



Medium Term Planning - Topic:

Curriculum Intent	
Skills/National Curriculum Links	<p>In addition to working further on objectives from Year __, pupils will be taught, following National Curriculum guidelines, the following this topic:</p> <ul style="list-style-type: none"> - Observed waves - Transverse and longitudinal wave properties - waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. - Energy and waves - pressure waves transferring energy; use for cleaning and physiotherapy by ultrasound; waves transferring information for conversion to electrical signals by microphone.
Spiritual, moral, social, and cultural development	<p>SMSC: Safe working. The importance of waves in real life. Students will reflect on their experiences and apply their understanding to a range of issues. Students will be encouraged to be reflective about their own beliefs and those of others and compare different people's faiths, feelings and values in order to develop their own perspective on life. Students will explore how Science influences the next stage of their education and/or employment.</p> <p>PSHE/British Values: learn about everyday uses of waves</p> <p>Skills Builder: Listening (Receiving, retaining and processing info), Speaking (The oral transmission of info and ideas), Problem solving (Find a solution to a situation or challenge), Creativity (imagination and generation of new ideas), Staying positive (The ability to use tactics and strategies to overcome setbacks), aiming high (Set clear and tangible goals), Leadership and teamwork</p>
Numeracy	drawing and interpreting graphs, using a formula.
Literacy	<p>Vocabulary Tier 2: solid wire, ripples (on surface of water),</p> <p>Vocabulary Tier 3: waves, matter, energy, longitudinal, transfers, frequency, amplitude, ultrasound, mechanical waves, wavelength, electromagnetic spectrum, ionisation</p> <p>Reading Following a written method and read risk assessments. Students may be directed to the textbook; this could be in lesson or at home on Kerboodle.</p> <p>Writing: Describing and explaining scientific phenomenon, free response writing for describing precautions taken, use of word mat to promote sentence formation.</p> <p>Oracy: inclusion of BEST resources which are research evidence on common misunderstandings in science, effective diagnostic questioning and formative assessment, constructivist approaches to building understanding, and effective sequencing of key concepts that promote metacognitive talk and dialogue.</p>
Becoming future ready	<p>Careers/Employability:</p> <ul style="list-style-type: none"> - <i>Sound Engineer</i> - <i>Radiographer</i> - <i>Dentist</i> - <i>Doctor</i>
Adaptation	Throughout this topic, quality first teaching will provide differentiation:



QFT/SEND Provision	<p>By product: Linear assessments and differentiated practical work.</p> <p>By resource: Lessons are differentiated per class and students, worksheets are coloured to support and assessments are linear.</p> <p>By Intervention: by providing different levels of supervision and support</p> <p>By Progressive Questioning: exploring pupils' understanding through interactive dialogue.</p> <p>By Grouping: according to prior attainment, gender, social preference, preferred learning style.</p> <p>By Task: Pupils should be involved in the identification of targets which are meaningful to them and in the selection of an appropriate task from the given range.</p> <p>By Offering Optional Activities: In class or as homework, to extend learning.</p> <p>This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.</p>	
Implementation Curriculum Delivery	To be able to:	
Learning Outcomes (Core Knowledge)	<p><i>Know</i></p> <ul style="list-style-type: none">- Recall that waves transfer energy without transferring matter <p><i>Apply</i></p> <ul style="list-style-type: none">- Describe the difference between a longitudinal and a transverse wave <p><i>Label key parts of a transverse and longitudinal wave diagram</i></p>	
	<p><i>Know</i></p> <ul style="list-style-type: none">- Define frequency and amplitude.- Name two parts of a microphone or loudspeaker.- State what a sound wave transfers, and what it does not transfer. <p><i>Apply</i></p> <ul style="list-style-type: none">- Describe the link between amplitude or frequency and energy.- Describe how a microphone and a loudspeaker work.- Describe how sound transfers energy, and how this is linked to generating electricity. <p><i>Extend</i></p> <ul style="list-style-type: none">- Explain, in terms of frequency, why we use ultrasound for cleaning and physiotherapy.- Explain the link between a microphone and a loudspeaker.	
	<p><i>Know</i></p> <ul style="list-style-type: none">- water waves are examples of mechanical waves- ripples on the surface of water are transverse waves <p><i>Apply</i></p> <ul style="list-style-type: none">- understand that waves can be used to transfer energy and information <p><i>Extend</i></p> <ul style="list-style-type: none">- be able to explain that mechanical waves need a medium to travel through	
	<p><i>Know</i></p> <ul style="list-style-type: none">- Name some waves of the electromagnetic spectrum.- Name the electromagnetic wave with the biggest wavelength.- Name an electromagnetic wave that can be harmful to living cells. <p><i>Apply</i></p> <ul style="list-style-type: none">- Describe the electromagnetic spectrum.- Describe the link between frequency and energy.- Describe the effect of radiation on living cells. <p><i>Extend</i></p> <ul style="list-style-type: none">- Describe all the waves of the electromagnetic spectrum in terms of increasing wavelength or increasing frequency.- Explain why only some electromagnetic waves cause ionisation.- Explain why ionisation can be harmful to living cells.	
Current learning to be developed in the future within:	<p>Before: At KS2 you will have covered what happens when light reflects off a mirror or other reflective surfaces and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.</p>	<p>Future: In GCSE physics you will also cover in more detail Wave behaviour in both natural and man-made systems. Waves carry energy from one place to another and can also carry information.</p>
Assessment	Refer to assessment maps for formative and summative assessment opportunities.	
Impact	Attainment and Progress – Refer to assessment results / data review documentation.	