



Learning Journey – P1 Conservation and Dissipation of Energy

Ad Astra

What have I done previously in my learning journey?									
Previously....		You have learnt previously about energy. This has involved: <ul style="list-style-type: none">• Learning about fuels and energy resources.• Learning about energy changes and transfers when burning fuels							
In this topic...		You will learn that energy can be transferred usefully, stored or dissipated, but cannot be created or destroyed. You will also learn that the main energy resources available for use on Earth include: fossil fuels (coal, oil and gas), nuclear fuel, bio-fuel, wind, hydroelectricity, geothermal, the tides, the Sun and water waves.							
We will develop our learning by studying the following each lesson:							RAG	Skills in Science checklist	
P1.06 Reducing Unwanted Energy Transfers (2 lessons) <ul style="list-style-type: none">• Describe the conservation of energy, with reference to transfer, storage, dissipation, creation and destruction.• Describe how energy transfers in a closed system affect the total energy of the system.• Describe, with examples, how energy is dissipated when a system changes.• Explain ways of reducing unwanted energy transfers including the use of lubrication or thermal insulation• Describe how the thermal conductivity of a material affects the energy transfer by conduction across the material.• Describe how the rate of cooling of a building is affected by the thickness and thermal conductivity of its walls.								<input type="checkbox"/> Scientific Method <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
P1.07 Efficiency <ul style="list-style-type: none">• Recall and apply the correct equation to calculate efficiency• Rearrange the efficiency equation• [HT only] Describe ways to increase the efficiency of an intended energy transfer.								<input type="checkbox"/> Scientific Method <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
P1.08 Global Energy Resources and Their Uses (2 Lessons) <ul style="list-style-type: none">• Name the main energy resources available for use on Earth.• Describe what is meant by a renewable energy resource.• Distinguish between energy resources that are renewable and energy resources that are non-renewable.• Compare the ways that different energy resources are used, including for transport, electricity generation and heating• Explain why some energy resources are more reliable than others.• Describe the environmental impact arising from the use of different energy resources.								<input type="checkbox"/> Scientific Method <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
P1.09 Trends in Energy Resource Use <ul style="list-style-type: none">• Explain patterns and trends in the use of energy resources• Give reasons why science does not always have the power to deal with the environmental issues arising from the use of energy resources.								<input type="checkbox"/> Scientific Method <input type="checkbox"/> Practical <input type="checkbox"/> Number skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
Key Vocabulary									
Conservation of energy	Closed system	Dissipate	Lubrication	Insulation	Thermal conductivity	Efficiency	Energy resources	Renewable	
Non-renewable	Reliable	Environmental impact	Trend						



Future Learning	<p>Learning about energy resources at GCSE lays the groundwork for A level study by introducing the key differences between renewable and non-renewable sources, their environmental impacts, and the challenges of switching to sustainable alternatives. At A level, this knowledge is developed further through more detailed scientific analysis, including energy transfer calculations, efficiency equations, and case studies of global energy use. Students also explore the economic, political, and technological factors influencing energy choices, linking classroom science to real-world issues such as climate change, international agreements, and innovation in renewable technologies. In this way, GCSE provides the essential concepts and awareness, while A level deepens understanding with quantitative skills, critical evaluation, and broader context.</p>
In careers	<p>Learning about energy and energy transfers isn't just for passing exams — it's the science behind how the world works. From powering homes to designing rockets, understanding energy helps solve real problems and build exciting futures.</p> <p>Here's how it links to careers:</p> <ul style="list-style-type: none">• Engineering Engineers use knowledge of renewable and non-renewable energy to design efficient transport systems, buildings, and machinery. <i>Average UK salary: £35,000–£45,000 (can rise to £60,000+ in specialist roles)</i>• Environmental Science Environmental scientists analyse energy use and pollution, helping governments and companies transition to renewable energy and meet sustainability targets. <i>Average UK salary: £30,000–£40,000</i>• Space & Aerospace Physicists and technicians apply energy transfer equations to rocket launches, satellite systems, and aircraft design, ensuring safe and efficient performance. <i>Average UK salary: £37,000–£50,000 (higher in defence and space sectors)</i>• Medicine & Healthcare Biomedical engineers and clinicians use energy concepts in technologies like MRI scanners, X-rays, and prosthetics powered by stored energy. <i>Average UK salary: £35,000–£45,000 for biomedical engineers; higher for clinical consultants</i>• Technology & Gaming Game developers use physics engines that simulate energy transfers to make virtual environments realistic and immersive. <i>Average UK salary: £30,000–£50,000 (can exceed £60,000 in senior roles or large studios)</i>• Electricians & Technicians Electricians apply energy transfer principles to install, maintain, and repair electrical systems in homes, schools, and workplaces. <i>Average UK salary: £32,000–£38,000 (with potential for more in specialist or contract roles)</i>• Renewable Energy Industry Wind turbine technicians, solar panel installers, and energy analysts work directly with renewable technologies to reduce reliance on fossil fuels. <i>Average UK salary: £28,000–£40,000 (higher with experience and specialist training)</i>• Geography & Policy Roles Energy knowledge supports careers in urban planning, sustainability policy, and climate change consultancy, where decisions about energy use shape communities. <i>Average UK salary: £30,000–£45,000 depending on sector</i>