




YEAR 12 TERM 1

'An ambitious curriculum that meets the needs of all'

Medium Term Planning - Topic: Adaptations for Gas Exchange

Curriculum Intent	
Skills/National Curriculum Links	<p>Developing knowledge from GCSE Biology or GCSE Combined Science, pupils will be taught, following National Curriculum guidelines, the following this topic:</p> <ul style="list-style-type: none"> Problems associated with increase in size Gas exchange in vertebrate groups Gas exchange in fish The human breathing system Gas exchange in insects Gas exchange in plants <p>Specified practical work:</p> <ul style="list-style-type: none"> Dissection of fish head to show the gas exchange system Investigation into stomata numbers in leaves Scientific drawing of a dicotyledon leaf
Spiritual, moral, social, and cultural development	<p>SMSC: Ethical issues of dissection of animals PSHE/British Values: Respiratory illness / effect of smoking on lung tissue Skills Builder: Practical skills, reading a scientific method, recording results</p>
Numeracy	<p>Surface area to volume ratio Stomatal density Magnification and scale calculations</p>
Literacy	<p>Vocabulary Tier 2: Gas exchange, lungs, gills, Vocabulary Tier 3: Unicellular, multicellular, metabolic rate, countercurrent flow, parallel flow, operculum, buccal cavity, lamella, intercostal muscles, trachea, bronchi, bronchioles, alveoli, spiracles, tracheoles, mesophyll, stomata, guard cells, epidermis, Reading: Students are given opportunity to develop their skills in specified tasks that develop disciplinary literacy. Throughout the A Level Biology course they develop their understanding of the requirements of exam questions and the key terminology in questions. In addition, they read practical methodology and translate this to actions in laboratory tasks. Writing: Students construct answers independently and through class teaching. Their answers range from single word answers to the planning and writing of 9-mark "extended writing" tasks that require linking of multiple concepts from a topic or across topics. These often develop students' ability to construct written evaluations of contrasting situations, or data, where the use of comparative connectives are required. Oracy: Students are regularly given the opportunity to practice their scientific vocabulary in class discussion, through choral response, pair or group discussion and in giving instruction to others during practical activities.</p>
Becoming future ready	<p>Careers/Employability: A Level Biology students from Crompton House progress on to a wide range of undergraduate degrees, degree apprenticeships and into work. Opportunities to develop effective communication skills, concise written work, following written and verbal instructions as well as extending their problem solving skills are all key skills identified by business leaders for future success.</p>
Adaptation	<p>Throughout this topic, quality first teaching will provide adaptive teaching accessible to all students:</p>
QFT/SEND Provision	<p>By product: Assessments have opportunities for students to achieve all grades, with structured questions and opportunities for development of extended writing for all abilities. By Intervention: by providing different levels of supervision and support in theory and in practical lessons. By Progressive Questioning: exploring pupils' understanding through interactive dialogue. By Grouping: according to prior attainment, gender, social preference. By Task: Pupils are involved in the identification of targets which are meaningful to them and in the selection of an appropriate task to develop specific skills further. By Offering Optional Activities: In class or as homework, to extend learning. This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.</p>
Implementation	<p>To be able to:</p> <ul style="list-style-type: none"> Relate increase in body size and metabolism to methods of gas exchange

Curriculum Delivery	<ul style="list-style-type: none">• Compare gas exchange mechanisms in <i>Amoeba</i>, flatworm and earthworm• Describe the ventilation mechanism of bony fish in maintaining concentration gradients across their respiratory surfaces	
Learning Outcomes (Knowledge)	<ul style="list-style-type: none">• Describe the structure and functions of the human respiratory system• Describe the adaptations of insects to gas exchange on land• Describe the structure of a leaf, the organ of gas exchange in plants• Describe the opening and closing mechanism of stomata• Know how to determine and compare the distribution of stomata in leaves	
	Red denotes interleaving; aspects of knowledge covered previously.	
Current learning to be developed in the future within:	Adaptations for transport in animals Adaptations for transport in plants Photosynthesis Respiration	
Assessment	Refer to assessment maps for formative and summative assessment opportunities.	
Impact	Attainment and Progress – Refer to assessment results / data review documentation.	