



Subject: Year 8 Biology - Breathing

Prior Key stage 2 Knowledge			
Animals and humans -identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood			
Overarching Topic: Breathing			
<p>Why is this topic being studied at this time?</p> <p>How does it fit into the wider subject curriculum?</p>	<ul style="list-style-type: none"> Breathing is central to life, as it allows the human body to ultimately release the energy it needs to sustain itself and its activities. Each day we breathe about 20,000 times. All of this breathing couldn't happen without help from the respiratory system, which includes the nose, throat, voice box, windpipe, and lungs. With each breath, you take in air through your nostrils and mouth, and your lungs fill up and empty out. As air is inhaled, the mucous membranes of the nose and mouth warm and humidify the air. Although we can't see it, the air we breathe is made up of several gases. Oxygen is the most important for keeping us alive because body cells need it for respiration and ultimately energy and growth. Without oxygen, the body's cells would die. This unit builds on units covered in year 7 such as respiration, cells and organ systems. By knowing how each part of the organ system works students will be able to explain how gas exchange, oxygen and carbon dioxide move between alveoli and the blood. By linking to ideas covered in respiration students will be able to understand how oxygen is transported to cells for aerobic respiration and carbon dioxide, a waste product of respiration, is removed from the body. Looking forward this topic relates to the ideas about respiration covered in GCSE, cells and human biology. This topic also has important links to PSHE by enabling discussion around smoking and taking drugs and the health effects of these. 		
	Essential	Core	Ambitious
The Big Questions (What questions will students be able to answer upon mastery of the topic?)	<p>What are 4 parts of the human respiratory system?</p> <p>Which part of the lungs carries out gaseous exchange?</p> <p>How are the parts of the gas exchange system adapted to their function?</p>	<p>How do exercise, smoking and asthma affect the gas exchange system?</p> <p>What factors cause changes to breathing rate and volume?</p> <p>How do changes in pressure move the gases in and out of the lungs?</p>	<p>A day in the life of an oxygen atom – describe your journey into the body.</p> <p>How can lung disease be treated?</p> <p>How would Usain Bolt's lungs be different to a heavy smoker's?</p> <p>How could we create an artificial, disease-resistant lung?</p> <p>Fish don't have lungs – how do they breathe?</p>
The Key Skills/ Techniques	The sophistication and application of skills will become more advanced as students' progress through the essential, core and ambitious knowledge		
	Skill/Technique	How will this skill be developed?	
	1. Graphing & Drawing	Draw graphs with suitable scales, axes and units. Correct line of best fit. Appreciation of anomalies and processed data. Scientific drawing of cells, concepts and scientific equipment.	
	2. Variables	Identify independent, dependent and control variables and devise experiments to include these to ensure valid results. Appreciation of uncertainty.	
	3. Data Analysis	Describe, explain and predict trends. Graph and table data interpretation. Identify links and patterns within and between topics. Statistical analysis of data to include mode/median/mean/range determination. Drawing justified conclusions from presented data.	
	4. Application	Apply known and taught theory in unfamiliar contexts. Making links to taught theory and extracting key ideas. Communicating using correct scientific terminology.	
5. Working Scientifically	Identify hazards and planning to limit risk. Describe how to improve accuracy/precision/repeatability/reproducibility/validity. Evaluate reliability of methods and investigations, taking in to account data analysis.		