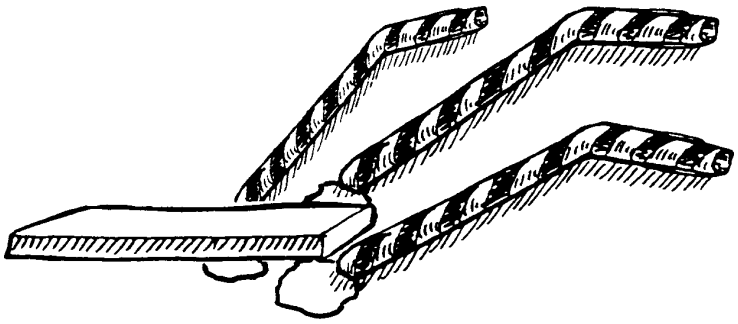
How Strong is Air?

This activity helps students to realize that air takes up space, and has strength, and that that strength can be used to lift heavy objects. Students will use everyday objects and their breath to lift something as heavy as a child off the ground on a cushion of air.

Materials

- A board strong enough to support the weight of a child and just large enough to stand on (wooden clipboards work well)
- Shoes, bricks or other heavy items
- Plastic produce bags from supermarket
- Straws (average thickness is best, like what you'd get at a restaurant)



Background for Teachers

We don't notice the air around us most of the time. In this case, air is trapped inside a plastic baggie. Students can see the baggie has air in it, and observe that air is quite powerful, by using air to lift a brick.

By forcing more and more air into a small space, the air in the baggies is compressed. This compressed air has great strength and can support a brick or a person. Compressed air is used in garage lifts to raise cars, in tires to support bikes, and in drills to break up concrete.

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Procedure

- Kneel in a small circle of 4 - 6 people.
- **Observe** the air around you.
- Make a **prediction**. How strong do you think air is? Think about moving air and what it can do. How do birds use air when they fly? Do you think you can lift a brick using only straws, plastic bags and air?
- Each person can use **one** straw and **one** plastic bag.
- Layer the plastic bags on top of each other in the center of the group with the open side of each bag facing out toward the student it belongs to.
- Place a brick or other heavy object on the board and place the board on top of the stack of plastic bags in the center of the group.
- Using just these materials, **no hands**, try to lift the brick by blowing air through the straws and into the plastic bags. Students will need to wrap the opening of the bag around the straw and hold it closed so that air cannot escape.

If you succeed in lifting a brick, try this:

- Have a **small** student stand on the board.
- Have an adult carefully spot the person.
- Try to lift the person using air.

Extending the Science

- What's the fewest number of baggies you can use to lift the brick?
- Can you lift the brick without using the board?