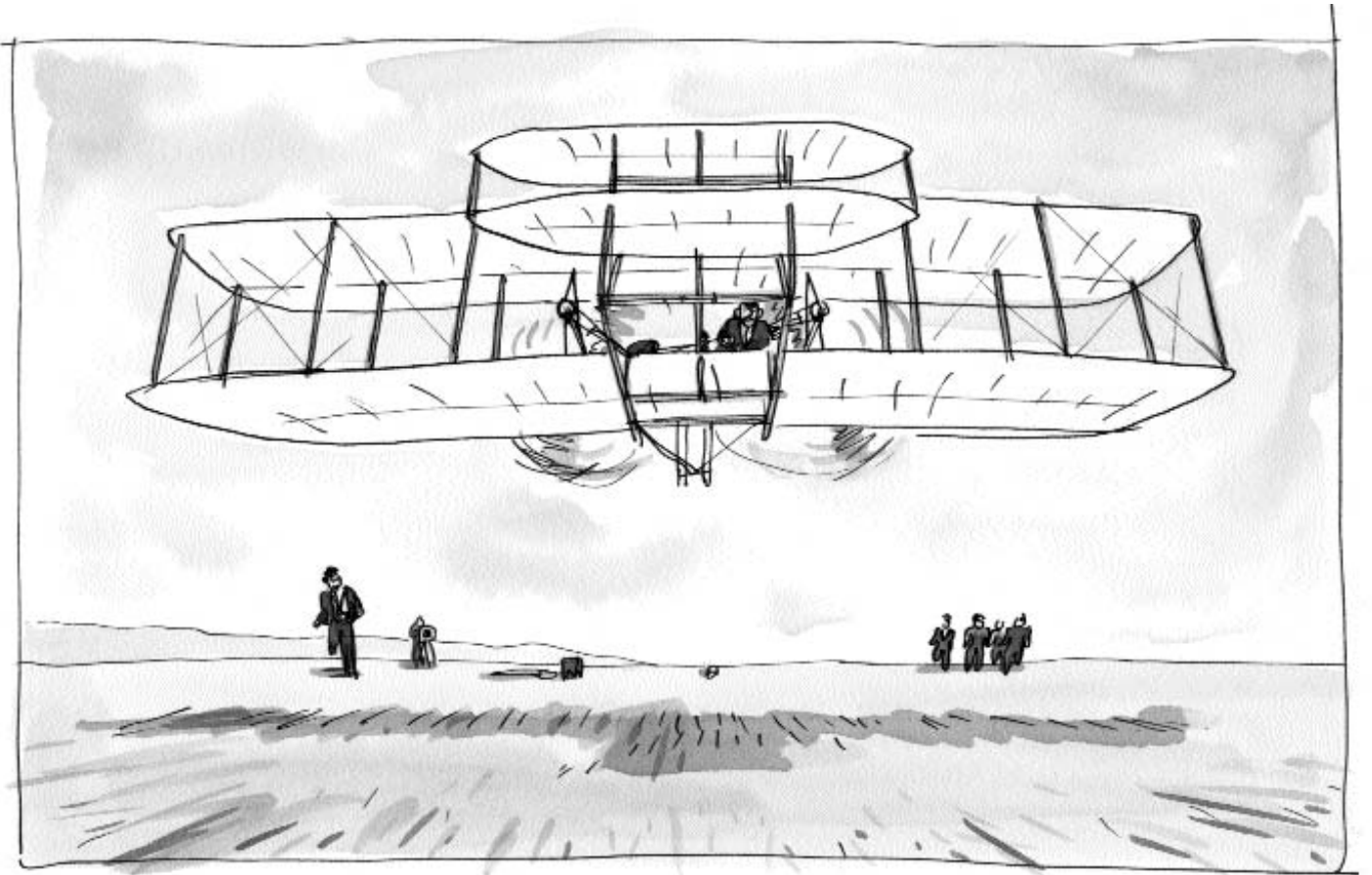


T E A C H E R ' S G U I D E

Up in the Air

THE STORY OF THE WRIGHT BROTHERS



a breakfast serials story

Written and illustrated by **Brian Floca**

Teacher's Guide by Sherrye Dee Garrett, Ed.D.

D I S T R I B U T E D B Y :

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Introduction

The *Up in the Air* Teacher's Guide gives students an opportunity to interact with literature, art, science, and the newspaper through this story. The story and illustrations are by children's author Brian Floca. *Up in the Air* is much more than the story of the Wright brothers. It is a journey into creative thinking and innovative problem-solving. Wilbur and Orville Wright exemplify the higher-order thinking skills we want all students to develop.

Components of the Lessons

Lesson Plans

The chapter lesson plans are divided into four parts:

Vocabulary identifies important vocabulary words in the chapter. Teachers may use the vocabulary instructional activities they choose, such as identifying phonics elements, using root words and affixes, or determining meaning from context.

Just the Facts questions are literal-level questions. Students can usually find the answers in the text in one sentence.

Let's Discuss questions require students to obtain meaning across text and to think critically.

Inventor's Notebook activities on each page have students connect events and topics in the chapter to the real world through newspapers. These are cumulative activities that build each day.

Additional Activities

These activities encourage students to extend their knowledge of aviation and the Wright brothers' work.

Puzzles

A crossword puzzle and a word search are provided.

Acknowledgements

This teacher's guide was developed by the Use The News foundation in collaboration with Breakfast Serials. It was created by Dr. Sherrye Dee Garrett.

Use The News Foundation seeks to develop educational projects that provide resources addressing human rights issues such as diversity, character education, health and nutrition, safety, disaster preparedness, the environment, and the elimination of prejudice. Founded in August 1998, the Foundation is a nonprofit public benefit corporation that fosters partnerships with schools, Newspaper In Education programs, and their business sponsors. For information, contact Dr. Betty L. Sullivan at 415-861-1637 or via e-mail: BETTYSNIE@aol.com.

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Background Resources

Up in the Air chronicles the Wright brothers' thinking, problem-solving and aircraft design. There are wonderfully understandable descriptions of the science related to the design of the brothers' gliders and aircraft.

It will be especially helpful to your students to see photographs and sketches of the gliders, wings, propellers and other inventions created by the Wright brothers. Many of the Wright brothers' photographs, sketches, and papers are available online. Here are some websites that will give you access to this important information:

The Wright Brothers Aeroplane Company and Museum of Pioneer Aviation

www.wrightbros.org

The U.S. Centennial of Flight Commission–Wright Brothers History

www.centennialofflight.gov

Wright Experience–Reconstructing the Wright Brothers' Legacy

www.wrightexperience.com

American Institute of Aeronautics and Astronautics: Celebrating the Evolution of Flight

www.flight100.org/index.cfm

United States Air Force Museum

www.wpafb.af.mil/museum/index.htm

The Aviation History Online Museum

www.aviation-history.com

Flying History

www.flyinghistory.com/index.shtml

Timeline of Early Aviation

- 1783** Joseph and Jacques Montgolfier in Paris invent a hot-air balloon, first sending it aloft empty, then using a rooster, duck and sheep as passengers, and finally adding two human flyers. The following year, Joseph Montgolfier himself flew in the balloon with six passengers.
- 1804** Sir George Cayley builds and flies the world's first successful model glider.
- 1892** The Wright brothers open their first bicycle shop.
- 1896** Otto Lilienthal dies when wind causes him to lose control of his glider.
- 1900** The Wright brothers make their first glider flight.
- December 17, 1903**
The Wright *Flyer* lifts into the air at 10:35 a.m. The flight lasts only 12 seconds and covers a distance of 120 feet, but it is the first flight of a powered, piloted, heavier-than-air machine.
- 1905** The Wright brothers' *Flyer III* covers 24.2 miles in 38 minutes and 3 seconds.
- 1906** U.S. Patent No. 821,393 is issued to the Wright brothers on a flying machine.
- 1908** Orville Wright makes the first demonstration flight for the Army at Fort Myer, Virginia. In the final flight, the aircraft crashes, killing Lieutenant Thomas Selfridge, a passenger, and injuring Orville Wright.
- 1909** The Wright Company becomes incorporated with a capitalization of \$1,000,000.
- 1910** Octave Chanute dies in his home in Chicago, Illinois, at age 78.
- 1912** The Wright brothers produce a new model incorporating a patented stability device that automatically banks the aeroplane at a correct angle when turning.
- 1912** Wilbur Wright dies at age 45. Orville succeeds his brother as president of The Wright Company.
- 1913** Ensign W. D. Billingsley is thrown out of a Wright hydroplane at an altitude of 1,600 feet, becoming the first naval aviator to be killed in an airplane accident.
- 1915** The National Advisory Committee for Aeronautics (NACA) is formed, the first government-sponsored organization in support of aviation research and development.
- 1916** William E. Boeing builds and test-flies his first aeroplane, the *B&W* trainer.
- 1918** The United States Post Office inaugurates airmail service from the Polo Grounds, Washington, D.C.
- 1918** As World War I nears its end, Orville Wright notes, "The Aeroplane has made war so terrible that I do not believe any country will again care to start a war."
- 1919** The first municipal airport in the United States is dedicated at Atlantic City, New Jersey.
- 1921** Bessie Coleman becomes the first African-American woman to receive a Fédération Aéronautic Internationale (FAI) pilot's license.
- 1925** Douglas Aircraft Company, Inc., is organized.
- 1926** The *USS Langley* is commissioned and becomes the first American aircraft carrier.
- 1926** Commander Richard E. Byrd and pilot Floyd Bennett complete the first flight over the North Pole.
- 1927** *Spirit of St. Louis*: First nonstop solo flight across the Atlantic by Charles A. Lindbergh.
- 1927** The Wright Field is dedicated in Dayton, Ohio.
- 1928** Amelia Earhart becomes the first woman to cross the Atlantic.
- 1929** Former Secretary of War Dwight Davis presents the Distinguished Flying Cross, awarded by the U.S. Congress, to Orville Wright and, posthumously, to his brother Wilbur.
- 1930** Orville Wright is presented with the first Daniel Guggenheim Medal for Aeronautics.
- 1933** Orville Wright is awarded the first Honorary Fellowship of the Institute of the Aeronautical Sciences.
- 1933** Wiley Post makes the first round-the-world solo flight in his Lockheed Vega, *Winnie Mae*.
- 1948** Orville Wright collapses in his laboratory in Dayton, Ohio, and dies at the age of 76.

First Flight, 1878

Just the Facts

1. What was the first air toy that fascinated Orville Wright?
2. Who designed the first “helicoptere”?
3. What items did Orville use to make his first printing press?

Let’s Discuss

4. Why was Orville’s teacher upset with him?
5. What was the mechanism that made Orville’s “bat” move?
6. What was somewhat surprising about Wilbur and Orville’s mother in that day and age?
7. Why do you think Wilbur didn’t want to look like he was interested in Orville’s toy?
8. How did Wilbur and Orville display their creative mechanical abilities?
9. What do you think will happen if Wilbur goes away to college?
10. Make a prediction: What could happen that would keep the brothers together?



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Inventor’s Notebook

Inventors like Wilbur and Orville Wright read, think and analyze as they work through challenges. Use your “Inventor’s Notebook” to collect information and record your thoughts.

Some toys are representations of items that exist in real life, such as fire engines or computers. Other toys represent ideas that might exist in the future. Find a newspaper ad for a fantasy or science fiction toy. Paste the ad in your notebook. Then write a paragraph or a list describing the scientific discoveries that would have to take place to make that toy a reality.

Vocabulary

- **bat** (n)
a toy with a propeller on top, powered by a twisted rubber band
- **contraption** (n)
a fanciful device
- **mechanical** (adj)
related to machines

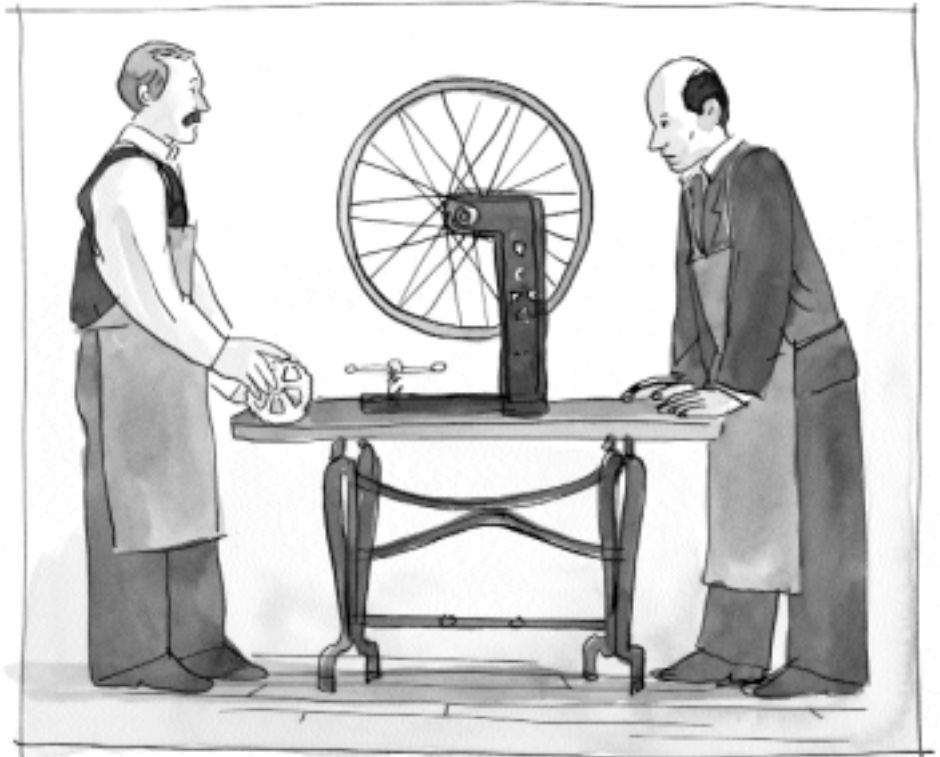
Chapter Hed, 1878

Just the Facts

1. What was the name of Orville's first newspaper?
2. What new form of transportation was becoming popular in that time?
3. Why were Orville's skills well suited to the bicycle business?

Let's Discuss

4. What injuries did Wilbur sustain in a hockey accident?
5. What complications developed from the injuries?
6. How did Orville help Wilbur develop a new interest in life?
7. How did the newspaper business lead Wilbur and Orville to a different business?
8. Why did the brothers decide to open a bicycle shop?
9. What information in the story suggests that Wilbur might make a good teacher?
10. Make a prediction: What do you think Wilbur's discovery might be?



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Inventor's Notebook

Inventors like Wilbur and Orville Wright read, think and analyze as they work through challenges. Use your "Inventor's Notebook" to collect information and record your thoughts.

Find a news story or an ad about a modern communication device. Paste the story/ad in your notebook. Write a paragraph describing how the new communication device is different from Orville's newspaper.

VOCABULARY

- **nudge** (v)
push gently
- **brash** (adj)
doing things in haste, without thought to consequences
- **tuberculosis** (n)
a highly communicable disease affecting the lungs

The Flying Man, August 1896–May 1899

Just the Facts

1. Who was “the flying man”?
2. What was the length of Otto Lilienthal’s longest glider trip?
3. Whose models did Wilbur use in developing his own bat?

Let’s Discuss

4. Why did Wilbur and Orville take Lilienthal’s work seriously?
5. Describe Lilienthal’s “wings.”
6. What do you think Lilienthal meant when he said, “Sacrifices must be made”?
7. How did Wilbur research the field of flying?
8. Why was Samuel Langley important to Wilbur?
9. What do you think Wilbur meant when he wrote, “And then if possible add my mite to help on the future worker who will attain final success”?
10. Make a prediction: How will Samuel Langley reply to Wilbur?



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Inventor’s Notebook

Inventors like Wilbur and Orville Wright read, think and analyze as they work through challenges. Use your “Inventor’s Notebook” to collect information and record your thoughts.

Find a newspaper story about someone who is attempting a difficult feat. Paste the story in your notebook. Make a list of the difficulties the individual faces in attempting the feat. Then explain how new research or an experiment would give the individual information needed to be successful.

VOCABULARY

- **burly** (adj)
strong and heavily built
- **makeshift** (adj)
crude and temporary
- **aeronautics** (n)
science dealing with the operation of aircraft
- **typhoid** (n)
a serious communicable disease marked by fever, headache, and intestinal inflammation and caused by a bacterium