The Heart

The heart is a muscle

LOCATION:

Just to the left of the middle of the chest.

SIZE:

Size of your fist – approximately

FUNCTION:

Pumps oxygenated blood around the body, and brings waste and deoxygenated blood back to the lungs.

HOW IT BEATS:

Before each beat, your heart fills with blood. The muscle then contracts (tenses) to squirt the blood along.

PARTS OF THE HEART:

4 Chambers:

Two at top, right and left atrium (atria)

Two at bottom, right and left ventricles

SEPTUM:

Muscle that separates the two sides

VALVES:

Keep blood flowing in correct direction.

VEINS AND ARTERIES:

Feed in and out of heart.

1. Deoxygenated blood comes in to heart through superior and inferior vena cava into the right ventricle.
2. Passes through tricuspid valve.
3. Into right atrium.
4. Passes pulmonary valve into the pulmonary artery.
5. Blood is sent to both lungs – it collects oxygen (o2) and gets rid of waste (co2).
6. Oxygenated blood comes back into heart through aorta.
7. Through mitral valve.
8. Into left ventricle and out through aorta around the body.

Arteries carry oxygen rich blood FROM the heart.

Veins carry deoxygenated blood TO the heart.

Edible Hearts

Aim:

To represent the parts of the heart with edible ingredients.

Equipment / Ingredients:

9 regular sized Marshmallows

16 mini marshmallows

Red and blue food colouring

Icing sugar

Rice crackers

Cocktail sticks

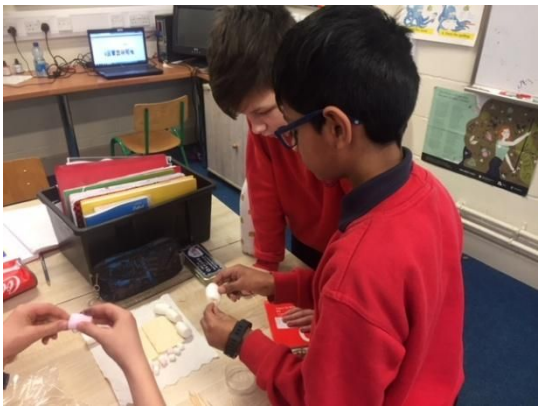
Knife

Labels

Procedure:

1. Mix red food colouring into one half of the icing and the blue food colouring into the other half of the icing.

2. Put three regular marshmallows on a cocktail stick. Repeat four times. These represent the pulmonary veins.



3. Put four mini marshmallows onto a cocktail stick. Repeat three times. These represent the aorta.

4. Secure in a cracker bread and use a knife to spread the coloured icing onto a cracker bread - blue on one and red on the other. These will represent the chambers of the heart.

5. Label each part of the heart

Result:

We assembled the edible parts to make a heart. We labelled each part.

Conclusion:

We used blue icing for the inferior and superior vena cava as they carry deoxygenated blood from the body to the heart. The deoxygenated blood then flows through the right atrium and ventricle before it is carried to the lungs by the pulmonary artery.

The red icing represents the pulmonary veins that carry oxygenated blood from the lungs back to the heart, through the left atrium and left ventricle .The aorta then brings that oxygenated blood from the heart to the rest of the body.

How Do Valves Work

Aim: To learn how valves ensure one directional flow to the heart.

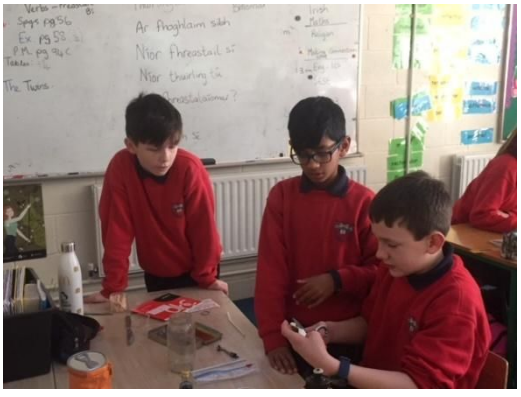
Equipment: Jar, balloon, 2 bendable straws, water, scissors, Sellotape

Procedure:

1. Fill a jar ¾ full with water.

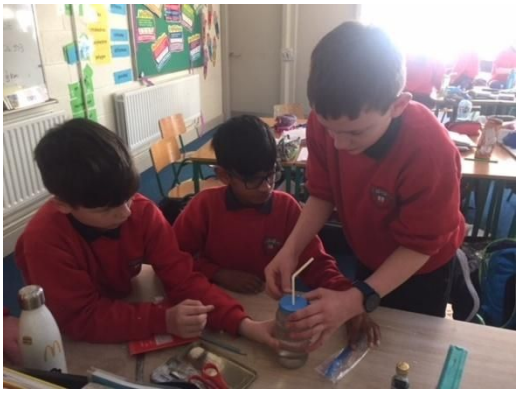
2. Inflate the balloon to stretch it a little.

3. Cut the neck off the balloon and keep it for later.



4. Stretch the top of the balloon over the jar.

5. Pierce 2 small holes in the top of the balloon and place the straws in the holes.



6. Secure the bottom part of the balloon to the head of one of the straws, using sellotape, ensuring the mouth is facing out.

7. Press sharply on the stretched balloon and observe the water as it squirts out of the straw.

Prediction: I think the water will squirt out the open straw more.

Results:

The water squirted out the balloon valve. It did not go back the straw as the valve closed each time we pressed. The harder we pressed the more water came out.

Conclusion:

The valves in the heart close after each squirt of blood. This stops blood flowing down the wrong way and keeps the blood circulating around the body in the correct way. We also saw (by accident) how a hole in your heart affects the blood flow and functioning of the heart. When the air was escaping through a hole in the balloon the required pressure wasn't there to pump the water effectively.

How Do Valves Work – Experiment 2

Aim: To explore the functioning of the heart valves in a more detailed way.

Equipment: 2 plastic bottles, 3 straws: 2 long 1 short, crocodile clips, water, food colouring, compass.

Procedure:

1. Pierce a hole in the lids of the bottles using the compass and secure on the bottle.

2. Pierce one bottle with a hole on each side and the top.

3. Turn the other bottle upside down our pierced bottle and put short straw in through the hole on the lid.

4. Insert the long straws one into each hole at the side of the bottle and attach the outside of the inured bottle secure with Sellotape.

5. Add food colouring to the jug of water and pour through the straws, filling to the level of the hole.

6. Squeeze the bottle in pumping action and observe what is happening.

7. Put the crocodile clip on the short straw and squeeze the bottle again.

8. Observe what happens this time.

Prediction:

I thought the first it would go up a little but most of it would not, I thought the second time none would go up.

Results:

1. The first time we squeezed the bottle the coloured water went up through the straws through to the other bottle.

2. After we added the crocodile clips to it the water didn't travel.

Conclusion:

The crocodile clip added like a value. When it was closed the blood wasn't able to travel back up the straw. This means the blood passing one way through a chamber can't go back up, once the valve is closed.