

How to teach osmosis

by [148734](#) on January 27, 2012

Table of Contents

How to teach osmosis	1
Intro: How to teach osmosis	2
Step 1: Equipment	2
Step 2: Dissolve the egg shells	3
Step 3: The fun part	3
Step 4: Measuring the mass	3
Step 5: Osmosis	4
Step 6: The final effect	4
Step 7: The science bit	5
Step 8: Extention work	5
Related Instructables	5

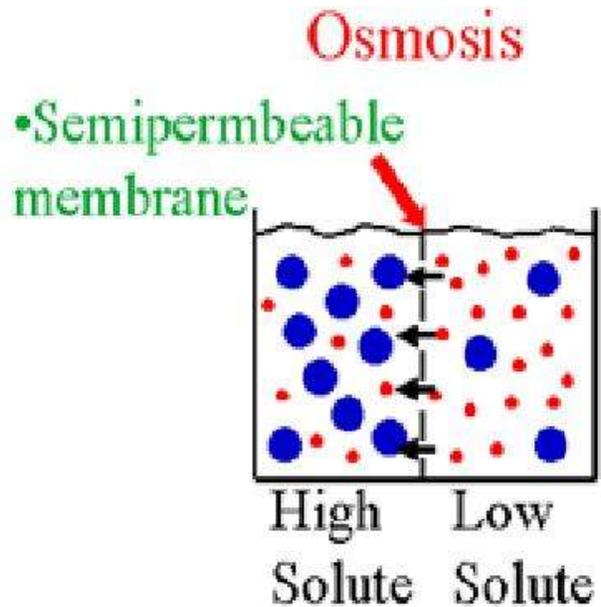
Intro: How to teach osmosis

I originally used this instructable as a demonstration to explain osmosis to my classes.

Over the years many of my pupils told me they'd tried it for themselves at home (got their interests, half my job was done). I've started using this method as a practical with **some** of my classes with great results and plenty of opportunities for pupils to visualise cells and osmosis also for extension work to challenge the more able (you know the one that has finished, while you're still explaining what to do to others).

Over all it does take 5 days but you can take about 2 days off by putting the eggs in vinegar yourself but it does lose some of its WOW.

I took these photos before I decided to make this instructable so sorry if photo doesn't quite fit the step.



Step 1: Equipment

- 2 x eggs
- about 500ml of vinegar (I normally use the distilled white vinegar, but this bottle was only 14p)
- 2 x 250ml Beakers
- bag of sugar
- 2 x 500ml beakers
- Post it notes or Sticky labels
- 1 x balance (the more accurate the better)



Step 2: Dissolve the egg shells

Place each of the eggs into a 250ml beaker and cover with vinegar. Place them in a spot where they won't be tampered with, (then put them somewhere even safer with a note on them, saying "do not touch"). Leave for 2-3 days (over weekend is best, you can set them up on a Friday lesson and revisit Monday/Tuesdayish).



Step 3: The fun part

The eggs now have no shells but are intact. Retrieve them using a spoon, or gently emptying the beakers into a sink.

This is normally the only problem part as **some pupils are put off by the smell of vinegar**.

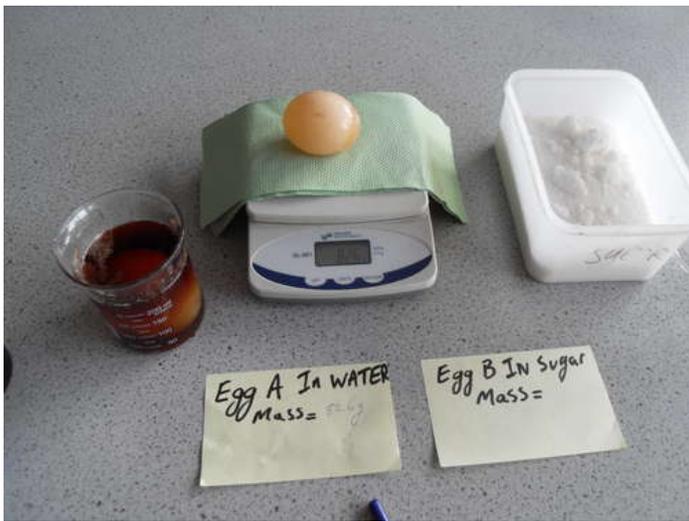
I am always paranoid of the bursting them, but this hasn't happened yet, and the ones that get dropped are easily cleaned up with some paper towels.



Step 4: Measuring the mass

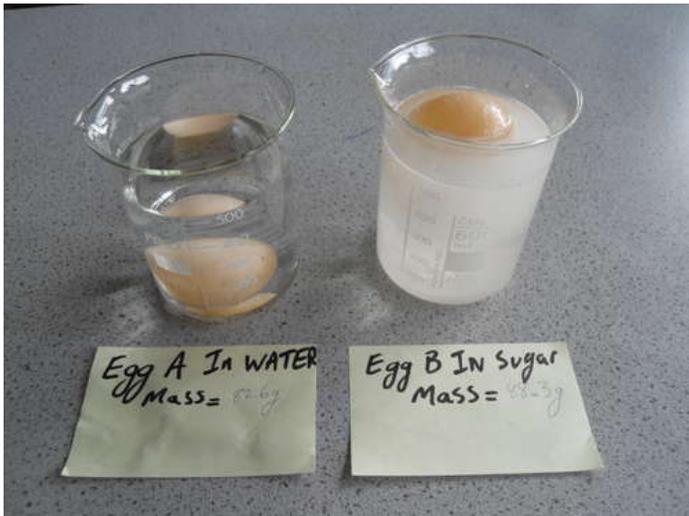
Place each egg on a balance and measure its mass as accurately as the equipment allows.

write each mass and conditions that each egg will be kept in on a separate label.



Step 5: Osmosis

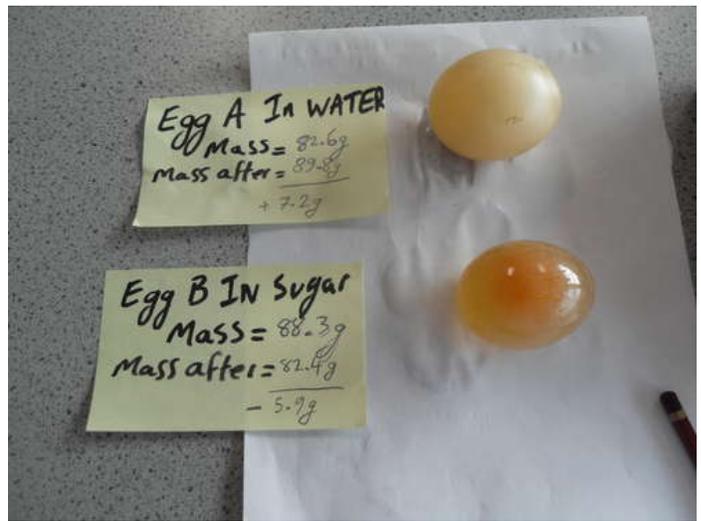
Put one of the eggs in a 500ml beaker and fill with water (don't forget the label).
Fill the other 500ml beaker with water and make a saturated sugar solution. (put so much sugar in so it doesn't dissolve any more).
Put the remaining egg in the sugar solution and label.
Place the beakers somewhere safe and **wait 2 to 3 days** .



Step 6: The final effect

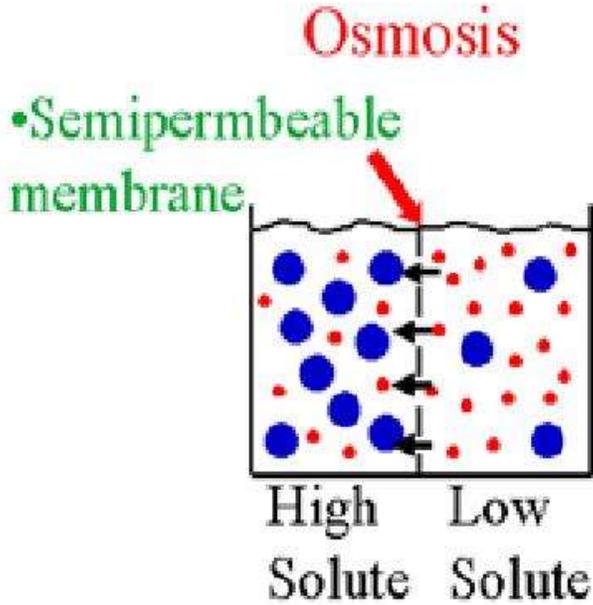
Basically remove the eggs, weigh them again, and **calculate the change in mass** .
I have had some amazingly visual effects at this point, the egg in the sugar solution can shrivel up to a third it's size and the one in water can expand to look like a fully loaded and primed to go water balloon (the kids notice this resemblance, you've been warned).

Make sure everyone washes their hands at the end of this practical.



Step 7: The science bit

The water is moving through the eggshell (semi-permeable membrane also called a selectively permeable membrane) from an area of high concentration to an area of low concentration.



Step 8: Extension work

Tell the pupils to:

- describe what is happening to each egg.
- calculate the percentage mass change
- draw a graph of class average results.

Related Instructables



Organic Hydroponics / Aquaponics by bhsx



The No Shame Sandwich, or The Triple Fried Egg, Chutney, and Chili Sauce Sandwich by JohnJY



How to breed eggs by spock155



How to make a bouncy egg. by futureventions



Eat Invasive Species: Himalayan Blackberry Custard Pie (Photos) by invasivore



Science Experiments With Eggs! by gobblewobble123

