

# STEM Education Online Resources



## Elementary Level Program

Title	Link	Description
Gizmos: Free Fall Tower	<a href="#">Gizmos: Free Fall Tower</a>	Recreate Galileo's famous experiment by dropping objects off the Tower of Pisa. **Simulation Requires Adobe Flash**
Video: 7 Minutes of Terror: Curiosity Rover's Risky Mars Landing	<a href="#">7 Minutes of Terror: Curiosity Rover's Risky Mars Landing   Video</a>	NASA's Curiosity rover is a 1-ton robot that made an unprecedented Mars landing on Aug. 6, 2012. See how the risky maneuver kept rover team members in suspense for 7 fateful minutes.
NASA Education	<a href="#">NASA Education for Students K-4</a>	Links to space related activities, games, and articles.
Khan Academy: Understanding Area	<a href="#">Khan Academy: Understanding Area</a>	Area affects the speed needed to hold up a person in the wind tunnel. Learn about how to calculate area or brush up on your skills.
How Does a Parachute Work	<a href="#">How Does a Parachute Work</a>	Video that explains how a parachute works using air resistance.
Physics of Skydiving	<a href="#">Physics of Skydiving</a>	Discovery Education video about the forces at work on a sky diver.
Teachers TV: Air Resistance	<a href="#">Teachers TV: Air Resistance</a>	Video experiment with eggs, gravity, and parachutes.
Video: Force is a Push or Pull	<a href="#">A Force is a Push or Pull</a>	Jared uses balloons to show us that a force is a push or pull. He also explains that the force of air is what makes a jet take-off.
Force and Motion: Bill Nye Clip	<a href="#">Force and Motion - Bill Nye Clip</a>	This is a selection from the Bill Nye: Motion episode that explains the basics of motion and push/pull forces.

Engineering Design: Playing with Parachutes	<a href="#">Playing with Parachutes</a>	The "Playing with Parachutes" lesson explores how parachutes are used to slow moving objects. Students work in teams of "engineers" to design and build their own parachutes out of everyday items. They test their parachutes, evaluate their results, and present to the class.
Activity: Wind Tunnel	<a href="#">Wind Tunnel</a>	Scientists use enormous wind tunnels to test the design of planes, helicopters, even the Space Shuttle. You can test a plane you made in your own wind tunnel.
Activity: Parachute Drop	<a href="#">Parachute Drop</a>	Skydivers rely on parachutes to carry them safely to Earth. Test materials like wax paper, a thin plastic bag, and a coffee filter to make and drop mini-parachutes. Which material makes the slowest drop? Enter results online and find out what other experimenters discovered.
PBS Cyberchase Area Alert	<a href="#">Cyberchase Area Alert</a>	Video showing the relationship between area and perimeter.

## Middle Level School Program

Title	Link	Description
Fluid Pressure - an inquiry introduction	<a href="#">Fluid Pressure - an inquiry introduction</a>	Simulation to investigate how pressure changes in air and water.
Gas Properties-Inquiry Middle School	<a href="#">Gas Properties-Inquiry Middle School</a>	Learning objectives: <ul style="list-style-type: none"> <li>•Students will be able to describe and draw what air looks like at a microscopic level.</li> <li>•Students will be able to explain how air applies pressure and predict how various changes affect the pressure.</li> </ul>

Gizmos: Free Fall Laboratory	<a href="#">Gizmos: Free Fall Laboratory</a>	Investigate the motion of an object as it falls to the ground. **Simulation requires Adobe flash.**
Video: 7 Minutes of Terror: Curiosity Rover's Risky Mars Landing	<a href="#">7 Minutes of Terror: Curiosity Rover's Risky Mars Landing   Video</a>	NASA's Curiosity rover is a 1-ton robot that made an unprecedented Mars landing on Aug. 6, 2012. See how the risky maneuver kept rover team members in suspense for 7 fateful minutes.
Mars Science Laboratory	<a href="#">Mars Science Laboratory</a>	Go beyond skydiving to find out the latest news about Curiosity's Mission on Mars. Including videos, images, tweets from Curiosity and more.
NASA Education	<a href="#">NASA Education for Students 5-8</a>	Links to space related activities, games, and articles.
Stratos: World Record Freefall	<a href="#">World Record Freefall Video</a>	Video: Baumgartner reached an estimated speed of 1,357.6 km/h or 843.6 mph(Mach 1.25) jumping from the stratosphere, which when certified will make him the first man to break the speed of sound in freefall and set several other records while delivering valuable data for future space exploration.
State of Matter Simulation	<a href="#">State of Matter Simulation</a>	Continue the discussion of the states of matter after your fieldtrip. This interactive simulation allows students to click on one of the three phases of matter and see the movement and arrangement of the particles. It addresses the part of the key idea about the movement and arrangement of particles in solids, liquids and gases.
Engineering Design: Playing with Parachutes	<a href="#">Playing with Parachutes</a>	The "Playing with Parachutes" lesson explores how parachutes are used to slow moving objects. Students work in teams of "engineers" to design and build their own parachutes out of everyday items. They test their parachutes, evaluate their results, and present to the class.
Activities: Design Squad	<a href="#">Design Squad: Hovercraft</a>	Design squad is a great link for engineering design activities. This is a specific activity about forces and flight, but feel free to explore other options.

Skydiving Interactive Simulation	<a href="#">The Physics Classroom: Skydiving</a>	two individual forces, the velocity, and the height over the course of the falling motion. This is a good way to visualize balanced and imbalanced forces and their relationship to terminal velocity.
Video: Huge Parachute Being Designed for Mars	<a href="#">Huge Parachute Being Designed for Mars   NASA Space Science HD</a>	NASA is testing a large supersonic parachute under extreme conditions for future exploration of Mars. Learn about how they do it and the problems they have to solve.

## High School Level Program

Title	Link	Description
Fluid Pressure - an inquiry introduction	<a href="#">Fluid Pressure - an inquiry introduction</a>	Simulation where students will be able to qualitatively investigate how pressure changes in air and water.
Static Fluid Pressure and Fluid Flow	<a href="#">Static Fluid Pressure and Fluid Flow</a>	An inquiry lab asking students to apply concepts of fluid flow and pressure.
Gizmos: Free Fall Laboratory	<a href="#">Gizmos: Free Fall Laboratory</a>	Investigate the motion of an object as it falls to the ground.
Gizmos: Distance-Time and Velocity-Time Graphs	<a href="#">Distance-Time and Velocity-Time Graphs</a>	Investigate position and velocity vs. time.
NASA: Beginner's Guide to Wind Tunnels	<a href="#">Beginners Guide to Wind Tunnels</a>	At this Website you can study wind tunnels at your own pace and to your own level of interest.
Video: 7 Minutes of Terror:	<a href="#">7 Minutes of</a>	NASA's Curiosity rover is a 1-ton robot that

Curiosity Rover's Risky Mars Landing	<a href="#">Terror: Curiosity Rover's Risky Mars Landing   Video</a>	made an unprecedented Mars landing on Aug. 6, 2012. See how the risky maneuver kept rover team members in suspense for 7 fateful minutes.
Mars Science Laboratory	<a href="#">Mars Science Laboratory</a>	Go beyond skydiving to find out the latest news about Curiosity's Mission on Mars. Including videos, images, tweets from Curiosity and more.
NASA Education	<a href="#">NASA Education for Students 9-12</a>	Links to space related activities, articles, and social media.
Skydiving Interactive Simulation	<a href="#">The Physics Classroom: Skydiving</a>	The Skydiving Interactive simulates the motion of a falling skydiver. The mass of the skydiver, the parachute size, and the initial height can be varied. Learners view the size of the two individual forces, the velocity, and the height over the course of the falling motion.
Discussion: The Elephant and The Feather	<a href="#">The Elephant and The Feather - Free Fall</a>  <a href="#">The Elephant and The Feather - Air Resistance</a>	Suppose that an elephant and a feather are dropped off a very tall building from the same height at the same time. Suppose also that air resistance could somehow be eliminated such that neither the elephant nor the feather would experience any air drag during the course of their fall. Which object - the elephant or the feather - will hit the ground first?
Discussion: Skydiving	<a href="#">Skydiving</a>	Observe the motion of the skydiver in the simulation. As the skydiver falls, he encounters the force of air resistance. The amount of air resistance is dependent upon two variables which are discussed.

Stratos: World Record Freefall	<a href="#">World Record Freefall Video</a>	Video: Baumgartner reached an estimated speed of 1,357.6 km/h or 843.6 mph(Mach 1.25) jumping from the stratosphere, which when certified will make him the first man to break the speed of sound in freefall and set several other records while delivering valuable data for future space exploration.
Video: Huge Parachute Being Designed for Mars	<a href="#">Huge Parachute Being Designed for Mars   NASA</a>	NASA is testing a large supersonic parachute under extreme conditions for future exploration of Mars. Learn about how they do it and the problems they have to solve.
	<a href="#">Space Science HD</a>	

Other resources for teachers:

<http://www.pbslearningmedia.org/>

<https://www.brainpop.com/games/>

<http://powermylearning.org/> <http://www.graphite.org>