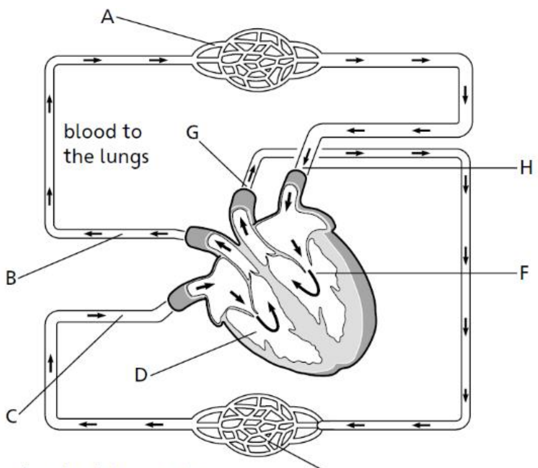
Year 5 & 6 Science: Home Learning Week 10

Hello Year 5 & 6, this week our focus is on the circulatory system. You should try to complete tasks 1, 2 & 3 if you can, the rest, including the practical activity, are optional. I've included instructions to make a robotic hand.

As always, remember to get permission from an adult before doing any practical activities and clean up after yourself when you're finished!

Take care & stay safe

Miss Johnston ☺

Task	Description
1	Watch the BBC Bitesize lesson on Wednesday. Here's a link to the daily lessons page: https://www.bbc.co.uk/bitesize/tags/zncsscw/year-6-lessons/1
2	Visit BBC Bitesize, read the information and complete the activities on the circulatory system: https://www.bbc.co.uk/bitesize/topics/zwdr6yc/articles/zs8f8mn
3	Answer the following questions: a) What does the circulatory system do? Why is this important? b) Can you name the main organs in the circulatory system? c) Why do you think the circulatory system got its name? Use a dictionary to find the meaning of 'circulate' to help you.
4	*The circulatory system.* Your heart and all the blood vessels inside you make up your **circulatory system**. The job of the circulatory system is to carry blood to all the parts of your body. **Arteries** leave the heart and branch into smaller and smaller tubes. The smallest of these tubes are called **capillaries**. These then join back together to form **veins**. Your heart is divided into four **chambers**. The top two chambers receive blood from the veins. The blood then goes into the bottom two chambers which contract and force blood into the arteries. Answer the following questions: a) How many chambers does the heart have? b) Which of the letters on the diagram of the circulatory system show: i. arteries ii. veins iii. capillaries c) The heart in the diagram is drawn as though you are facing the person. Which letter shows the right hand side of the person's heart?
5	**OPTIONAL PRACTICAL ACTIVITY: Build a robotic hand**

Practical Details

Build a Robotic Hand

About this activity

Have you ever wondered how your hand works when you hold something? Have you ever wanted to build a robotic hand of your own? This engineering activity will show you how the bones and tendons in your hands work together to grip things.

Safety note

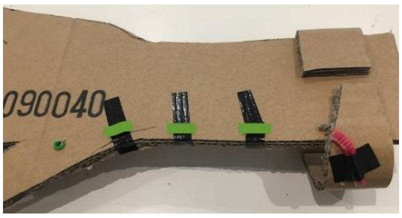
- Take care when using scissors.

Equipment & materials

- Corrugated cardboard
- Sticky tape
- Drinking straws
- String
- Scissors

Method

1. Draw the shape of your robotic hand on the cardboard. You can simply trace your own hand or draw a bigger, "more robotic" hand.
2. Below the wrist, continue to cut out a forearm, which will attach to your own, like a glove.
3. Mark the joints of the fingers on the cardboard (2 joints for the thumb, 3 for the other fingers). You can use a ruler to fold the joints more easily.
4. Cut the straws into 20, 1cm-long pieces and 5 longer pieces of about 3-4 cm. Tape them onto the cardboard hand as shown by the green and red markings in the picture.
5. Make a hole at the tip of each finger and at the base of the thumb.
6. Thread a piece of string through each fingertip, tying a knot on the back to keep it from slipping through.
7. Thread a piece of string through the straw pieces on each finger and make a loop for your fingers at the bottom.
8. Thread a piece of string through the straw pieces on the thumb, then through the hole at the base of thumb so that the string runs down the back of the "hand". Make a loop for your thumb.
9. Using a spare piece of cardboard, cut out a 2cm wide strip to form and arm brace to support the hand when you use it. Attach this near the end of the cardboard arm, as shown in the pictures.



The back of the hand & thumb

Threading the string

The completed project

Expected observations and results

Unlike other parts of the body, which rely on muscles for movement, our hands move because of tendons pulling on our finger bones. In this activity, the cardboard acts as the bones of the hand. The string represents the tendons on the inside of the fingers and palm, which contact (squeeze together) when you grip something and relax (stretch out) when you let go. In this model, you can pull on the strings to move each finger independently, unlike in our hands where the middle and ring fingers share a tendon and so cannot move very far on their own – have a go and see!

Questions & possible further investigation

If you have enough cardboard, you could make other models to try to find the perfect design for a robot hand:

- Does adding more fingers improve grip?
- Are shorter fingers easier to control than larger fingers?
- What happens when you add more joints?