



Lesson 1: Invention of the light bulb

In this activity, pupils explore the history surrounding the development of the light bulb and the role Thomas Edison played in its creation.

PREPARATION

Photocopy the information page *The historic race to make-a-better-bulb* for each pupil. Photocopy the activity sheet *Invention of the light bulb* for each pupil.

LESSON

Ask your class to think about the humble, unassuming light bulb, an everyday object that passes without comment – until it doesn't work. The light bulb has been vitally important in the provision of light in modern times. Ask your pupils to talk about what they know about the invention of the light bulb. Do they know who invented it? How it was discovered or what came before?

Explain that the lesson will focus on the invention of the light bulb.

After the initial discussion, hand out the information page *The historic race to make-a-better-bulb*. The objective is to ask pupils to highlight key points and dates in the history of the light bulb as they read it, so they will be able to work on the activity sheet *Invention of the light bulb*. The information garnered from the information page will support the activity of creating a timeline that highlights key stages in the development of the light bulb. Encourage children to identify the key points so that they can be recorded succinctly, rather than copying huge chunks of text on to their timeline.

The information page concludes with Edison's involvement but that is not the end of the story. Ask pupils to research what happened next in the history of the light bulb, including the development and introduction of new low energy light bulbs. Now their timelines can be brought right up to date and extended to include future plans, such as the phasing out of ordinary light bulbs. The 100W bulb has already been withdrawn and the rest will follow in 2012.

PLENARY

Ask the class to identify what they have learned about the history of light bulbs. How has the light bulb changed our lives? Ask children to imagine what would have happened if the light bulb had never been invented.

LEARNING OUTCOMES

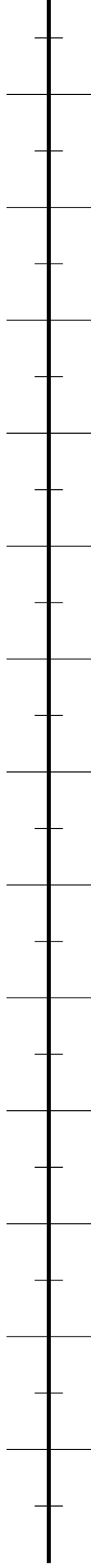
- To understand that Edison is credited with creating the first electric light bulb
- To understand that creation of the electric light bulb was quite a long process
- To skim or scan to identify key points in a text

Curriculum links
PSHE, History

Invention of the light bulb



Draw a timeline to show the important events that happened in the creation of the light bulb.
Use the information page *The historic race to make-a-better-bulb* to help you pick out key dates and events.



Invention of the light bulb



How has the light bulb changed since it was first created?

What do you think will happen to light bulbs in the future?



The historic race to make-a-better-bulb

Who invented the light bulb? It was Thomas Edison in 1879, wasn't it? That's what many people think and that's what is recorded in many places. Like most stories, however, there is a lot more behind this important invention than Mr Edison would have us believe.

The story of the light bulb really starts 70 years earlier.

In 1809 an Englishman, Humphry Davy, demonstrated a powerful electric lamp to the Royal Society in London. Davy's lamp produced its light by creating a blinding electric spark between two charcoal rods. This device, known as an 'arc lamp' was impractical for most uses because the light was simply too bright. The device also needed a huge power source and the batteries, which powered Davy's demonstration model, were drained quickly.

Back then, in the 19th century, other scientists thought that a completely new technique for making electric light held more promise.

The new method of generating light was known as 'incandescence'. Scientists knew that if you took some materials and passed enough electricity through them, they would heat up. Also, they knew that if the material got hot enough, it would start to glow and therefore give off light. This method had a problem though, because often the material would either burst into flames or melt into a puddle! If an incandescent light was to be made practical, both these problems had to be resolved.

Inventors discovered that one way to keep incandescent 'burners' from catching fire was to stop them being in contact with oxygen. Since oxygen is in the atmosphere, the only way to keep it away from the burners was to enclose the burner in a glass container, or 'bulb', and pump out the air. In 1841, a British inventor, named Frederick DeMoleyns, created a bulb using just this technique.

It was obvious that incandescent lighting would be a huge financial success if it could be perfected, so many inventors continued to work on finding a solution.

So did Edison invent the light bulb? Not exactly.

In 1850 Joseph Swan, an English physicist and chemist, began working on a light bulb using carbonised paper filaments in a glass bulb with no oxygen. By 1860 he was able to demonstrate a working model and obtained a British patent.



The historic race to make-a-better-bulb

Fifteen years went by while Joseph Swan tried to perfect his invention and he eventually received another patent for the incandescent light bulb in 1878. His house in Gateshead was the first in the world to be lit by a light bulb. In 1881 he started his own company, The Swan Electric Light Company, and started commercial production.

In America Thomas Edison had been working on copies of the original Swan design and also tried to register a patent. However the patent dates prove who won the race! Joseph Swan sued Thomas Edison and won. The British Courts forced Edison, as part of the settlement, to make Swan a partner in his company. Eventually Edison managed to acquire all of Swan's interest in the newly renamed Edison and Swan United Electric Company.

By 1882 Thomas Edison had established the Edison Electric Light Company in New York, which had a generating station, providing New York City with electric lighting. In 1883 the department store, Macy's, in New York became the first shop to install the new incandescent lamps.

Edison was extremely successful in setting up a system of power distribution in the city and selling the light bulbs that used this electricity! Within 10 years Edison had three million customers.

And the rest, as they say, is history!