Curriculum Overview

Curriculum Leader: Mr. Smith Subject: Science - Physics Year: 8

Year 8 Curriculum:

Autumn Term:

Light waves (Waves B)

All pupils will build upon and develop their core substantive knowledge of waves to learn about light waves. They will develop a knowledge of the transfer of energy via waves and how waves can be transmitted, reflected or absorbed. The behaviour of light through different substances will be described by all pupils through transparency, reflection, refraction and scattering ray diagrams. All pupils develop their knowledge of light through lenses and the structure of the eye.

All pupils will develop core disciplinary knowledge in evaluating an investigation.

Spring Term:

Circuit and magnet fundamentals

All pupils will develop their core substantive knowledge of electrical charge by using static electricity to focus on the electric field generated by charged objects and the electrostatic forces with which it is associated

All pupils will develop their core substantive knowledge on current electricity. They will be able to identify the charge carriers as electrons and build simple circuits. They will define and measure current, potential difference, and resistance.

All pupils will develop their core substantive knowledge of magnetism by learning about magnetic materials, permanent magnets and poles, and temporary magnets including electromagnets.

All pupils will develop core disciplinary knowledge in carrying out an experiment, writing a plan and recording data using tables.

Energy transfers and energy resources fundamentals

All pupils will build on prior and further develop their core substantive knowledge of energy in the context of energy stores, transfers and energy resources.

All pupils will learn the major energy stores, thermal transfers mechanisms qualitatively and the concept of work quantitatively.

All pupils will develop their core substantive knowledge of fuel uses and costs. They will learn what renewable and non-renewable fuels are and how to work out how much we pay for energy.

All pupils will develop explicit core disciplinary knowledge in writing a plan and the analysis skills of numeracy in calculating work and energy costs.

Summer Term:

Motion and pressure (Motion and forces 2)

All pupils will build on prior and further develop their core substantive knowledge of forces and motion by scientifically describing motion using words such as speed, acceleration and relative motion and using motion graphs.

All pupils will further develop their core substantive knowledge of energy changes and transfers by understanding moments and how levers make a job easier.

All pupils will further develop their core substantive knowledge of pressure in fluids by focusing on how to calculate pressure, atmospheric pressure and upthrust to explain floating and sinking.

All pupils will develop core disciplinary knowledge in presenting observations and data using line graphs, numeracy of calculations and evaluation of an investigation.

Links to National Curriculum

Our Year 8 Science Physics curriculum is carefully sequenced to build on KS2 knowledge of **Electricity** by describing the physical world through the fundamentals of the KS3 concept of **Electricity and Magnetism** with a particular concentration on **Current electricity**, **Static electricity**, and **Magnetism.**

Our Year 8 Science Physics curriculum carefully builds Year 7 knowledge of **Motion and Forces** and **Energy** by developing the KS3 concept of **Describing motion, Pressure in fluids, Forces and motion, Calculation of fuel use and energy costs** and **Energy changes and transfers.**

Our Year 8 Science curriculum ensures that over the year and all three sciences all pupils will learn the fundamentals of each core disciplinary knowledge skills for full coverage of **working scientifically**.

In the Year 8 Physics curriculum all pupils will learn the **experimental and investigation** skills of carrying out an investigation, writing a plan and recording data and the **analysis and evaluation** skills of drawing line, numeracy of calculations and evaluation of an investigation.

Knowledge and understanding of this curriculum will be assessed by:

Embedded within the curriculum, a range of high-quality assessment techniques will be deployed at the point of learning to ensure that all pupils are acquiring the core substantive knowledge, identifying gaps, and addressing misconceptions.

Sequentially throughout the year pupils will be assessed on their retention of the core substantive knowledge, further identifying gaps and misconceptions which will be addressed through a targeted intervention.

Pupils disciplinary core knowledge will be assessed systematically throughout the year, using a variety of bespoke practical scenarios to allow them to demonstrate fundamental core skills required within science and clear guidance of the next steps to progression in each area.

Powerful Knowledge/Cultural Capital Opportunities

The powerful knowledge of electricity and magnetism will allow all pupils to build circuits and build switches, know which materials are affected by magnets and be aware of the uses and dangers of electrostatic.

The powerful knowledge of energy resources will enable all pupils to work out energy costs and the impact of issues such as renewability and climate change.

The powerful knowledge of motion and pressure will allow all pupils to understand speed and acceleration in vehicles, how levers make life easier and why things float or sink.