

Science KS3 Curriculum Overview

Investigating Science - Scientists and Inventors

Pupils will:

This 'Scientists and Inventors' unit will teach your class about famous scientists and inventors linked to the Upper Key Stage 2 science curriculum. They will learn about the life and work of Stephen Hawking, and carry out an investigation into Hawking's theories on black holes. The children will learn about Libbie Hyman, a zoologist whose work on invertebrates informs much of what we know about the characteristics and classification of these creatures. Children will find out about the scientists who raced to prove the structure of DNA, and the controversies surrounding this discovery. They will learn about the role of DNA in inheritance, and create their own model of a DNA molecule. Your children will find out about Alexander Fleming and his discovery of penicillin, and will interpret data in a scatter graph to come to a conclusion about the effects of penicillin. They will look at the evidence for human evolution, and will learn about Mary Leakey and her role in finding significant fossil evidence, and what her fossils prove about evolution. Finally, children will find out about the life and work of Steve Jobs, and his development of new electronics and technologies.

Stephen Hawking

To report and present findings from enquiries, including causal relationships, in oral and written forms such as displays and other presentations in the context of Stephen Hawking and his findings on black holes.

AFL:

report on my findings from an inquiry inspired by Stephen Hawking's theories about black holes.

Libbie Hyman

To give reasons for classifying plants and animals based on specific characteristics in the context of Libbie Hyman's work on classifying vertebrates and invertebrates.

AFL:

use Libbie Hyman's work to classify invertebrates.

The DNA Race

To identify scientific evidence that has been used to support or refute ideas or arguments in the context of the race to discover the structure of DNA.

AFL:

identify the evidence scientists used to prove the structure of DNA.

Alexander Fleming

To record data using scatter graphs in the context of

Fleming's discovery of penicillin.

AFL:

record and interpret data on the effects of penicillin using a scatter graph.

Mary Leakey

To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago in the context of Mary Leakey's fossil findings in the Olduvai Gorge.

AFL:

describe the importance of the fossils found by Mary Leakey.

Steve Jobs

To use recognised symbols when representing a simple circuit in a diagram in the context of the invention of Apple computers and the life of Steve Jobs.

AFL:

explain how Steve Jobs used electronics to design computers

Biology

Pupils will:

This unit aims to give KS3 students an overview of the organisation of living things from single cells through to organ systems. They will start to look at how the structural differences between types of cells allows them to perform specific functions within the organism. They will explore how the skeletal and muscular systems work together to cause movement.

How to Use a Microscope

Animal and Plant Cells

Bacterial Cells

Specialised Cells

Levels of Organisation

The Skeleton

Muscles

AFL:

Quiz on microscopes

End of unit test created by teacher

Microbes

Pupils will learn about:

Microbes (pathogens, bacteria and viruses)

Bodily defence systems (natural defences)

Immune System (+ white blood cells)

Vaccination (+ Autism & Deadly Diseases)

Antibiotics (+ MRSA)

AFL:

- identify the main bodily defence systems against microbes and pathogens.
- explain how some systems work and how they are triggered.
- compare and evaluate the effectiveness of different systems.



- state what the immune system is made up from.
- distinguish between the different white blood cells and know the difference between natural and acquired immunity.
- draw and label the process of the immune system when responding to a pathogen.
- Make a cartoon strip about the different stages of the immune system at work.
- state what is inside a vaccine and how it enters the blood.
- explain how vaccines trigger an immune response using keywords.
- produce a flow chart describing the immune response to vaccination.
- explain to patients what MRSA is and how they can prevent it from spreading.
- present your information in any way you chose and it will be peer assessed next lesson.

Physics – Energy Changes and Transfers

This unit aims to give students an overview of the energy topic, it covers areas such as energy stores, calculations, energy from fuels and renewable and non-renewable energy

Pupils will learn about:

Energy Stores

Efficiency and Calculations

Renewable and Non-Renewable Energy

Energy from Fuels

Temperature and Heat Energy

Energy, Power and Domestic Bills

Assessment Activity Sheets are differentiated. Lower-ability pupils are given information about the units to help them with conversions, whereas higher-ability pupils are provided with less information and are required to recognise the appropriate units to use in equations.

Assessments

- Over the course of the year, pupils will undertake regular assessments based on content covered up until the date of the assessment.
- The dates of the assessments will vary depending on how long it takes to cover content with each class.
- In addition to the above tests, all students will sit an end of KS3 test towards the end of the academic year which will cover material from topics from the entire KS3 course.