Meden School Curriculum Planning							
Subject	Physics	**Year Group**	8	**Sequence No.**		**Topic**	Generating Electricity

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!'
KS2 years 3 & 4: electricity is the flow of current. Current is the flow of electrons in a wire. Electricity is conducted in metals. Composition of the atmosphere. **KS2 years 5 & 6. Identifying common appliances using electricity .** **Building basic circuits.** **Potential difference is measured in volts.** **Effects of increased CO2 on climate change.** **Human activities that are linked to global warming.** **KS3 Y7 : simple circuits, current and voltage. Current measured in amps, voltage or potential difference measured in volts. The higher the voltage the brighter the bulb.**	L1: be able to identify the vast uses of electricity in daily lives and know the **law of conservation of energy**. Be able to draw simple **energy transfer diagrams** and understand that one form of e**nergy transfers** into others. Not all energies are **useful.** Some are **wasted**. Most wasted energy is **lost to the surroundings as heat.** Understand what the **national grid** is and appreciate that electricity is only part of modern human history. Be able to imagine life before electricity and the challenges that brought. appreciate that 940 million people still live without electricity. L2: understand what a **power station** looks like and be able to recall where the electricity supplying Mansfield is from. Be able to name the key parts of a power station including the **boiler, turbines, generator and cooling towers.** Describe the **energy changes** that take place within a coal power station. Be able to compare similarities and differences between a true power station and an in-class model L3: Be able to name the **3 fossil fuels**. Understand that fossil fuels take **millions of years to form** and we are burning them far faster that they are replenishing. Identify the **harmful gases** released by burning fossil fuels. Analyse data to see the **correlation in increase C02 emissions and global temperature** since the industrial revolution. Understand the effects **the greenhouse effect** and how it has contributed to **global warming.** Be able to describe the **effects of global warming** and suggest ways to reduce individual **carbon footprint** L4: Be able to define the term **'renewable energy'.** Name various sources of renewable energy. Identify the **renewable energy resources** that use water. Describe how **tidal, wave and hydroelectricity energy resources work**. Describe **advantages** and **disadvantages** of tidal, wave and hydro energy.	**L1: Appreciation that not everyone in the world has access to electricity still to this day and how that could effect lives of teenagers in other places around the world. Opportunity to talk about projects and charities trying to overcome this and help more people access something we often take for granted.** **L2: Opportunity to discuss the knock on effects of closing a local power station in 2024, leading to job losses and loss on income from commuters to the local economy. Could the site be used for something else to provide jobs?** **L3: The global warming problem – who's problem is it? Caused by over consumption of older generations but needing to be fixed by the**

	L5: Identify renewable energy resources that utilise our atmosphere and the earth to generate electricity. Describe how **solar, wind, biomass and geothermal energy** resources work. Describe **advantages and disadvantage**s of solar, wind, biomass and geothermal energy. L6: Be able to identify the advantages and disadvantages of 7 different forms of renewable energy. Understand why some places like Iceland are ideally suited to use geothermal energy due to their **geographical location.** Use **debating skills** to determine the most appropriate type of renewable energy to supply Meden School based on location, type of buildings, size, time of usage and types of activities taking place. L7: Understand how a **nuclear power station** works. Know that the most common **nuclear fuels** are **uranium** and **plutonium.** Be able to compare nuclear power stations to coal power stations. Identify the pro's and con's of using nuclear power. Know the locations of nuclear reactors in the UK and the aim to reach **25%** of UK power from nuclear fuel by 2025 L8: Know the definition for **power**. Recall and use the equation **Power = energy / time** to calculate power. Be able to **convert minutes into seconds**. Rearrange the power equation to calculate energy. **Energy = power x time**. Know that power is measured in **Watts.** Justify how low power light bulbs can **reduce energy consumption**. L9: Know what an **Energy meter** is and where they are found in our homes. Understand the different ways energy companies can collect information on our energy usage using **meter, smart meters or cards.** Describe what a **kilowatt-hour** is and know that there are **3,600,000Joules in 1 kWh.** Be able to use data to calculate energy usage and calculate the **cost of electricity.** Consider how the **demand for electricity changes** throughout the day and also throughout the year and why electrical usage might be greater in winter months compared to summer. L10: Revision L11: End of Topic Test L12: GPA test feedback	**younger generations. How are different countries dealing with the issue differently?**