

Introduction for teachers

Michael Faraday's creative scientific discoveries changed our world, while his Christian faith demonstrated both compassion and a gentle wisdom.

Preparation

Display board and a pen for writing up numbers.

Selected props to explain Faraday's life: bubble-blowing mixture, torch, electrical battery, a toy that uses electrical batteries, large lit candle. (*Could you safely demonstrate an interesting science phenomenon for children, employing magnets, light or bubbles?*)

Wicker basket with its contents (e.g. bread rolls) covered with a cloth.

An image of Michael Faraday may also be helpful, but please ensure you have the **necessary permission** before using any images obtained from the Internet.

Introduction

Our collective worship today is all about... Nothing. Absolutely nothing. Nothing at all! What are we going to do for the next 15 minutes? Nothing? Well, we are going to do something... about nothing. How? Well... here it is. Nothing. Zero.

Draw a nought on the display board.

We don't know who first invented Nothing, but about 2,000 years ago, the ancient Greeks and others were trying to come up with some way of counting that meant, if you were writing down the number ten, it didn't mean you had to make ten marks. Somebody came up with the idea of counting up to nine (*show this with your fingers: one, two, three...*), adding one more, and then you had a group called Ten. (*Write this large on the display board.*) Two groups would be 20. Three groups 30.

The little circle was called nought. (*Write this, with an arrow pointing to the 0*). Or zero. This meant you had the whole group of ten, and nothing else. Nought meant nothing more. Can you imagine being the person who invented the zero?

'I've just invented the Zero?'

'What's that?'

'Oh, nothing.'

'Nothing? You've spent all that time inventing Nothing?'

'Yes, great isn't it? Nothing! Isn't that something!'

'But you can't make something be made out of Nothing!'

'I did. Isn't that great?'

And so a new word was born: *Naughty*. Hands up: who here has ever been naughty? All of us at some time. But naughty used to mean 'nothing' or 'worthless'. 'What have you been doing?' 'Nothing!' 'That's naughty!'

Here's a story about someone who definitely wasn't naughty. Instead of doing Nothing, he was definitely doing Something. Thanks to his work, you can do all sorts of amazing things today that were unthinkable just 150 years ago.

Development

Two hundred years ago, a boy called Michael was born to a poor family in south London. He didn't seem to be very important. He left school at age 14, to work as an apprentice to a publisher, that's a business that makes and sells books.

But something happened with Michael over the next six years: in his spare time, he started reading the books, but he also wanted to find out things for himself. He went to science lectures, and found himself a new job as a lab technician and servant for Sir Humphrey Davy, a very famous scientist working with gases. By working for him, Michael met other scientists, learned more and started running his own experiments in his spare time. Bit by bit, Michael was discovering more and more about how the invisible universe worked. He was finding Something where others saw Nothing.

Michael began investigating invisible gases, like chlorine. He studied light, electricity and magnetism. He created a new type of electrical battery. He designed and made the world's first electric motor. He investigated why a mysterious underground explosion killed 95 coal miners, and discovered that coal dust can explode. He investigated air pollution, river pollution, and how soldiers in the army could stop blowing themselves up with gunpowder. Michael Faraday was using science to save people's lives.

But he also wanted to help others learn as well. He wanted everyone, especially children, to understand how the universe worked, and gave free lectures about his discoveries. Michael did amazing things with bubbles and light and electricity that got people thinking and talking and wondering. He sat inside an amazing electrical cage producing showers of sparks! But he also made people look closely at everyday things, like lit candles.

(Quick science demonstration?)

But there was another side to Michael Faraday. Every weekday morning, he'd leave his house carrying a mysterious basket, returning later with it, empty. In the afternoons and evening he'd be at work on his science. But what was he doing with the basket in the mornings? He was out visiting

people. Michael was a devout Christian who believed Jesus' words about loving your neighbour as you love yourself, and the need to show compassion to all. So every morning, he was out visiting the elderly and sick in his local community, offering food, company and a listening ear to their troubles. He wanted to make a difference. For Michael, everybody had something special about them, even those less well-off, because they were made in the image of God, just like it said in his precious Bible.

Every day, Michael discovered Something new, where others saw only Nothing. For him, Science and faith were all part of the same thing. God's universe was out there, waiting to be discovered, by anyone who could take the time to find Something *or Someone* that was infinitely precious.

I wonder... what's the most interesting thing you've discovered this year? Did you tell anyone else about it? What else could you find out about it? I wonder...

Prayer

Father God, thank you for giving us a place to live in this this amazing universe full of wonders. Thank you for all the people around us, especially the ones that nobody else notices, but you do. Open our eyes to see all of this, to see all of them, and to care for it and to care for them as much as you do. Amen.

Information for teachers

You can find out more about Michael Faraday at [Science Kids](#), on [BBC history](#) and on the [Kid Science YouTube page](#).

The [Royal Institution](#) still maintains Michael Faraday's laboratory in its original state, including his Bible, and continues Faraday's practice of providing Christmas science lectures for children and young people. All scientific investigations or demonstrations should be carried out in accordance with your school's Health and Safety Policy.

Teaching tip: before you stage any 'public' scientific demonstration, please do the Michael Faraday thing and check carefully, that it works!