



INVENTIVE BRITAIN

AGE RANGE Primary

TIME 45 minutes

This activity will provide children with a chance to develop creativity and extend scientific knowledge. It will allow them to use a variety of differing styles of writing, e.g. reporting and instructions and will provide opportunities for team work. It will provide a starting point for further research into other inventions.

CURRICULUM LINKS Science, English, Mathematics, Design and Technology, History, Computing, PSHE.

FURTHER INFORMATION

This series of stamps looks at eight key inventions from the past century. Ask the children to research the inventions and then discuss their importance. Have any of the inventions gone on to other things? E.g. there are investigations into different types of cat's eyes for the road, including those that change colour according to the temperature.

What kind of person would you have to be to be an inventor? How could your work affect the rest of your family?

Activity

This activity involves children creating an invention that would be useful now or in the future. The children will need to draw a set of plans showing how it works and then write an explanation of what it does. They will also need to explain what the benefits are. Ask the rest of the class to act as a panel and imagine that they were in charge of £500,000 which could be given to the best invention. The children need to explain what it is, what it does and why it is important. The class could then vote on which invention was the best.

LOWER

- Draw a picture of something you would like to invent. Explain underneath what it does.

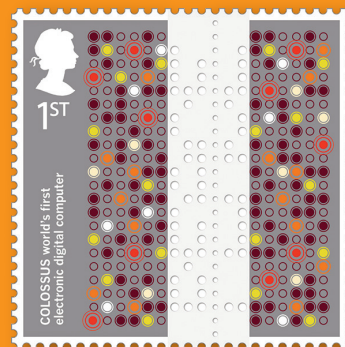
ADVANCED

- Using your plans from above, build a simple model (working or non-working) of your invention. Inventions do not have to be complex, sometimes the simplest thing can be a great success.



COLOSSUS

The Colossus was the name given to a group of computers which were invented during the Second World War between 1943 and 1945. The computers were designed to be used at Bletchley Park where they were used by code breakers. This computer was very different from the modern day machines, and engineers had to change the wiring and plugs if they wanted the machine to carry out a different job. It was known as a 'program controlled' computer, and it could take up to three weeks to change the function. It did not store programs in its memory. Tommy Flowers was the engineer who designed Colossus, the world's first programmable computer.



WORLD WIDE WEB

Today the Internet and the World Wide Web are part of our everyday lives, but this hasn't always been the case. It was only back in 1989 that a British computer scientist Sir Timothy John Berners-Lee developed the Web. Born in London, both his parents were computer experts. Interested in electronics as a young child, he qualified and went to work in CERN in Geneva, Switzerland, where his boss let him work on developing links between the Web and the Internet. The Internet and the World Wide Web are connected but are different. The Internet is a huge mass of information whilst the Web is a system which interprets this information through web pages, browsers and various other systems.



CAT'S EYE

The Cat's eye was invented by Percy Shaw in 1934. Percy used to meet his friends at his local pub which was on high ground and was often cloudy and foggy. On his way home, he would rely on the reflection of his headlights on the tramlines. However once the tramlines disappeared things got difficult. One night a strange reflection made him stop his car. The reflection was that of a cat's eye. This, it is said, was the inspiration for his invention which is now used all over the world. Cat's eyes are used to indicate the middle or sides of the road. Whilst plain ones are most often used, you will also find red, amber and green on major roads and motorways.

They are reflective studs used to mark roads and improve road safety by reflecting car lights. Cat's eyes are usually put into the surface of unlit roads.



FIBRE OPTICS

In the 1950s an Indian physicist Narinder Singh Kapany and a British scientist Harold Hopkins sent a simple picture down a pipe made from thousands of glass fibres. Fibre optics are used to send light beams down thin strands of plastic or glass. They are usually no thicker than a human hair. They can be made of silica or plastic. They are also used in communications to send data. Large parts of the country are now served by fibre optics which bring broadband into our homes and offices. This has speeded up transmission times and improved the quality of information including pictures and video on our computers and laptops.



STAINLESS STEEL

Harry Brearley has been described as the inventor of 'rustless steel' which went on to be called stainless steel. He used this to produce the inside barrel of a gun. Born in Sheffield, he started life as a steelworker working at his father's steelworks. He then became an assistant in their chemical laboratory. He often studied at home and by his late thirties he was known for being very clever. Today stainless steel is used in many forms from manufacturing pots and pans to car parts, cutlery and parts of washing machines. The main property of stainless steel is that it does not rust and it lasts a long time. It is also very hardwearing and can stand high and low temperatures. It can also be polished to give a shiny surface and is mainly recyclable. It is ideal for use in buildings and in the manufacture of sinks.



CARBON FIBRE

Thomas Edison, the inventor of the light bulb, was one of the first to use carbon fibre. Although the fibres he used were not as strong as today, they could stand a great deal of heat and that made them ideal for conducting electricity.

He made his fibres out of bamboo and cotton, however in the late 1950s new high tensile strength carbon fibres were discovered. These weighed very little and were more tensile than steel. They could be drawn out and stretched more easily. The USA quickly started using the technology to help build lighter planes and space craft. New fast cars are often built from carbon fibre and so are snowboards, also very light bicycles and tennis racquets providing athletes with even more flexibility and speed.

POSTAL FACT: In 1978 the first optical cable system in Europe to form part of the public telephone network was installed between the Post Office Research Centre in Martlesham and Ipswich telephone exchange.



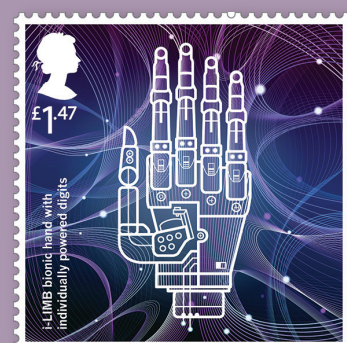
DNA SEQUENCING

This was discovered in part in the 1970s by two American biologists Allan Maxam and Walter Gilbert. DNA sequencing is the process of determining the precise order of nucleotides within a DNA molecule. DNA is used in police work to identify victims and criminals, and for DNA profiling. DNA stands for deoxyribonucleic acid, a self-replicating material which is present in nearly all living organisms as the main constituent of chromosomes.



i-LIMB

The i-Limb is a man-made hand invented by David Gow and a team of engineers at the Princess Margaret Rose Hospital in Edinburgh. Manufactured by Touch Bionics it looks like a real hand but is far more sophisticated than the old prosthetic hand. It also allows the wearer to pick up things and use it for normal activities. Motorised fingers allow the hand to bend and flex. The user only has to think about moving the hand for it to work. Using the latest technology, you can increase or decrease their grip around objects. This is very useful when tying laces or opening a bottle or jar. It was launched in 2007.



Further activities

- Choose one of the inventions on the list and imagine that you have been sent to write a report for the local paper on the inventor or the team involved. Explain in clear terms what has been invented and its use. What kind of impact will it have on the world in general?
- Look at some of the activities of the fictional character Professor Branestawm. See if you can invent something along the lines of one of the professor's designs. Professor Branestawm books were written by Norman Hunter. The first two were written in the 1930s but the others were published after 1970.
- Using the Internet and books, find ten inventions from the 19th and 20th centuries. Create a timeline over 200 years and then mark on the time line your ten inventions.
- Go through some magazines or newspapers and cut out four items, e.g. fridge, car, plane, bicycle and see if you can find out who invented them and when. Another idea would be to choose five things from around your home.
- What kind of people make good inventors? How would their work affect the rest of their family?

