

Meden School Curriculum Planning							
Subject	Chemistry	Year Group	7	Sequence No.	1	Topic	Lab Safety and Techniques

Retrieval	Core Knowledge	Student Thinking
What do teachers need retrieve from students before they start teaching new content ?	What specific ambitious knowledge do teachers need teach students in this sequence of learning?	What real life examples can be applied to this sequence of learning to development of our students thinking, encouraging them to see the inequalities around them and 'do something about them!'
	<p>L1: Working safely in a lab needs rules followed by everyone. Goggles are worn during practical work to protect the eyes. Practical work is carried out standing up to avoid spills or equipment falling on people. Hazards are chemicals, equipment or procedures which can harm someone. Precautions are steps taken to minimise the risk of a hazard causing serious harm. Hair and loss clothing should be tucked in to reduce risks of chemical spills or catching fire.</p> <p>L2: Hazard symbols are an international way of labelling chemicals to signify the relevant hazards associated with a substance. Symbols include irritant, corrosive, flammable, toxic, oxidising, explosive, health hazard and environmental hazard. Corrosive means the chemical can attack metal and burn skin, precaution wear goggles and gloves (where required by hazcards), wash off any spills immediately. Irritant means chemicals that can cause rashes, mild burning sensations on the skin, precautions are the same as corrosive, but gloves not required. Toxic means the chemicals are poisonous if ingested/inhaled, precautions include gloves and use in a fume cupboard. Flammable means a chemical that catches fire easily, precaution is keep away from any naked flames. Oxidising means the chemical contains a lot of oxygen and so helps other substances to burn, precaution keep away from naked flames and flammable substances. Health Hazard is used on substances that attack the organs over a prolonged period time, carcinogenic (cancer causing) chemicals fit into this category. Other core lab hazardous include cuts from broken glassware which must be swept up and placed in the glass bin, burns caused by touching hot objects, slips due to spills and trips due to bags etc not put away properly.</p> <p>L3. A Bunsen burner is a piece of specialist laboratory equipment used for heating safely. A Bunsen must always be placed on a heatproof mat during use. A Bunsen comprises of a chimney attached to an inlet collar/airhole which is attached to a base attached to the gas via a flexible hose. To light a Bunsen, the airhole must be closed, a splint is used, and the splint should be lit before the gas is switched on. The safety flame (airhole closed) which is yellow is never used for heating. It is called the safety flame as it is easy to see. The blue flame is created by having the airhole half open. The roaring flame is created by having the airhole fully open.</p>	

<p>L4 KS2 Planning an experiment based on a question that you are trying to answer, often with a prediction of what you think might happen.. Methods need equipment and measurements. Variables are things that might affect something else.</p> <p>L5: KS2 Results may have trend or patterns in them. Repeats allow you to spot results that don't seem right.</p> <p>KS2 Results can often be present in charts either bar charts, line graphs or scatter graphs. Scatter graphs have lines of best fit.</p> <p>Conclusions sum up the findings of the experiment and give an answer to the original question.</p> <p>L8/9 KS2 Maths includes metric measures specifically mm through to km and their conversions. It also covers metric units for volume and mass. It covers scales on rulers and thermometers.</p>	<p>L4 A hypothesis is a statement believed to be true but can only be tested by carrying out an experiment. Eg the roaring flame is the hottest. An experiment needs to be a fair test by ensuring only one variable is changed. The independent variable is the one being investigated eg the type of flame. The dependent variable is the one being measured and is expected to change as a result of changing the independent variable eg the final temperature of the water. Control variables are all other factors relevant to the experiment that must be kept the same eg the volume of water, the time heated, the type of container used. Experiments are repeated to improve the precision and to look out for anomalous results</p> <p>L5: Conclusion this summarises the findings of a set of results and then makes a statement which either supports or disproves the original hypothesis. Roaring flame is hottest, followed by the blue flame and the yellow flame is the least hot.</p> <p>L6 A good scientific method should be written in the same format as a cooking recipe, it should include the names of each piece of equipment and how it will be used, quantities, a sequence of clear steps to follow, hazards and precautions and the results/observations to be recorded. A results table should be set up if appropriate ready to be used during the experiment. A result table has the independent variable in the first column. Column headers should include appropriate units.</p> <p>L7: Scientific equipment have specific names and uses. Beakers hold solids and liquids which will not release gases during a reaction or will spit when heated. Conical flasks hold solids or liquids which are likely to release gases during a reaction or spit when heated. They are also used when swirling is required to mix chemicals eg during titrations. Measuring cylinders are used to measure liquid volumes. Test-tubes are used when small quantities are used during a reaction. Boiling tubes are used when smaller quantities are needed to be heated. Equipment used during heating include Bunsen burners, heatproof mats, tripods, gauzes and pipe-triangles.</p> <p>L8: All measurements in science have an appropriate piece of equipment used to measure them. Thermometers or temperature probes measure temperature. A balance is used to measure mass. Newton balances are used to measure force. Measuring cylinders are used to measure liquid volume. Stopwatches are used to measure time. Reading scales is an important skill. Accurate measurements are close to the true value and are achieved using equipment with a high resolution. Precision is achieved when multiple measurements of the same aspect are similar in value i.e repeats should be close together.</p> <p>L9: SI units are the internationally agreed units used for each type of measurement. Length/distance is measured in metres, mass is measured in grams, time is measured in seconds, temperature is measured in Celsius, forces are measured in Newtons, volume is measured in metres cubed or centimetres cubed etc. All SI units have subdivisions eg kilo, centi, milli, micro, nano. Kilo (prefix =k) is 1000X bigger, centi (prefix = c) is 100X smaller, milli (prefix =m) is a 1000X smaller, micro (prefix = μ) is a 1,000,000X smaller and nano (prefix = n) is 1,000,000,000X smaller.</p>	
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