Ravens Wood School

KS3 Curriculum Plan

Subject: Year 7 Energy Transfers.

Overarching Topic: Energy Transfers			
Why is this topic being studied at this time? How does it fit into the wider subject curriculum?	• Bouncing balls, radios, kettles, *Homo sapiens* and roller-coasters… all have one thing in common…energy transfers. So where does all this energy come from? Although we usually think of the lights as making energy to light up, energy is actually not created from anything. This principle is called **conservation of energy**. Energy is never created or destroyed, but rather converted between different forms. So, when you turn on the lights, you're converting electrical energy into light and heat energy. You're not actually making light from scratch. Energy transfers go on around us all the time. • Although students will have come across the concept of Energy in various forms this will be the first time they will be accessing all ten forms. This then leads into ideas on light, sound and work that are needed before this can be properly formed.		
	Critical	**Core**	**Pinnacle**
The Big Questions (What questions will students be able to answer upon mastery of the topic?)	What are the ten energy types? How do jobs get done using one of the 10 energy? Can I model where energy is transferred from one store at the start to another? What is conservation of energy?	How does the energy of an object depend on its speed, temperature, height or whether it is stretched or compressed? How is energy is transferred between energy stores in a range of real-life examples, using diagrams. Can I calculate the useful energy and the amount dissipated, given values of input and output energy? How is energy is dissipated in a range of situations?	L1: What energy forms will we need? Where will we get those energy forms from? Challenge: How will we sustain life once we get there? L2: How can we use this knowledge of efficiency to improve the design of a new town or colony on another planet? L3: Make the rollercoaster faster! What could happen if it went too fast? L4: Can a process ever be 100% efficient? Why? L5: How would you visually represent the flow of energy? L6: Why can't processes such as swinging pendulums or bouncing balls go on forever but a floating object in space will have 'perpetual momentum' i.e. it will carry on floating through space?
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.