

S for Science: Bernoulli Effect



Overview: Bernoulli's Principle basically states that pressure decreases when the flow speed increases. In simple terms, imagine turning the water hose on outside and putting your thumb over the opening. What happens when you do this? The pressure increases but the amount of water that gets through the hose decreases. Next, imagine that you are walking beside a stream and you throw in a small stick and walk beside it. When the stream narrows, allowing less water through it, the speed of the stick moving through the water increases. This principle is the underlying principle on how airplanes fly. Air flows over an airfoil (wing) to create lift.



Activity: demonstrate Bernoulli's Principle by using a hair dryer and a ping pong ball or similar type ball. The upward pressure of the hair dryer balances the downward force of gravity so the object appears to levitate.

Materials:

1. Hair dryer with cool air function (so little ones do not burn themselves).
2. An object to float
 - a. Ping pong ball
 - b. Lightweight plastic ball
 - c. For advanced aged children you can have them create their own paper polygons to float
3. Safe power source



Procedures:

1. Find a safe power outlet and plug the hair dryer in.
2. With supervision, have the child turn on the hair dryer on the cool air setting.
3. Point the hair dryer vertically so the air is coming out to the ceiling.
4. Carefully and slowly place the ball a few inches above the hair dryer and slowly let go.
5. The ball or egg will float above the hair dryer demonstrating Bernoulli's Principle!
6. For fun variations, slowly try tilting the hair dryer to one side or the other and see if the ball continues to float.
7. What else can you make float?



Key Terms:

1. Bernoulli's Principle—pressure decreases as the flow increases and pressure increases as the flow decreases. Think of the stick in the stream example.
2. Pressure—pressure means how much of something is pressing on something else.
3. Volume—volume refers to the amount of space something takes up.
4. Gravity—gravity is the force by which a planet or other body pulls things to its center.

