

APP

AF1, AF2

PoS

1.1a, 1.2a,
1.2b, 1.3a,
1.4a, 2.3a, 4a,
4c, 4h

Framework

1.1a1, 1.1a2,
1.1a3, 1.1b,
1.1c, 2.1

Resources

Worksheet 2.1 or 2.2

Weblinks you may find useful:

[Plastic surgery in ancient India](#)

[Plastic surgery in World War 2](#)

[Changing Faces homepage](#)

Task overview

Pupils research the history of 'nose jobs' in order to write a script for a radio documentary. They could record the work.

Key concepts

circulatory system, microbes, infection, antibiotics, antiseptic techniques

Outcomes

Script for radio documentary.

Alternative outcome: recorded radio documentary.

Timing

2 lessons

OR 1 homework + 1 lesson

Safety

Some images of surgery may be too graphic for some pupils.

Levels 3–4

Show pupils photos of celebrities who have had nose surgery; before and after photos if possible. Ask for their comments on this.

Pupils then use *Worksheet 2.1 Nose jobs 1* to find out about the history of facial surgery. They follow the instructions on the sheet to construct a radio documentary script or work in groups to plan and record a radio documentary.

There is no need for pupils to do any research or writing, although some may like to.

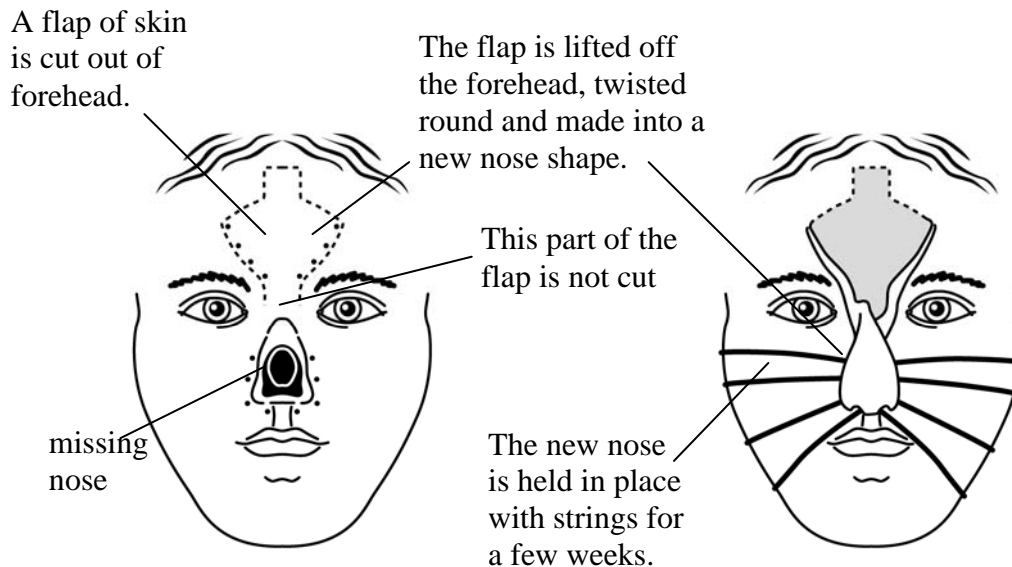
Pupils will be aided by access to the Level Descriptions Sheet. Assessment by you, or by pupils themselves, can be done by using Level ladder 2.1.

Levels 5–8

As above but pupils use *Worksheet 2.2 Nose jobs 2*. Assess using Level ladder 2.2.

Some people choose to have plastic surgery because they want to change the way they look. The term 'plastic' means 'to shape' and has nothing to do with plastics. Plastic surgery has been around for a very long time.

In ancient India people had their noses cut off as a punishment. Doctors used flaps of skin from the forehead to try to rebuild their noses. The skin survives as long as it stays attached to the rest of the body and the blood can flow – a bit like a leaf on a tree.



How early plastic surgery was carried out in India.

At the end of the 1700s people became interested in having cosmetic surgery – surgery to make them look more attractive. Then two things happened in the 1800s that made cosmetic surgery still more appealing to people:

- In 1842 Crawford Long was the first person to use a chemical to numb the pain of someone having surgery. This was the first anaesthetic used in surgery.
- In 1867 Joseph Lister used carbolic acid to kill germs when doing operations. Soon many surgeons were using carbolic acid to stop infections and so surgery became much safer.

In 1903, a 22-year-old American woman called Gladys Deacon wanted to make her nose look perfect. She had hot wax injected into it. But soon the wax started to lose its shape and slid into her lips and cheek. She died in 1977 after spending most of the rest of her life in hospital.

Penicillin is an antibiotic that was used to kill bacteria in Britain following its discovery in 1928 by Alexander Fleming. Antibiotics are helpful in fighting infections.

During World War II the faces of some people were very badly burned. Surgeons such as Archibald McIndoe developed better 'plastic surgery' techniques to help rebuild these people's faces. He developed a new type of skin graft and found that soaking wounds in salty water helped them to heal faster. He made this discovery by wondering why the wounds of pilots who had crashed into the sea healed faster than those who had crashed on land.

We may think that plastic surgery is only for people who want to look a bit better but it is very important for helping people whose faces have been burnt or damaged in an accident.

Some people feel that we desire a perfect face so much that people with faces who look different are treated badly by society. Changing Faces is a charity that supports and represents people who have 'disfigurements' to the face, hands or body from any cause. It also campaigns to try to get people to see more than just a face.

What you need to do

Get together in a small group and plan and act out a radio documentary about the history of facial surgery. Your teacher might record it. The documentary needs to explain:

- how the need for facial surgery has changed over time
- how developments in science have helped surgeons get better results
- about the latest facial surgery that is possible now.

You may find these words helpful

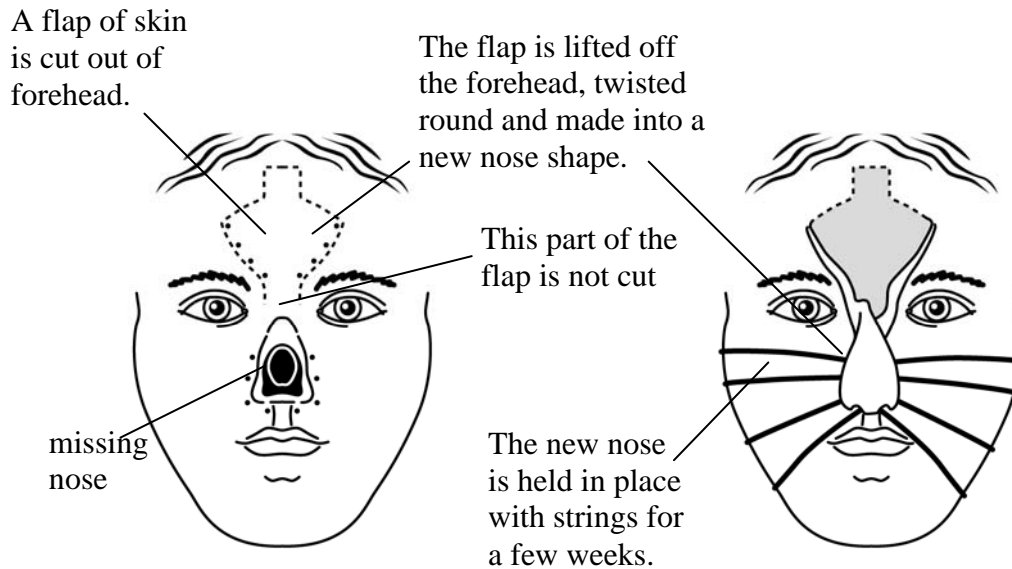
anaesthesia, antibiotic, circulation, disfigurement, facial surgery, infection, microbes

Safety

Be aware you may find some images upsetting on the internet.

Some people choose to have plastic surgery because they want to change the way they look. The term 'plastic' means 'to shape' and has nothing to do with plastics. Plastic surgery has, however, been around for a very long time.

In ancient India people had their noses cut off as a punishment. Their noses were recreated using flaps of skin from the forehead. Apparently, the nose looked quite good and the forehead scar faded after some time. The skin survives as long as it stays attached to the rest of the body and the blood can flow – a bit like a leaf on a tree.



This method was invented in about 500 BC and was still being used in India in the nineteenth century.

In Europe, people who had lost or damaged their noses often had noses made of metals and wax. For instance, the Dutch astronomer Tycho Brahe (1546–1601) fought a duel with another man after they argued about who was the better mathematician. In the duel Brahe lost a large chunk from his nose, which he filled in with a mixture of gold, silver and wax! Surgeons in Europe also experimented with flaps of skin taken from the forehead or an arm.

Towards the end of the eighteenth century people started to become interested in having cosmetic surgery – surgery to make them look more attractive. This was often done by injecting things into the face.

In the late nineteenth century it also became possible to numb the pain of surgery and even 'knock people out', using drugs called anaesthetics. This meant that people did not have to suffer so much to try to improve their looks, and so cosmetic surgery started to become even more popular. However, it did not always go well. In 1867 Joseph Lister wrote about using carbolic acid to kill germs when doing operations. This was used by surgeons to stop infections and is called antiseptic surgery.

The first modern 'nose jobs' were conducted in the 1890s by American surgeon John Roe (1848–1915) and German surgeon Jacques Joseph (1865–1934). Their techniques involved taking away some of the cartilage in a patient's nose – most of the hard stuff that forms the shape of your nose is cartilage, not bone.

During World War II the faces of some people were very badly burned. Surgeons such as Archibald McIndoe (1900–1960) developed better ‘plastic surgery’ techniques to help rebuild these people’s faces. He developed a new type of skin graft and found that soaking wounds in salty water helped them to heal faster.

McIndoe made this discovery by wondering why the wounds of pilots who had crashed into the sea healed faster than those who had crashed on land.

These days plastic surgery continues to improve. We tend to think that plastic surgery is only for people who want to look a bit better but it has a very important role in helping people whose faces are disfigured, due to burns or accidents.

However, some people feel that we now have such a desire for perfect faces that people with facial disfigurement are treated badly by society. Changing Faces is a charity that supports and represents people who have disfigurements to the face, hand or body from any cause. It also campaigns to try to get people to see more than just a face.

What you need to do

Get together in a small group and write a script for a radio documentary about the history of facial surgery. You could get further information from the internet. The documentary needs to explain:

- how the need for facial surgery has changed over time
- how developments in science have helped surgeons get better results
- about the latest facial surgery that is possible now.

Safety

Be aware you may find some images upsetting on the internet.

You can assess yourself on two strands: AF1 and AF2.

	AF1 Thinking scientifically	AF2 Understanding the applications and implications of science
3	<p><i>To reach this level I could have:</i></p> <p>a said that antibiotics are not the same as antiseptics.</p> <p>b explained that antibiotics kill bacteria and so can stop infections in patients who have had surgery.</p> <p>c described how the shape of the nose can be changed by putting things in it or removing things from it, like plasticine.</p> <p>d used information on the worksheet to explain that more complicated surgery is now possible.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p><i>To reach this level I could have:</i></p> <p>a explained that facial surgery can help people if they have had an accident.</p> <p>b stated that the discovery of antiseptics meant more people survived after surgery.</p> <p>c said how nose surgery can affect somebody's life.</p> <p style="text-align: right;"><input type="checkbox"/></p>

	AF1 Thinking scientifically	AF2 Understanding the applications and implications of science
4	<p><i>To reach this level I could have:</i></p> <p>a described that the blood contains substances that keep cells alive – allowing skin flaps to survive.</p> <p>b described how a leaf is a bit like a skin flap – the leaf is alive as long as it is attached to the tree but will die if removed.</p> <p>c used the evidence on the sheet to agree with the statement that surgery can go wrong.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p><i>To reach this level I could have:</i></p> <p>a described advantages and disadvantages of advances in plastic surgery.</p> <p>b pointed out that antibiotics are routinely used to treat infection when operations are carried out.</p> <p>c said that plastic surgeons need to have good understanding of the skin and the circulatory system.</p> <p style="text-align: right;"><input type="checkbox"/></p>

You can assess yourself on two strands: AF1 and AF2.

	AF1 Thinking scientifically	AF2 Understanding the applications and implications of science
5	<p><i>To reach this level I could have:</i></p> <p>a described some of the steps surgeons carry out to try to make sure people survive surgery.</p> <p>b explained why some nose surgery might fail, using a model for the circulatory system such as comparing it to a central heating system.</p> <p>c pointed out that cosmetic surgery can still leave considerable scars.</p> <p>d pointed out how McIndoe came up with the idea of soaking wounds in salty water.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p><i>To reach this level I could have:</i></p> <p>a described that some people think that plastic surgery should only be done for people who have had an accident, whilst others think that anyone should be able to have it done.</p> <p>b said that because surgery is more successful, more people now want cosmetic surgery to change their looks and there are now more jobs for plastic surgeons.</p> <p>c stated that some people think cosmetic surgery is wrong because it creates a perfect image which many more people then feel they have to conform to.</p> <p>d described how facial reconstruction techniques are used by surgeons to help burns victims.</p> <p style="text-align: right;"><input type="checkbox"/></p>

	AF1 Thinking scientifically	AF2 Understanding the applications and implications of science
6	<p><i>To reach this level I could have:</i></p> <p>a explained how the heart, lungs and small intestine work together to transport food and glucose around the body.</p> <p>b explained that the water model of circulation is good because the blood and heart are represented, and the heat being given off at radiators is like respiration in cells but the model is poor because it doesn't represent the lungs.</p> <p>c described how an experiment I have done or seen supports the idea that microbes are killed by antibiotics.</p> <p>d described how surgeons in World War II would have found out about other surgeons' ideas.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p><i>To reach this level I could have:</i></p> <p>a explained some of the factors that a plastic surgeon takes into account when deciding to try a new surgical technique, e.g. cost, success rate, age of patient.</p> <p>b explained how plastic surgery has helped burn victims because it makes them look 'more normal' in other peoples' eyes or explained how cosmetic surgery has made some actors look younger so they are more likely to get acting jobs.</p> <p>c explained how the idea of using skin grafts for nose surgery has led scientists to take things further and explore the idea of face transplants.</p> <p>d described how surgeons need a good understanding of the circulatory system and muscles.</p> <p style="text-align: right;"><input type="checkbox"/></p>

	AF1 Thinking scientifically	AF2 Understanding the applications and implications of science
7	<p><i>To reach this level I could have:</i></p> <p>a organised the information in the radio broadcast systematically in order to explain the advances in cosmetic surgery.</p> <p>b explained how good some of the evidence that saline helps wounds heal is, e.g. there were probably lots of casualties in the war with similar wounds and similar situations.</p> <p>c described how various experiments that I have done, seen or read about support the idea that microbes are killed by antibiotics.</p> <p>d described how some of the surgical techniques would have been accepted by scientists, e.g. reading each other's published works and repeating surgery to see if they got the same results.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p><i>To reach this level I could have:</i></p> <p>a pointed out that new techniques in cosmetic surgery are driven by peoples' willingness to pay for treatments that will help them look better.</p> <p>b explained how scientific developments can change everyone's views around the world, e.g. progress in surgical procedures means that simple surgery can be carried out safely and/or without pain anywhere in the world.</p> <p>c suggested different reasons for and against plastic surgery, including such things as the cost, whether it is right or wrong to change your natural appearance, religious views.</p> <p>d explained how surgeons have thought creatively about improving the results in cosmetic surgery, e.g. using skin from similar-coloured parts of the body for skin grafts.</p> <p style="text-align: right;"><input type="checkbox"/></p>

	AF1 Thinking scientifically	AF2 Understanding the applications and implications of science
8	<p><i>To reach this level I could have:</i></p> <p>a described how cells need oxygen to survive, including a detailed description of aerobic respiration and its importance, drawing on ideas of cells and organelles and of chemical reactions and of energy.</p> <p>b used criteria, such as accuracy of data, source of information, to judge how good different pieces of information on the internet are in helping me to form an argument for or against facial plastic surgery.</p> <p>c explained how the surgery has changed over time and described in detail the new evidence that has brought about these changes and how this evidence has brought about these changes.</p> <p style="text-align: right;"><input type="checkbox"/></p>	<p><i>To reach this level I could have:</i></p> <p>a explained how the first ideas for facial plastic surgery came about because people used to think it was fair to cut off someone’s nose if they had done something wrong.</p> <p>b judged whether developments in plastic surgery have had good or bad effects on our society and justify why I think this.</p> <p>c explained how the developments in surgery from World War II led to more people wanting nose jobs for cosmetic rather than reconstructive reasons.</p> <p>d said why I think facial surgery is overall a good or a bad thing and why I think this, considering the costs and how the treatments affect patients and those around them.</p> <p style="text-align: right;"><input type="checkbox"/></p>