

Using a Straw, Bernoulli Style

Concepts Illustrated:

The Bernoulli Effect

Time Requirements: 5 minutes

Grade Level of Audience:

This qualitative demonstration is best suited for students ages 9-12.



I. Materials and Equipment

1. Cup of water (a fast food restaurant cup with lid works well as the lid would support one straw by itself)
2. Two plastic straws

II. Description of Set-up

1. Fill the cup to the top with water and place one straw vertically upright in the cup.
2. Hold the second straw horizontally, such that one end of the straw is placed just above and to the side of the vertical straw.
3. Vigorously blow air through the horizontal straw over the top of the vertical straw. With practice, one can cause water to move up the vertical straw, become atomized, and shoot to the side.

III. Details of Student Implementation

1. The general idea being demonstrated is that as the fast air moves across a surface, the lower the pressure exerted by the air becomes. The moving column of air represents a column of lower pressure over the opening of the straw. With a static air mass resting over the top of the water, there is greater air pressure over the water at one end of the straw, and a lesser air pressure over the water at the other end of the straw. The difference in pressure results in a net force which pushes water upward through the straw.
2. The lower pressure also results in a reduction in the size of the water droplets that move into air (just like a perfume "atomizer").