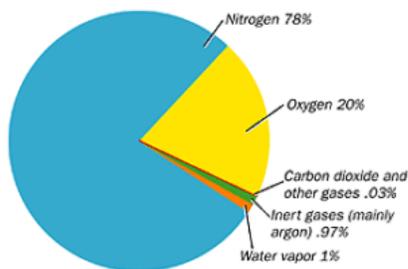


What's up with Air?

By Julie Webb

**Scientists ask questions. Scientist make observations.
I can be a scientist right now. I can ask questions. I can
record and analyze data. I can make observations.**

What is in this bottle? Nothing? Yes, air!



<https://www.toppr.com/guides/science/air-around-us/components-of-air/>

What is air?

I. Introduction: Air is a mixture of gases - oxygen, carbon dioxide + (plus tiny amounts of many other gases), water, and nitrogen. Unfortunately, there is also some pollution in the air.

Use iPads to let kids create a pie chart and make observations on the data.

https://nces.ed.gov/nceskids/graphing/classic/bar_pie_chart.asp?temp=74172.9

Nitrogen 78

Oxygen 20

Water 1

Carbon Dioxide+other misc. gases 1

Project sample as students enter above the data on their devices.

What do you notice about the components of air?

II. Nitrogen makes up most of the air we breathe. You can not see it, you can not smell it, you can not taste it. Nitrogen does two very important things. First, it

helps plants grow. Since the Earth has many, many plants, it's a good thing there is a lot of nitrogen in the air. Second, it dilutes the oxygen in the air so that the air doesn't explode! Oxygen is very explosive. Nitrogen keeps us safe from oxygen!

III. Water Can you see the water in the air. Not usually, Can you see the water in this bottle? Would you like to? Let's make a cloud. Before we do, let's look at water in this cloth. Is it dripping out? Why? What do you predict will happen if I squeeze the cloth? Right, if I squeeze the cloth there won't be enough room for the water. The water droplets will be squished together and fall out of the cloth. Now lets see if can squeeze water out of the air!

Pour a half teaspoon of alcohol into an empty water bottle. Cap the bottle tightly and shake the bottle. Now squeeze the bottle twisting the bottle into the shape on an 8. This compresses or squishes the air into a smaller space. This presses the tiny water molecules together making them easier to see. Let go of the bottle and when it springs back you will see the water vapor like a cloud in the bottle. Open the bottle and let the water vapor puff out of the bottle!

IV. Carbon Dioxide This is the gas that we breathe out. Take a deep breath. Now put your hand up in front of your face. Blow out the air out of you mouth. Much of the air you feel coming out of your mouth is carbon dioxide. Can we see it? Not usually, Would you like to see some carbon dioxide bubbles? Let's make some.

Pour 1 cup of vinegar into a water bottle. Pour $\frac{1}{3}$ a cup of baking soda into a balloon. Attach the balloon to the top of the bottle completely covering the opening. Lift the balloon to dump the baking soda into the vinegar. Watch the carbon dioxide bubble up and fill the balloon.

V. Oxygen in the air keeps you alive! When we breathe in air, our lungs move the oxygen into our blood which takes it to all cells in our bodies. Oxygen is the fuel that lets our cells burn the food with give them to make energy. This energy keeps us alive. We can't see oxygen but we can watch a candle use oxygen it

to burn energy stored in the candle wax. Light a candle. Let the candle burn. Ask the kids how long it will burn. It can burn until the energy in the wax is all used up or until the fire is blown out. But we can make it go out without blowing it out and without using up all the food or wax in the candle. We do this by not allowing the fire to have the oxygen or fuel necessary to use the candle wax. Place a jar over the candle. Watch as the fire uses up all the oxygen in the jar. When the oxygen is gone the fire will die.

VI. Bonus: Air Power Caterpillar Race just for fun!

1 x 4.5 in strips of paper

1 inch circle

Fold the strip of paper into fourths to make a zigzag caterpillar body. Draw eyes on the circle and glue on the head.

Use the force of air through a small straw to blow the caterpillar in a race across the desk.

Ask yourself, "Can nothing move objects? Can air move objects?"

Conclusion: write what you think about air now. Did your thinking change? How?

Super Scientist's Name _____

I can ask questions. What is air? Is air nothing?

Nitrogen 78%

Oxygen 20%

Water Vapor 1%

Carbon Dioxide+ (other minor gases) 1%

Create a pie chart to observe data at

I can make observations.

Use pictures or words to show your observations.

Nitrogen

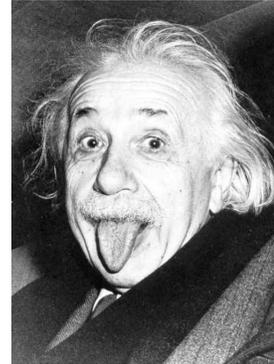
Water

Carbon Dioxide+

Oxygen

I can ask questions.

I can organize and analyze data.



I can make observations.