

## **June 6 – Floating**

This week we are going to make a ping pong ball float in mid-air and learn about Bernoulli's principle and air pressure!

**\*Always remember to ask an adult before doing any science experiment.**

### **Materials:**

- Hair dryer,
- Ping-pong ball,
- Empty toilet paper tube.

### **Procedure:**

1. Point the hair dryer up towards the ceiling and turn it on.
2. Slowly place the ping pong ball into the stream of air. What happens?
3. Try to slowly tilt the hair dryer from side to side, watch what happens to the ping pong ball. Be sure to try different temperature and speed settings on your hair dryer to see if there is a difference.
4. Once the ping pong ball is floating place the empty toilet paper tube into the stream of air above the ball. What do you notice?

### **Explanation:**

The ping pong ball should have floated in mid air above the blow dryer even when you tilted it! Why didn't the ping pong ball go flying across the room? It is due to something known as Bernoulli's principle (Bernoulli was a scientist who was born over 250 years ago!). He found out that when a stream of air moves faster than its surroundings (as in the hair dryer) the air pressure decreases. Because the ping pong ball is in the lower pressure air of the blow dryer, every time it tries to leave, the high pressure air from the room pushes it back in place, so it floats! When you added the empty toilet paper tube you should have noticed that the ping pong ball was sucked into the tube. As the air from the blow dryer hit the tube it was compressed into a narrow stream, this sped up the air even faster. As the air speed increased the pressure decreased even more. The areas of higher pressure (the room and the blow dryer) then forced the ball into the tube!

Have fun defying gravity this week! Be sure to check back next week for another neat experiment.

Jeff Unrau  
Regional Executive Director  
Praxis the Science and Technology Hotline

## **June 13 – Taste Without Smell**

Have you ever heard the expression “your eyes are bigger than your stomach” or what about “it smells good enough to eat”? Today we are going to do a simple experiment to determine how other senses, more specifically your sense of smell, affects how your food tastes.

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### **Materials:**

- Potato,
- Apple,
- Nose (best to use your own!),
- A set of very keen taste buds.

### **Procedure:**

1. Have an adult help you peel and cut both a potato and an apple into small pieces (be sure they are of the same size).
2. Place a blindfold over your eyes (or just shut them tight if you don't have a blindfold), plug your nose, and without peaking, mix up the apples and potatoes. Eat one. Which one did you eat? Were you able to tell the two apart?
3. Try it again, but this time keep your eyes closed and don't plug your nose. Was it easier to tell the apple and potatoes apart?

### **Explanation:**

You should have noticed that when your eyes were closed and your nose was plugged it was very difficult to distinguish between the potato and apple. When you unplugged your nose it should have been possible to tell the two apart. So what's happening? Your taste buds are limited in the different “flavours” that they can distinguish, these include; sweet, salty, bitter, and sour. Because your nose and mouth are connected through the same airway, every time you eat, you also smell the food. Your sense of smell is around 10000 times more sensitive than your sense of taste and when they work together your brain is able to identify lots and lots of different foods!

So keep this in mind next time you have to eat something you don't like; shut your eyes, plug your nose, and imagine it being your favourite food, you won't be able to tell the difference!

Jeff Unrau  
Regional Executive Director  
Praxis the Science and Technology Hotline

## **June 20 – Simple Chromatography Method**

Ever wonder how they make all the different colors in markers and pens? I did too! They use a variety of different colors and mix them together for the desired effect. There is an easy way to separate the different colors using chromatography.

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### **Materials**

- Coffee filter,
- Felt pens (non permanent) – Roller ball black pens work well,
- Rubbing alcohol,
- Small cup or plate.

### **Procedures**

1. Cut the coffee filter into a long and narrow strip.
2. Using a marker color a small circle along the bottom of the filter, repeat this process with the other markers leaving approximately 1 centimetre between each circle. Be sure to also leave a centimetre between the bottom edge of your filter and your circle.
3. Dip the bottom of the coffee filter into a cup of rubbing alcohol and wait for the filter to absorb the alcohol. The cup should only have enough rubbing alcohol to submerge the bottom few millimetres of the filter; the circles you coloured earlier should not be submerged.
4. Wait a few minutes while the alcohol slowly soaks into the filter, what do you see?
5. Repeat using different markers.

### **Explanation**

You should have noticed that while the alcohol was absorbed up the filter the ink from the pens moved with it. Each marker produced a variety of colors that may not have been present in the original marker color. So why did some colors travel further away from the original circle? The colors that travelled furthest weigh less and can travel easier through the filter. The colors that stay behind are larger and denser. We used a simple method of chromatography to show that each marker is made up of a variety of substances!

### **Upcoming Events**

Praxis will be attending the Bow Island Children's Festival on June 21 from 11:00 am – 5:00 pm, come on by for more fun experiments!

Jeff Unrau  
Regional Executive Director  
Praxis the Science and Technology Hotline

## **June 27 – Balloon Rockets**

With the weather warming up I'm sure most people are spending a lot of time outside. Once the sun goes down (on a clear night) take a peak into the sky. There is nothing more fascinating than countless stars twinkling in the distance. It got me thinking of space, so this week we are going to make our own balloon rockets! Although they won't make it all the way to the stars it will give us an idea of the principles behind the space shuttle.

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### **Materials**

- Balloons (several different shapes and sizes)
- String/fishing line (the longer the better!)
- A straw
- Tape

### **Procedures**

1. Attach one end of the string to a solid surface like a chair or table. This can be done outside as well using trees or patio furniture.
2. Slide the other end of the string through the inside of a straw.
3. Attach the other end of the string to another solid surface and make sure the string is stretched tight. The longer the length of your string the longer your rocket can travel.
4. Blow up a balloon but do not tie it, you want to attach it to the straw using tape while making sure no air escapes.
5. Once the balloon is firmly attached to the straw you can release it!
6. Be sure to try different types of balloons and strings to see how fast your rocket can travel.

### **Explanation**

The balloon should have shot across the string at incredible speeds! We all know that when you release an air filled balloon it goes flying all over the place, but how come? As the air is released from the balloon it creates forward movement equal to the force of the escaping air. This is known as thrust! The space shuttle also uses thrust to reach space, except the space shuttle burns fuel to eject hot gases and does so at a much larger scale!

If you are interested in learning more about the stars and space visit the Medicine Hat Astronomy Club's website at <http://nonprofit.memlane.com/astro/>. The Astronomy Club hosts regular visitor's nights at the Sunridge Observatory the next one is July 11. It is a great opportunity to get an up close look at space!

**Upcoming Events**

Praxis will be attending the Canada Day Celebrations in Kin Coulee on July 1<sup>st</sup>, be sure to visit our booth for more fun science experiments!

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