	Physics Unit: Electricity What does progression of knowledge look like at St Leonard's?
Year	**Progression of knowledge:**
EYFS	• Help children understand how electricity works • Discuss electrical safety including plugs, sockets, switches and electric lamps • Pupils may explore a light bulb by using a magnifying glass to look closely at the filament and the materials it is made from • Explore electricity using wire loop games and discussing observations • Explore simple circuits and their components • Discuss everyday experiences like thunder and lightning
2	• Electricity is a form of energy, used for lighting, heating, making sound and making machines and appliances work. • Pylons and cables carry electricity through the countryside, some electricity cables in busy cities are buried underground • Appliances are devices that run on electricity and they should be used safely (includes, no frayed wires, avoid spillages and keep away from water, not putting objects into sockets • Compare life in a village that has no electricity • A circuit is a complete path around which electricity can flow • Circuits contain components like wires, switches and bulbs.
4	• Electricity is a form of energy, used for lighting, heating, making sound and making machines and appliances work. • Some appliances run on electricity; some plug into the mains electricity and others run on batteries. • An electrical circuit consists of a cell or battery connected to a component using wires. • A series circuit is where all the components of the circuits are joined in one loop. If one part of the loop is incomplete, then the circuit will not work • Names of components include cells, wires, bulbs/ lamps, switches and buzzers • A cell is a single unit, and a battery is a collection of cells • One way to test to see if a circuit is complete is to use a bulb/lamp, if the lamp turns on then the circuit is complete. • Closed switches complete circuits. When a switch is open the bulb/lamp will not light up as the series circuit is incomplete. • Wires are made from metals as they are good conductors of electricity e.g., iron, copper and steel • Insulators are materials that do not allow electricity to pass through them easily e.g., plastic, wood, rubber and glass. • Thomas Edison invented the first practical incandescent light bulb
6	• Recognise circuit symbols in a simple circuit- identify the simple circuit used in a hand torch • Electric current is measured in amperes, current is a flow of charge • Associate the brightness of a lamp or volume of a buzzer with the potential difference in a circuit • Investigate the brightness of a bulb if the PD is increased or the number of bulbs increased in a series circuit • Investigate how the length of wire affects the brightness of a bulb. • Potential difference is measured in volts • Resistance, measured in ohms, as the ratio of potential difference (p.d.) to current • Differences in resistance between conducting and insulating components (quantitative) • Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects • The idea of electric field, forces acting across the space between objects not in contact
KS3 (NC)	• Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge • Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current • Differences in resistance between conducting and insulating components (quantitative). • Separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects • The idea of electric field, forces acting across the space between objects not in contact.