



SVC Science Learning Pathway - Year 8



LP	Literacy/ Numeracy	How Science Works	Biology	Chemistry	Physics
8.9	<ul style="list-style-type: none"> Students will plot appropriate graphs (bar chart or line graph) with units, headings and scales based on the practical, then analyse graphs and use them to support conclusions after data is extrapolated. Analysis of practical results are communicated coherently, enhanced by specialist terms which they are able to use with a high degree of accuracy in the correct context. Their spoken communication is clear, with use of data & specialist terms fluently to support & justify conclusions. 	<ul style="list-style-type: none"> Students will evaluate practical & suggest ideas to further improve the reproducibility of their results. They are beginning to use preliminary work to decide on the best conditions. They are able to link ideas together from more than one area. Students will select the appropriate techniques & apparatus with very little or no support and link to relevant theories. Students will write conclusions that show the use of data, to inform their opinions, linking with previously established scientific theories. 	<ul style="list-style-type: none"> Students will confidently link the life processes together e.g. Respiration, Digestion, Movement, Growth, Sensitivity etc. Students will create explanations for unfamiliar examples based on their existing knowledge & apply to new examples e.g. adaptations for breathing. They are able to explain how antibiotic resistance occurs and link it to real life examples e.g. MRSA. They are able to debate issues such as antibiotic resistance & overuse of antibiotics. 	<ul style="list-style-type: none"> They are able to write word & symbol equations. Students will explain that atoms or particles are rearranged to make new products in reactions and can link the idea of the conservation of mass, & changes of state to chemical reactions. Students will explain the differences between pure substances & mixtures linking to atomic structure & the best separation technique. Students will explain reactions in terms of atoms being rearranged and link to energy changes that occur when new products are made. 	<ul style="list-style-type: none"> Students will hypothesise and carry out an investigation to explain why the spectrum is formed linking it to refraction of colours. Students will use the correct units for frequency and wavelength and explain why changes in frequency can be more dangerous Students will explain the dangers of each part of the EM spectrum and explain why people might have ethical issues against using it Students will explain how radiation can cause cancer
6.7	<ul style="list-style-type: none"> Students will plot appropriate graphs (bar chart or line graph) and analyse graphs then use them to support conclusions after data is extrapolated. Students will clearly communicate analysis of practical and use specialist terms mainly in the correct context to enhance explanations. Students will communicate clearly via discussion, using data & specialist terms to explain conclusions. 	<ul style="list-style-type: none"> Students will link CV's to practical reproducibility and understanding of the question being asked is clear and with limited guidance Students will test a given hypothesis. IV, DV and CV are clearly applied to all aspects of their practical work. Their work is evaluated & ideas are suggested to further improve the accuracy of my results. Students will select appropriate techniques & apparatus with little or no support & link to the relevant theories. 	<ul style="list-style-type: none"> They are able to write word equations to represent aerobic respiration and connect aerobic respiration to burning of fuels. Students will categorise bacteria, fungi and viruses as micro-organisms. Students will name some of the diseases that can be caused by bacteria, fungi and viruses and explain how they can be transmitted. Students will explain the importance of enzymes in digestion and name the main enzymes involved in digestion. 	<ul style="list-style-type: none"> Students will select relevant separation techniques e.g. filtration, evaporation to separate mixtures. Students will explain the properties of materials based on their state using the particle theory. Students will recognise reactions e.g. neutralisation, combustion etc. Students will explain reactions in terms of atoms being rearranged, and new products being formed as a result. 	<ul style="list-style-type: none"> Students will explain why light is refracted as it passes from one material to another. Students will link amplitude and frequency to loudness and pitch. Students will use the correct units for frequency and wavelength Students will give uses and dangers of several parts of the EM spectrum Students will suggest ways to reduce risk of more of the dangers

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4-5	<ul style="list-style-type: none"> Students will plot appropriate graphs (bar chart or line graph) and interpret them to spot patterns. This is evident in the conclusion. Students will use Specialist terms mainly in the correct context. Students will discuss clearly, using results to explain conclusions. 	<ul style="list-style-type: none"> Students will apply the skills of practical planning, linking CV's to practicals. IV, DV & CV are applied to their practical work. Other scientists work is connected to their own work. Work is evaluated and ideas are suggested to further improve the accuracy of my results. Students will select appropriate techniques and apparatus with little support. 	<ul style="list-style-type: none"> They are able to describe how the body defends itself and the role of immunisations. Students will confidently describe the role of blood in transporting products of digestion, oxygen and carbon dioxide around the body. They are able to state where microbes can be useful. 	<ul style="list-style-type: none"> Students will predict the products of chemical reactions. They are able to describe how the periodic table is organised. Students will follow a method using relevant separation techniques to separate mixtures. Students will suggest reasons for their choice of separation techniques and begin to connect the big ideas around element, mixtures and compounds. 	<ul style="list-style-type: none"> Students will demonstrate the correct path of rays to show reflection and refraction of light. Students will identify amplitude on a wave diagram and begin to link it to loudness. Students will describe what is meant by frequency. Students will identify all the EM spectrum in order & explain what frequency and wavelength mean Students will give uses and dangers of some parts of the EM spectrum
2-3	<ul style="list-style-type: none"> Students will describe patterns in graphs and results. Students will begin to analyse practical results and communicate them using some specialist terms Students will discuss findings, using results to give conclusions 	<ul style="list-style-type: none"> Their plan can answer the key Science question and I can identify variables. Their results are described and ideas are suggested to improve the practical. Students will select appropriate techniques apparatus with some support and explain conclusions based on patterns in their own results. 	<ul style="list-style-type: none"> Students will begin to describe how organs work together to transport substances around the body. Students can identify organs involved in digestion. Students can state some defence mechanisms. 	<ul style="list-style-type: none"> They are able to write some simple word equations. Students will demonstrate that they can follow a practical method. Students will name the products of some reactions. Students will describe some parts of the periodic table. 	<ul style="list-style-type: none"> Students will describe how light travels and what happens when it hits an object. Students will relate the spectrum to white light. Students will identify most of the EM spectrum in order
0-1	<ul style="list-style-type: none"> Their graphs are labelled. Students will state simple patterns in their conclusions. 	<ul style="list-style-type: none"> Students will make predictions based on simple scientific knowledge. Students will select correct equipment and record results in a table. 	<ul style="list-style-type: none"> Students will list some nutrients and identify foods containing that nutrient. Students will describe the importance of breathing and how it changes during exercise. Students will label a diagrams e.g. heart and lungs. 	<ul style="list-style-type: none"> They are able to describe the properties of some materials. E.g. bendy etc. They are able to label products and reactants. Students will label word equations. 	<ul style="list-style-type: none"> Students will state how we see objects. Students will describe how shadows are formed. Students will label some parts of a wave. Students will give one use or one danger of the EM spectrum.