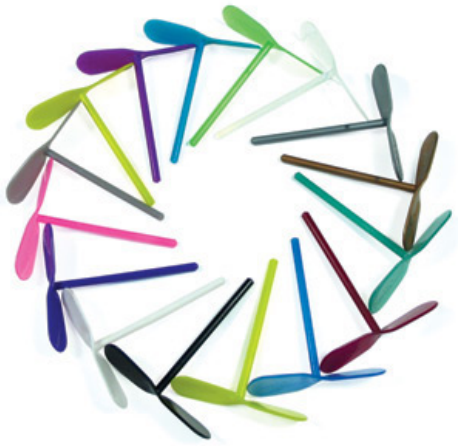
TEACHERS Serving TEACHERS!®

Educational Innovations Inc.®

SnapCopters

AIR-425

Our colorful little SnapCopters will help your students:



- examine the principles of gravity, force and motion
- explore the principles of flight including camber, lift, center of gravity, and momentum
- investigate problems related to forces and interactions

Furthermore, SnapCopters will support your students' understanding of the Next Generation Science Standards (NGSS)*, as shown in the table below.

Elementary

3-PS2-2

Students can use the SnapCopter to make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

Middle School

MS-PS2-2

Students can use the SnapCopter to plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.

High School

HS-PS2-1

Students can use the Snap-Copter to investigate and analyze data to support the claim that Newton's Second Law of Motion describes the mathematical relationship among the net force on a macroscopic object, its mass and its acceleration.

Suggested Science Idea(s)

3-PS2-2 MS-PS2-2 HS-PS2-1 3-5-ETS1-3

Students can use the SnapCopter to investigate many problems regarding forces and interactions. Fascinating trials to study flight, gravity, force and motion.

** NGSS is a registered trademark of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards were involved in the production of, and do not endorse, this product.*

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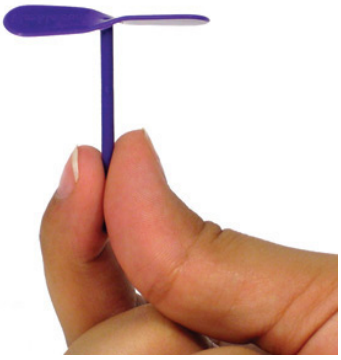
How to Fly Your SnapCopter

Flying your SnapCopter is a snap!



Hold the SnapCopter with the propeller up and the shaft in your in your right hand, between your middle finger and thumb. Grip it firmly and then make a quick snapping motion—much like snapping your fingers. Your SnapCopter should spin counterclockwise.

NOTE: If you are left handed, follow the instructions above, but hold your SnapCopter upside down when you snap!

Try these variations!

1.

After students have mastered vertical flight, challenge them to figure out how to aim the SnapCopter so that it flies more horizontally.

You can set up a coffee cup on the table (or a waste basket on the floor). Who can fly their SnapCopter with the most accuracy?

2.

Students can test different variables to determine what will make the Snap-Copter stay aloft the longest or fly the furthest.

Who can fly their SnapCopter the greatest distance? (Hint: with a little practice, they should be able to fly their SnapCopters 20 feet or more!)

What Makes a Helicopter Fly?

In order to fly, an object must have **lift**—that is, a force moving it upward. Lift is usually made by wings. Wings create lift because of a relationship called **the Bernoulli Principle**. The Bernoulli Principle describes how the speed of air and the pressure in the air are related. When the speed goes up, the pressure goes down. The opposite is also true.

Wings are curved on top and flatter on the bottom. This shape is called an **airfoil**. That shape makes air flow over the top faster than under the bottom. As a result, there is less air pressure on top of the wing. This makes the wing move up.

A helicopter's rotor blades are spinning wings that create lift. An airplane must fly fast to move enough air over its wings to provide lift. A helicopter moves air over its rotor by spinning its blades. The rotor makes the lift that carries the helicopter up.

Source: http://www.nasa.gov/audience/forstudents/5-8/features/what-is-a-helicopter-58.html

Take Your Lesson Further

As science teachers ourselves, we know how much effort goes into preparing lessons. For us, "*Teachers Serving Teachers*" isn't just a slogan—it's our promise to you!

Please visit our website for more lesson ideas:

TeacherSource.com/lessons

Check our blog for classroom-tested teaching plans on dozens of topics:

http://blog.TeacherSource.com

To extend your lesson, consider these Educational Innovations products:

AeroCopter (AIR-222)
Catapult the Aero Copter into the sky with the rubber band launcher, and watch it fly! When the Aero Copter reaches maximum height, its blades open, and it spins back down to the ground, with the LED light illuminating its descent. Best flown at night.

Balloon Helicopter (AIR-610)

These balloon powered helicopters are great for outdoor or indoor fun (if you have high ceilings). Simply snap the blades on the hub, place the balloon on the included collar, then inflate the balloon and you're ready for lift off! When you release, air travels through the blades, causing them to spin. Lift is created and off it goes! We've gotten these to fly over 20 feet high. Blow up the balloon again to relaunch.

HandCopter (AIR-430)
To launch, simply place the HandCopter's plastic shaft between both hands and spin counterclockwise. These colorful copters can be used for dozens of scientific investigations. Why won't the HandCopter work if launched clockwise? How does this simple "toy" illustrate the Bernoulli Principle? Students can test different variables to determine what will make the HandCopter stay aloft longer or fly straighter.

Bernoulli Blaster (AIR-550)
You provide the fast moving air, and we'll provide the rest! With an electric leaf blower or vacuum cleaner (exhaust mode), you can easily demonstrate the unexpected effects of low air pressure. A fast stream of air across the top of this fascinating device reduces air pressure in the tube. Then, ambient air pressure will propel ping pong balls upward, in apparent defiance of gravity! Students at all levels will marvel!