GRAHAM BELL AND THE WRIGHT BROTHERS – KITES IN AIRCRAFT DESIGN**

Emboldened by his invention of the telephone in 1876, Alexander Graham Bell joined the race to prove that human flight was possible. To do this, Bell invented and patented tetrahedral-shaped kites that were very light and very strong. Bell added small engines to his tetrahedral kites, producing some of the earliest manned airplanes. Unfortunately, his tetrahedral airplane designs were overshadowed by the Wright Brothers' successful biplane design. The Wright Brothers also conducted many experiments with kites prior to the first manned flight in 1903. Kites and Kite-flying have also inspired other flight inventions such as the para-glider, hang glider, and sport parachutes.



**The 1901 Wright Glider Flown as a Kite**  
Image Courtesy of Institute of Mathematical and Physical Sciences, East Tennessee State University

### **GUGLIELMO MARCONI – KITES IN RADIO AND WIRELESS COMMUNICATION**

Italian inventor Guglielmo Marconi transmitted the first radio signal across the Atlantic Ocean, from England to New Foundland, using a large kite to lift the receiver antenna 400 feet into the air. This innovative experiment led to the development of radio broadcasting and modern wireless communications systems.

## CREATE YOUR OWN INDOOR-KITE

### ESSENTIAL MATERIALS

- paper
- 5-6 feet of string or yarn
- straw or craft stick
- tape
- A parent or adult to assist you

### OPTIONAL MATERIALS:

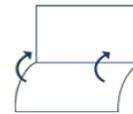
- feathers
- newspaper
- colored markers or crayons
- ribbon
- other lightweight materials from the recycling bin



### KITE-BUILDING BASICS

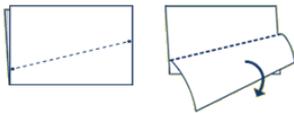
1

Fold your paper in half, as shown.



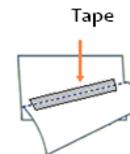
2

Fold down one side of your paper at an angle to make the wings.



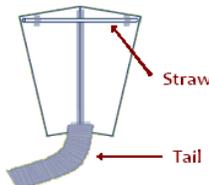
3

Tape the wings together along the fold, as shown.



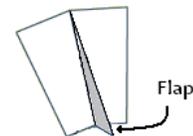
4

Tape a straw or craft stick across the wings. Make the tail by taping a strip of newspaper or ribbon to the bottom of your kite.



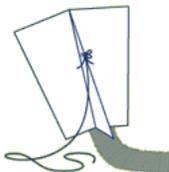
5

Turn the kite over. Fold the flap back and forth until the flap stands straight up.



6

Punch a hole in the flap. Use this hole to tie one end of the string to your kite.



7

Now, take your prototype kite for a test flight. Fly your kite in a room with plenty of open space.



### KEEP TRACK OF YOUR KITE-FLYING ADVENTURES IN A INVENTOR'S NOTEBOOK

Download yours at  
<http://sparklab.si.edu/downloads/sparklab-inventors-ntbk.pdf>.

### THINK ABOUT IT!

HOW WELL DOES YOUR KITE FLY?

CAN YOU MAKE IT BETTER?

HOW?

<http://sparklab.si.edu>

**TO LEARN MORE ABOUT KITES AND INVENTION, CHECK OUT THE FOLLOWING:**

<http://smithsonianlibraries.si.edu/smithsonianlibraries/2010/03/when-i-think-of-alexander-graham-bell-i-think-of-kites.html>

<http://www.loc.gov/teachers/classroommaterials/presentationsandactivities/presentations/fantasy-flight/kites.html>

<http://best-breezes.squarespace.com/science-of-kite-flight/>

<http://www.lessonplanspage.com/ScienceLetsGoFlyAKiteForcesK2.htm>

<http://www.edutopia.org/blog/teaching-science-elementary-grades-kites>