

Wing Shape and Lift

Developed by: Linda Fenton

Discipline / Subject: Science

Topic: Aviation

Grade Level: 3, 4, 5

Resources / References / Materials Teacher Needs:

This is a great interactive to share with students:

<http://www.pbs.org/wgbh/nova/space/lift-drag.html>

Use this one after the activities:

<http://www.sciencekids.co.nz/videos/engineering/flightaerodynamics.html>

Activity Sheet

Copy Paper

24 inch piece of string

Hole Punch

Tape

Lesson Summary:

Something to know: An airfoil is a wing shape that can provide lift.

Students will do an activity that will teach them about air pressure and how lift is created.

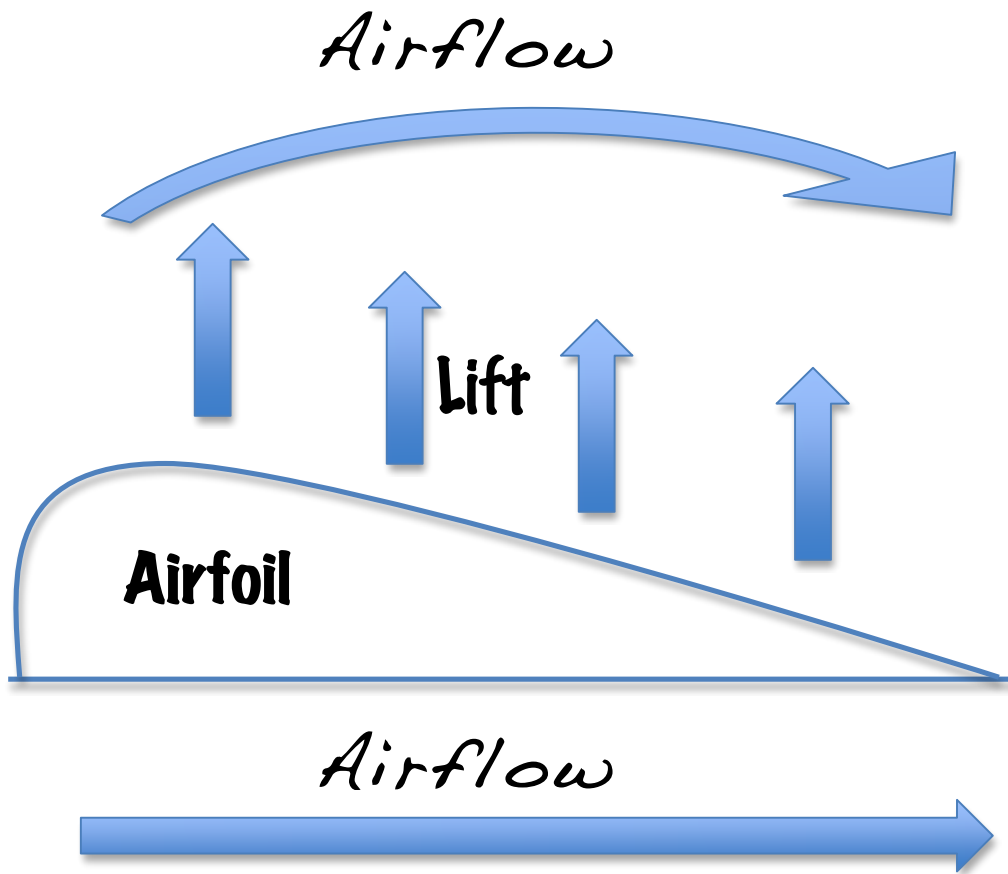
Bernoulli's principle: Bernoulli's principle helps explain that an aircraft can achieve lift because of the shape of its wings. They are shaped so that that air flows faster over the top of the wing and slower underneath. Fast moving air equals low air pressure while slow moving air equals high air pressure. The high air pressure underneath the wings will therefore push the aircraft up through the lower air pressure.

Standard's Addressed: (Local, State, or National)

Common Core Standards Science (Draft) Pushes & Pulls

1. Construct an explanation for why an object subjected to multiple pushes and pulls might stay in one place or move.

<p>Learning Objectives:</p> <ol style="list-style-type: none"> 1. Understand the idea of lift and how a wing's shape can affect it. 2. Learn what an airfoil is. 	<p>Method of assessment for learning</p> <p>Teacher observation Activity Sheet</p>
<p>Procedural Activities</p> <ol style="list-style-type: none"> 1. Share with students the pbs.org website to introduce lift. 2. Pass out sheets of paper. Bend the paper in half lengthwise (don't put a fold in it). Tape the ends together. Punch a hole in the center of the rounded end. Put the string through the hole. This is an airfoil. 3. Predict what will happen to airfoil when you spin around. 4. Hold the airfoil at arm's length holding each end of the string. 5. Spin your body to see what will happen with the airfoil. You can also use a blow dryer if the spin doesn't work. 6. Record your observations. 7. Follow up with the sciencekids video. 	
<p>Materials Students Need:</p> <p>Activity Sheet 1 piece of copy paper 24 inch piece of string Tape (Teacher should punch the hole especially with younger students)</p>	
<p>Technology Utilized to Enhance Learning:</p> <p>Websites</p>	
<p>Other Information:</p> <p>Students will be surprised that the paper will float up. Going further: Make modifications with shape of wing and see what happens.</p> <p>Lesson Plan modified from Experimental Aircraft Association (EAA) education curriculum.</p>	
<p>Modifications for Special Learners/ Enrichment Opportunities:</p>	



Data Collection

Wing Shape and Lift

Name _____ Date _____

Prediction	Observation

1. How did you hold your string to get the best result?
2. What do we call the upward movement of the airfoil?
3. What modifications could you make to your airfoil? Try it. What happened?

