Blow It Out!

For second graders, air is a tricky science concept. After all, kids this age think in very concrete terms. And air is anything but concrete! It's invisible; it doesn't make sounds; you can't pick it up and throw it. So how do we know it exists?

One key way: we can see what it does. Here is an experiment that uses simple household materials to prove the point. It can also make for a very amusing family "magic" show. Just watch!

What You Need:

- Empty gallon milk jug, clean and dry, with cap off
- Scissors
- Strong plastic garbage bag
- Duct tape
- Lighted candle

What You Do:

1. Explain to your child that you will be exploring whether air really exists, even if you can't see it. Explain that one way we can identify air is by seeing what it can do—like when you use it to blow out a candle. (Your second grader may want to practice blowing directly a few times, just to be sure!)
2. Now explain that you can use the milk jug to blow out the candle, too, using just a few special modifications. Start by helping your child cut the bottom off the jug. Then cut a circle from the strong plastic bag, at least three inches bigger around than the opening of the jug.
3. Use the plastic to replace the bottom of the jug, and tape it firmly with the duct tape all around, so that no air can escape.
4. Now the fun part: Place the lighted candle in a holder on a table, and hold the jug at least a foot away, with the mouth of the jug pointed toward the candle. Holding the jug steady, hit the plastic firmly with an open hand. Watch: the candle should blow out, even though you never touched it or blew on it yourself. Why? The jug is full of air. When you banged on the bottom, you shot an air current straight out the jug, making a very simple version of a "vortex generator"! This is the same principle that brings us air guns and stomp rockets; together with lots of other complex physics, it also gives us space rockets, too!

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