SUBJECT: Physics YEAR: 10 MTP TITLE: Energy stores and transfers HALF TERM: _1_ NO. OF LESSONS (approx): 5

Deliberate and specific retrieval of expected prior knowledge	*Academic transformation*	*Personal transformation*
• Energy types: Students should recall the different forms of energy (kinetic, potential, thermal, chemical, etc.) from KS3. • Energy transfer: Basic understanding of how energy transfers between stores and how energy can be lost. • Work and Energy: Basic knowledge of how work is done when a force is applied over a distance • Conservation of Energy: Students should remember that energy cannot be created or destroyed, only transferred or transformed.	• Energy stores and transfers: Detailed understanding of the different energy stores (kinetic, thermal, gravitational potential, chemical, elastic potential) • How energy can be transferred between them (mechanical, electrical, heating). • Work done and power: A deeper exploration of how work is done (force x distance) and how power is the rate of doing work. • Energy efficiency: Understanding the concept of energy efficiency in various systems (e.g., machines) and how to calculate it. • Conservation of energy: Applying the law of conservation of energy in closed systems and using it to analyse energy transfers and transformations. • Energy dissipation: How energy is lost to the surroundings in forms like heat and how this affects efficiency.	• How energy transformations happen in everyday life (e.g., in cars, homes, and phones). • Sustainability and future energy: Discussion of renewable energy sources and their potential in solving the global energy crisis, which connects to their social responsibility. • Technological advances: Exploring cutting-edge technology that uses energy transformations efficiently, such as electric cars, wind turbines, or solar panels. • Energy conservation in daily life: Ways students can reduce energy consumption in their homes, schools, and communities.
Can I Learning Questions • Can I state energy stores? • Can I describe and calculate energy transfers in a system? • Can I calculate power? • Can I explain ways to increase efficiency in energy transfers? • Can I calculate energy transfers?	*Literacy* Website links: BBC Bitesize: Energy – For reading and understanding key energy concepts. GCSE pods Tasks for Reports and Verbal Discussion: Energy Efficiency Investigation: Students could research different types of household appliances (fridges, light bulbs, etc.) and write a report on their energy efficiency and environmental impact. Debate: Hold a debate on the use of renewable versus non-renewable energy resources, giving students the chance to use scientific evidence to support their opinions. Tier 2 vocabulary Energy, work, power, transferred Tier 3 vocabulary Conservation, kinetic, potential, mechanical, electrical	*Misconceptions* **Energy is used up:** Students often think energy is used up in processes (e.g., "The energy in a battery runs out"), rather than energy being transferred or transformed. **All energy is wasted:** Students might think that all energy is wasted during energy transfers, rather than understanding the concept of efficiency and that some energy is useful. **Power is the same as energy:** Students may confuse the concept of power (rate of doing work) with energy (the total amount of work done). **Higher energy efficiency always means more energy:** Students might assume that a more energy-efficient system consumes less energy, but instead, it uses less of the energy in the form of waste (e.g., heat). **Gravitational potential energy is the same as kinetic energy:** Some students may not grasp that these are two different energy stores that can convert into each other under certain conditions (e.g., a falling object).