Sound and Light

KS3 Curriculum Intent:

This unit includes what sound is, how sound behaves. What light is and how light behaves?

The unit seeks to give learners the knowledge they need to pursue further study and understanding at KS4.

Sequence 1:

Lesson 1: Sound waves and speed to describe how sound is produced and travels. Students to calculate the speed of sound and compare to speed of light/

Lesson 2: Loudness and amplitude to describe the link between amplitude and loudness. Students to label amplitude and wavelength of a wave. Students to be able to interpret oscilloscope traces.

Lesson 3: Frequency and pitch to describe the link between frequency and wavelength. Students to describe the frequency of a wave from a diagram or oscilloscope picture.

Lesson 4: The ear and hearing to be able to describe the structure and functions of the parts of the ear. To explain how our ears enable us to hear.

Lesson 5: Ultrasounds To describe what ultrasound is. Students to gives uses of ultrasounds and explain, with reasons, why animals use echolocation.

Assessment: baseline (google form), low stakes testing, homework.

Sequence 2:

Lesson 6: Light To state the speed of light. To describe how light travels. Students to investigate light transmitted through different materials, to rank them as transparent, translucent, and opaque. Students to explain solar and lunar eclipses.

Lesson 7: Investigating reflection to describe how light is reflected from a mirror. To use appropriate equipment and take readings safely.

Lesson 8: Investigating refraction to investigate how light is refracted when it enters different mediums.

Lesson 9: The eye and vision to name the parts of the eye. Students should describe how lenses can be used to correct vision.

Lesson 10: Colour to know that white light is made up of all the colour of the visible spectrum. Students to use a prism to disperse white light. Students to explain how objects appear different colours.

Assessment: low stakes testing, homework. Google form.

Sequence 3:

Lesson 11: Revision/ consolidation lesson on colour

Lesson 12: Test

Lesson 13: Reflection

Assessment: low stakes testing, EOU test.

Big picture

This unit has several opportunities for practical work and the embedding of mathematic skills such as measuring angles, using, and rearranging formula.

This unit builds on basic knowledge from KS1 and KS2 whereby students are introduced to different types of sound, how we see things.

The topic develops further understanding of interpreting wave forms for sound, construct and interpret ray diagrams for reflection and refraction, investigate lenses and how they are used to correct vision, investigate a prism, explain how the colour of an object is affected by the colour of light it is illuminated with.

Developing Cultural Capital:

This unit provides opportunities for students to develop their self-knowledge, self-esteem and self-confidence through group and paired work and develop their knowledge of how scientists have shaped understanding of the world. it provides opportunities to investigate how the eye and ears work and how to look after them.

Students will have access to IT to research and further their understanding of this unit and opportunities to make presentations.

Reinforcement and retrieval practice

- All learning sequences are consolidated through some homework, which is reviewed in the next sequence to Space Learning.
- 'Memory joggers' are formally completed as the Do Now, these will be evidenced in the student's books.
- AfL is used regularly to evidence gaps in knowledge and inform planning so that learning is consolidated before being moved on.
- Regular questioning is embedded in all lessons and should be a key feature on learning walks.
- End of unit assessment will be cumulative involving questions from previous units.

Progression Model:

- Students will build on and develop practical skills within this topic that will link into further units within science as well as an understanding of the fundamental building block of Physics that allow the higher-level learning to occur later in the GCSE.
- The learning will be revisited throughout the KS3 curriculum and KS4 course through cumulative assessments and memory joggers.
- Also, their metacognitive skills will improve as they use self-assessment, low stakes testing, memory joggers and responding to teacher's feedback to take control of their own learning.

Earth and Universe

KS3 Curriculum Intent:

This unit includes earth's structure, formation of rocks and the rock cycle and the earth in the universe.

The unit seeks to give learners the knowledge they need to pursue further study and understanding at KS4.

Sequence 1:

Lesson 1: The structure of the Earth- To name the three rock layers of the Earth. To compare the layers of the Earth.

Lesson 2: Sedimentary rocks- To describe how sedimentary rocks form.

Lesson 3: Igneous and metamorphic rocks – To describe how igneous and metamorphic rocks are formed.

Lesson 4: The Rock cycle- To list the process involved in the rock cycle.

Lesson 5: Ceramics- To describe the properties of ceramics.

Assessment: baseline, low stakes testing- homework.

Sequence 2:

Lesson 6: The Earth- To explain why places on Earth experience different daylight hours and seasons.

Lesson 7: The moon and changing ideas- To name the phases of the moon. To explain why we see phases of the moon.

Lesson 8: The solar system- To describe the model of the solar system.

Assessment: baseline, low stakes testing, EOU test.

Sequence 3:

Lesson 9: Test

Lesson 10: Reflection

Assessment: baseline, low stakes testing, EOU test.

Big picture

This unit has several opportunities for practical work, extended writing and the embedding of mathematic skills using data.

This unit builds on basic knowledge from KS1 and KS2 whereby students are introduced to Earth in space and rocks.

The topic develops further understanding of formation of stars including the sun and the planets in the solar system.

Developing Cultural Capital:

This unit provides opportunities for students to develop their self-knowledge, self-esteem and self-confidence through group and paired work and develop their knowledge of how scientists have shaped understanding of the Earth and Universe.

Students will have access to IT to research and further their understanding of this unit and opportunities to make presentations.

Reinforcement and retrieval practice

- All learning sequences are consolidated through some homework, which is reviewed in the next sequence to Space Learning.
- 'Memory joggers' are formally completed as the Do Now, these will be evidenced in the student's books.
- AfL is used regularly to evidence gaps in knowledge and inform planning so that learning is consolidated before being moved on.
- Regular questioning is embedded in all lessons and should be a key feature on learning walks.
- End of unit assessment will be cumulative involving questions from previous units.

Progression Model:

- Students will build on and develop practical skills within this topic that will link into further units within science as well as an understanding of the fundamental building block of Physics that allow the higher-level learning to occur later in the GCSE.
- The learning will be revisited throughout the KS3 curriculum and KS4 course through cumulative assessments and memory joggers.
- Also, their metacognitive skills will improve as they use self-assessment, low stakes testing, memory joggers and responding to teacher's feedback to take control of their own learning.

Voltage, Resistance and Current

KS3 Curriculum Intent:

This unit Voltage Resistance and Current includes explaining electric circuits, Current, potential difference resistance, and electrostatic force.

The unit seeks to give learners the knowledge they need to pursue further study and understanding at KS4.

Sequence 1:

Lesson 1: Circuit symbols and circuit diagrams: To know how to set up a simple series circuit and use circuit symbols to draw the circuit.

Lesson 2: Potential difference to set up a simple circuit and use a voltmeter to measure voltage in V. To understand what we mean by voltage.

Lesson 3: **Current: To** know what current is, how it is measured and its units. Investigate how current behaves in a series circuit.

Assessment: Baseline, homework.

Sequence 2:

Lesson 4: Parallel circuits: To investigate how current and voltage behave in a parallel circuit **(may take two lessons)**

Lesson 5 Resistance To explain electrical resistance**-** To calculate resistance from formula.

Lesson 6 Charging up: To know how static charge can be created. To know how pairs of charged particles behave

Sequence 3:

Lesson 7 Assessment

Lesson 8 Reflection

Assessment: low stakes testing, homework and EOU test.

Big picture

This unit has several opportunities for practical work, extended writing and the embedding of mathematic skills including calculations from formula, constructing and interpreting data.

This unit builds on basic knowledge from KS1 and KS2 whereby students are introduced to current in a circuit, making a current flow and changing the voltage.

The topic develops further understanding of series and parallel circuits, construct and draw circuits, calculate resistance, and investigate resistance of a wire analyzing data, identify patterns between current, voltage and resistance, how objects may become electrostatically charged.

Developing Cultural Capital:

This topic provides opportunities for students to develop their self-knowledge, self-esteem and self-confidence through group and paired work and develop their knowledge of how scientists have shaped understanding of the world taking initiative on wide and environmental issues and establish ways they can help on an individual, local, national, and global scale.

Students will have access to IT to research and further their understanding of this unit.

Reinforcement and retrieval practice

- All learning sequences are consolidated through a homework, which is reviewed in the next sequence to Space Learning.
- Every third lesson ‘Memory joggers’ are formally completed as the Do Now, these will be evidenced in the students’ books.
- AfL is used regularly to evidence gaps in knowledge and inform planning so that learning is consolidated before being moved on.
- Regular questioning is embedded in all lessons and should be a key feature on learning walks.
- End of unit assessment will be cumulative involving questions from previous units.

Progression Model:

- Students will build on and develop practical skills within this topic that will link into further units within science as well as an understanding of the fundamental building block of Physics that allow the higher-level learning to occur later in the GCSE.
- The learning will be revisited throughout the KS3 curriculum and KS4 course through cumulative assessments and memory joggers.
- Also, their metacognitive skills will improve as they use self-assessment, low stakes testing, memory joggers and responding to teacher’s feedback to take control of their own learning.