



Food for Thought

Line Creek Elementary



Scott McQuerry
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Mr. Q's Lab Notes

SIGN UP TO RECEIVE YOUR COPY OF MR. Q'S MONTHLY LAB NOTES.

THESE NOTES ARE FULL OF EXPERIMENTS AND SCIENCE-RELATED OPPORTUNITIES.

AND AS ALWAYS... NO SPAM!

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The lab of MR. Q

DARTH TATER



TRUST YOUR PEELINGS, LUKE FRY-WALKER. IF YOU ONLY KNEW THE POWER OF THE DEEP FRIED...

POTATO LAUNCHER

MATERIALS:

THREE OR FOUR LARGE POTATOES

CUTTING KNIFE

TWO FEET OF 1/2" PVC PIPE

WOODEN DOWEL ROD (IT SHOULD BE OVER TWO FEET LONG AND WIDE ENOUGH TO SLIDE THROUGH THE PVC TUBE)

RUN SPUD!
GET OUT OF
THE WAY!!!



IT'S TOO LATE FOR ME! SAVE YOURSELVES!

DIRECTIONS:

HAVE AN ADULT CAREFULLY CUT THE POTATOES INTO 1" THICK SLICES.

PLACE A SLICE OF THE POTATO ON THE GROUND. TAKE THE PVC PIPE AND STAB IT THROUGH A POTATO SLICE SO A PLUG IS CREATED ON ONE END.

PLACE ANOTHER POTATO SLICE ON THE GROUND AND REPEAT FOR THE OTHER END OF THE PVC.

HOLD THE LAUNCHER IN ONE HAND AND THE WOODEN DOWEL IN THE OTHER.

AIM THE LAUNCHER TOWARDS AN OPEN AREA - NEVER IN THE DIRECTION OF A PERSON.

USE THE DOWEL TO QUICKLY PUSH ONE END OF THE POTATO PLUG UP TOWARDS THE OTHER. THE POTATO ON THE OPPOSITE END SHOULD PROPEL THROUGH THE AIR.

HE'S MORE SPUD NOW THAN MAN... TWISTED AND SURPRISINGLY DELICIOUS.



MR. Q PREPARES TO WAGE WAR AGAINST DARTH

EXPLANATION:

THE POTATO LAUNCHERS WORK DUE TO THE CONCEPT THAT AIR TAKES UP SPACE. ONCE YOU CREATE A POTATO PLUG ON EACH END, YOU HAVE TRAPPED AIR INSIDE THE PVC PIPE. WHEN YOU PUSH ONE POTATO PLUG WITH THE WOODEN DOWEL, THE AIR INSIDE THE PIPE HAS TO GO SOMEWHERE. THERE IS ENOUGH PRESSURE CREATED TO PUSH THE OPPOSITE POTATO PLUG OUT OF THE PIPE AND INTO THE AIR.

Napkin" Launcher

Leaf blowers produce an air stream that moves at over 120 MPH. This is ideal for a variety of Bernoulli effect demos. Large balls, pop bottles, screw drivers, and small furry animals can be levitated within the air stream. Beach balls work particularly well in a room with a tall ceiling. A little water inside a smooth-bottomed 2l plastic bottle provides enough balast for an impressive demo, as shown at far left. Streams of toilet paper can be suspended 30' in the air. The removable pvc attachment shown in the picture at near left allows rapid and convenient dispersal of toilet paper.



Mmmm.... Bacon!

Students will conduct an inquiry-based activity on the topic of diffusion.

Materials:

Electric skillet or hot plate/skillet

Bacon

Chopped onion

Chopped red, green or yellow peppers

Timers

Activity:

1. Have students placed in rows in front of the demonstration table.
2. Instruct the students to raise their hand when they first smell an aroma of food in the air.
3. Ask a student in each row to begin their timers at the same time and to watch the students in their row. They are to record when the students in their row raise their hand.
4. Present the following problem statement to the students: How does the **type of food being cooked** affect the **rate of diffusion**?
5. Begin cooking the peppers.
6. Take an average time for each row and record the results.
7. Repeat this activity with the onion and then the bacon.

Explanation:

Cooking the bacon releases several aromatic molecules into the air. The convection of air from the heat source pushes these molecules through the air. The central concept of this activity is that all objects in the natural world tend to move from an area of high concentration (such as the aromatic molecules from the demonstration table) to areas of low concentration (such as the classroom).

Hypothesis:

If the **type of food being cooked** is an animal product, then the **rate of diffusion will** increase.



IT MAY BE OLD, BUT IT'S STILL A GREAT EXPERIMENT! I GIVE YOU THE INFAMOUS...

Egg in a Bottle - A Classic!

What you need:

Large-mouthed glass bottle
Hard-boiled egg
Birthday candle
Matches
Vegetable oil

What to do:



Step 1

CHOOSE AN EGG THAT IS SLIGHTLY LARGER THAN THE MOUTH OF THE BOTTLE. LINE THE MOUTH WITH A LITTLE OIL.



Step 2

INSERT A BIRTHDAY CANDLE INTO THE EGG AND LIGHT IT.

OKAY! I'M A LITTLE NERVOUS NOW...

What's going on?

As soon as the candle uses all the oxygen in the bottle the fire goes out. The heat from the candle expands the molecules of air in the bottle. When the fire is gone the molecules quickly move back together. Normally, air would be pushed into the bottle when this happens. Since the egg is in the way, the force of the air pressure outside of the bottle pushes on the egg and forces it into the bottle.



Step 3

PLACE THE EGG WITH THE CANDLE INSIDE THE INVERTED BOTTLE.



Step 4

THE EGG WILL MOVE INTO THE BOTTLE AFTER THE CANDLE

TO GET ME OUT, SEAL THE BOTTLE'S OPENING WITH YOUR LIPS AND BLOW!

Water to Wine (or Juice)

A visually fun demo to do for the students!

Materials:

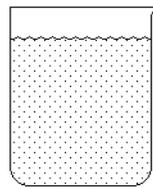
Phenolphthalein solution

Ammonia

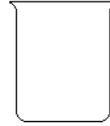
Vinegar

One clear pitcher

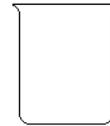
Three clear cups



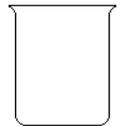
Pitcher
cap of
ammonia



Cup #1



Cup #2
few drops
phenolphthalein



Cup #3
cap of
vinegar

Activity:

Arrange the items as shown in the picture:

***Cup #3 should contain a bit more vinegar than the pitcher has ammonia.

1. A clear liquid from a pitcher is poured into cup #1 but becomes pink when poured into cup #2.
2. The contents of cups #1 and #2 are poured back into the pitcher in that order.
3. The liquid in the pitcher will now turn pink.
4. The liquid in the pitcher is poured into cups #1 and #2 but turns clear when poured into cup #3.
5. The contents of all three cups are poured back into the pitcher in the following order #1, #2 and then #3.
6. The liquid in the pitcher becomes clear and the clear liquid is then poured into all three cups.

Explanation:

Phenolphthalein solution is clear when neutral or acidic but turns pink when basic. Therefore, the ammonia solution (basic) turns pink in the presence of phenolphthalein within the second cup. The entire pitcher will turn pink when the contents of cup #1 and #2 are mixed together. However, when this pink liquid is in the presence of acid, such as in cup #3, its color will change back to clear. Since there is more vinegar (acid) than ammonia (base) in the pitcher, when all fluids are mixed together the resulting mixture is more acidic than basic. Thus, the liquid turns clear.

What's in My Cereal?!

Children will explore the iron content of their cereal.

Materials:

Total® brand cereal, or other high iron content breakfast cereal

Water

One super-strong craft magnet (found in most large craft stores)

Zip type bags

Activity:

1. Place a large handful of cereal into a baggie and add an equal amount of water.
2. Use your hands to crush the flakes to pin-head size pieces.
3. Squish the mixture together and let set for a few minutes until it becomes soupy.
4. Place the magnet on the outside of the baggie and swish the mixture around.
5. Particles of iron will collect inside the bag, near the magnet.

Explanation:

The human body requires iron for the production of hemoglobin molecules in red blood cells. It is the iron in the hemoglobin that attracts oxygen molecules, allowing the blood cells to carry oxygen to body cells. Since red blood cells are always being replaced there is a constant need for a new supply of iron in the diet.

The iron in the cereal is the same iron found in nails and automobiles. It is mixed in the cereal batter along with many other additives. The small size of these pieces is very easily digested by the acids in our body.