Ravens Wood School

KS3 Curriculum Plan

Subject: Year 7 Separating Techniques

Overarching Topic: Separating Techniques			
Why is this topic being studied at this time? How does it fit into the wider subject curriculum?	• Since ancient times, people have used methods of separating and purifying chemical substances for improving the quality of life. The extraction of metals from ores and of medicines from plants is older than recorded history. In the Middle Ages the alchemists' search for the philosophers' stone (a means of changing base metals into gold) and the elixir of life (a substance that would perpetuate youth) depended on separations. In the industrial and technological revolutions, separations and purifications have assumed major importance. This topic introduces the idea of the ways properties of mixtures and the compounds they contain affect the ways in which they are utilized and separated. This encourages students to justify their choices not just within science but within all areas of the curriculum. • This topic relies on knowledge from the *science skills*, *particle theory* and *periodic table* topics studied earlier in the year for an understanding of the particle models and practical skills. This topic is then applied to the Earth's Resources topic in year 8 and leads into the KS4 AQA curriculum.		
	Critical	**Core**	**Pinnacle**
The Big Questions (What questions will students be able to answer upon mastery of the topic?)	What does mixture mean? What are the different separation techniques? Can the solvent and solute be identified for a solution? What do the terms soluble, insoluble and solubility mean? What are melting points and boiling points and how do they differ between pure substances and mixture?	Can the way in which substances dissolve be explained using the particle model? How does the solubility curve of a solute explain observations about solutions? How is chromatography used to identify unknown substances in mixture? Can a suitable technique be chosen and rationalised for a mixture?	Why might a mixture often be more useful than a pure compound? What will happen if you keep adding a solute to a solution? How could you use separating techniques to provide drinking water to poor areas of the world? Why is the factory that makes whiskey called a distillery?
The Key Skills/ Techniques	**The sophistication and application of skills will become more advanced as students' progress through the critical, core and pinnacle 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 patters 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.	