

Kindergarten – First Grade

Read Aloud Informational Text

Hodgkins, Fran, and True Kelley. *How People Learned to Fly*. New York: HarperCollins, 2007. (2007)

When you see a bird flying, do you dream about flying too?

Do you run with your arms out, imagining that you're soaring among the clouds? Do you make paper airplanes? Do you fly kites?

If you do, you aren't alone. For thousands of years, people have dreamed of being able to fly.

They watched birds and bats soar.

They imagined people and other animals that could fly and told stories about them.

They designed machines that they thought would be able to fly.

They had many ideas. As they tried each new idea, they learned a lot.

They learned about gravity. Gravity is the force that keeps everything on the Earth's surface. Because of gravity, things have weight.

If there were no gravity, people, dogs, cats, and everything else would go floating off into space. Gravity keeps us on the ground, even if we would rather be flying.

People also learned about air. Air is made of tiny particles called molecules. When you walk or run, you push through air molecules. They push back on you, too, even though you don't really feel the push unless the wind blows.

People learned that wind could push a kite into the sky.

When air molecules push back on a moving object, that is a force called drag. You can feel drag for yourself. Hold out your arms. Now spin around. Feel the push of air on your arms and hands? That's drag. Like gravity, drag works against objects that are trying to fly.

Kites were useful and fun, but people wanted more. They wanted to fly like birds.

Birds had something that kites didn't: Birds had wings.

People made wings and strapped them to their arms. They flapped their arms but couldn't fly.

They built gliders, light aircraft with wings. Some didn't work, but some did.

The gliders that worked best had special wings. These wings were arched on both the top and the bottom. The air pulled the wings from above and pushed the wings from below. When the wings went up, so did the glider! Arched wings help create a force called lift. Lift is the force that keeps birds and gliders in the air.

Most gliders have long, thin wings. The wings create enough lift to carry the aircraft and its passengers. Gliders usually ride currents of air the same way a hawk soars.

Gliders are very light, and long wings and air currents can give them enough lift to fly. But to carry more than just a passenger or two, an aircraft needs a lot more lift. The question is: How do you create more lift?

The engine is the answer!

The engine is a machine that changes energy into movement. The forward movement that an airplane needs to fly is called thrust. More thrust makes an airplane move forward faster. Moving faster creates more lift. And with more lift, an airplane can carry more weight. So an aircraft with an engine can carry passengers or cargo.

In 1903 the Wright brothers figured out how to get wings and an engine to work together in order to give an airplane enough thrust to fly. They made the first powered flight at Kitty Hawk, North Carolina.

Since then, people have made airplanes that can fly faster than sound can travel. They have made airplanes that can fly all the way around the world without stopping.

Today, thousands of people travel in airplanes every day. People really have learned how to fly!

Used by permission of HarperCollins Publishers.

Nivola, Claire A. Planting the trees of Kenya: the story of Wangari Maathai. New York: Farrar, Straus & Giroux, 2008. (2008)

- Students (*with prompting and support from the teacher*) describe the connection between drag and flying in Fran Hodgkins and True Kelley's *How People Learned to Fly* by performing the "arm spinning" experiment described in the text. [RI.K.3]