

Air in Motion Activity Extension

- Line students up against wall
- Direct them to push on it as hard as they want.
- Tell them to move away from the wall or fence and form a new line at one end of the wall or fence
- Challenge the youth to walk by the wall or fence and try pushing on it as they walk. No stopping allowed.
- Again, have them line up at one end of the wall or fence. This time, have them run along the wall or fence. Tell them to push on it at the same time they are running.
- Ask the students to rank how easy it was to push on the wall or fence when they were just standing in a line next to the wall or fence, when they were walking along it, and when they were running along the wall or fence.
- The faster that they move along the wall or fence, the less time they have to push on it because they are so busy moving forward.
- Tell them that this illustrates a law of physics called Bernoulli's principle. In today's activity, they will get to explore Bernoulli's principle.
- Partner students up.
- Have each pair of students get a piece of paper and a pair of scissors.
- Have each student cut their paper into strips so that they are about 2 in. wide and 8.5 in. long, or the length of the piece of paper.
- Direct each of them to place the short end of the paper strip against their chins as shown in the illustration in Figure 1 below.
- Ask them to predict what will happen when they blow across the top of the paper. (They will probably expect the paper to get pushed down by their breath.)
- Instruct the kids to blow across the top of the paper. Because of the Bernoulli principle, the paper will go up, not down, when they blow across it.
- Observe this with the class, and participate in the discussion questions below.

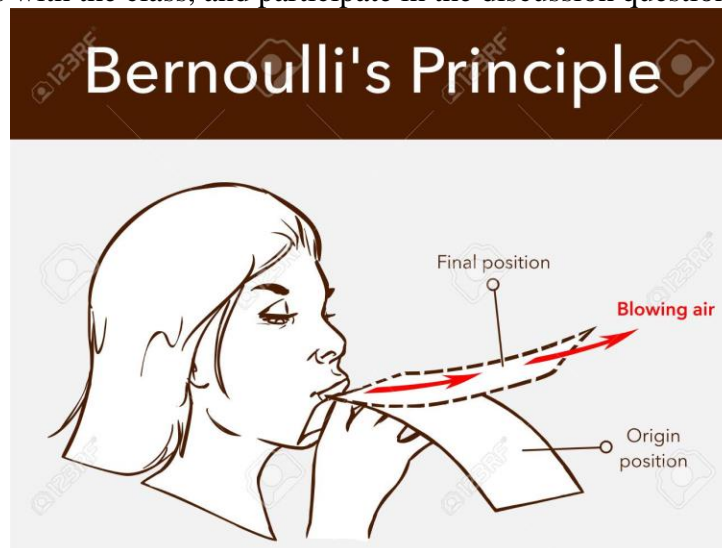
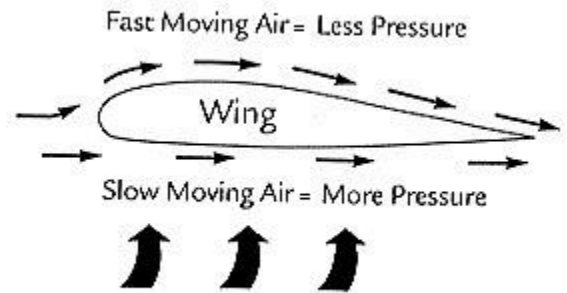


Figure 1. Bernoulli Paper Activity

Discussion Questions

Q: When air is blown across the top of the paper strip, is it moving faster or slower than the air on the underside of the paper?

A: The air on top is moving faster than the air under the paper. If the youth seem uncertain about this, have them test it. Have one of the partners blow outward across the strip while the other partner holds one hand below the strip and the other above the strip of paper. Then, have them trade places so that the other partner can experience this too.



Q: Does the air pressure on the underside of the strip change at all?

A: No, the air pressure underneath the strip remains the same, but the air pressure on top of the strip decreases as air is blown outward across the strip.

Q: Why do you think the strip of paper moved the way it did?

A: The difference in air pressure between the fast-moving air above the strip and the still air underneath the strip caused the strip to be pushed upward. This response of the strip to the difference in air pressure between moving air and still air demonstrates the Bernoulli principle

Q: Does the Bernoulli principle apply to birds and kites, too?

A: Yes