Year 6 Progression in Science Grid					
Topic	**Electricity**	**Evolution and Inheritance**	**Living things and their habitats**	**Animals including Humans**	**Light**
Prior knowledge	**From Y4** Construct a simple series electrical circuit, identifying and naming its basic parts Name some different ways to enable the children to be safe when using electricity		**From Y2** Describe how some plants and animals are suited to different habitats. Describe how animals obtain food by eating plants or other animals. **From Y4** Use classification key to identify plants or animals **From Y5** Describe the life process of reproduction in some plants and animals	**From Y1** Name the main parts of the body, including those related to the 5 senses Identify which animals are fish, amphibians, reptiles, birds and mammals **From Y2** Describe the basic needs of humans and other animals (water, food, air). Describe the importance of exercise, eating the right amounts of different foods and hygiene for humans. **From Y3** Explain some functions of skeletons and muscles in animals Identify that animals need the right types and amount of nutrition **From Y4** Describe the simple functions of the basic parts of the digestive system in humans Describe the importance of and how to correctly brush their teeth **From Y5** Name the phases of human growth and development Recognise that different mammals have different gestation periods Describe some of the changes during puberty	**From Y3** Notice that light is reflected from surfaces Find patterns in the way that the sizes of shadows changes Understand how to protect eyes from the sun
Prior knowledge for working scientifically	I know … • How to raise different types of scientific questions • How to recognise and control variables • How to give reasons for my predictions • How to plan and carry out comparative and fair tests • How to take measurements with increasing accuracy • How to record data and results • How to look for different causal relationships • How to suggest improvements in methodology				
Key vocabulary	Voltage Brightness Volume Switches Danger Series circuit Electrical safety sign Switch Bulb Buzzer Motor	living things change fossils offspring not identical characteristics variation evolution adaptation inherit inheritance environment extreme conditions	microorganisms characteristics plants animals classifying invertebrates spiders snails worms vertebrates fish amphibians reptiles birds	heart lungs liver kidney brain skeletal skeleton muscle muscular lifestyle nutrients water alcohol digest	Voltage Brightness Volume Switches Danger Series circuit Electrical safety sign Switch Bulb Buzzer Motor

		advantageous disadvantageous	mammals	digestion digestive human circulatory system blood vessels blood diet exercise drugs substances	
Statutory requirements	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches Use recognised symbols when representing a simple circuit in a diagram.	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans.	Recognise that light appears to travel in straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Key Performance Indicators	Explain how the number of voltage cells affects bulbs, buzzers or motors in a circuit Use recognised symbols when representing a simple circuit in a diagram	Recognise that living things produce offspring which are not usually identical to their parents Identify how adaptation of plants and animals over time may lead to evolution	Classify some plants, animals or microorganisms, explaining the choices made	Explain the main parts and functions of the human circulatory system, including heart and blood vessels	Explain that we see things which either give out or reflect light
Essential knowledge	I know … • The number and voltage of cells in a circuit impacts the brightness of a lamp or volume of a buzzer • How to draw a simple circuit • The recognised symbols to represent components • How to explain variations in how Components function • To work systematically to identify the effect of changing one component at a time	I know ... • Living things change over time • Living things that inhabited the Earth millions of years ago from fossils • Living things produce offspring • Offspring inherits characteristics from both parents and so vary from each other • Animals and plants adapt to suit their environment and this happens over many years • Adaption can lead to evolution	I know … • Carl Linnaeus realised living things can be grouped according to characteristics. • Living things can be classified into animals, plants and microorganisms. • Vertebrates can be subdivided into amphibians, fish, reptiles, birds and mammals. • Invertebrates can be subdivided into insects, spiders, worms, molluscs	I know … • The heart, arteries, veins, capillaries and blood are the main parts of the Human circulatory system. • Arteries, veins and capillaries are blood vessels that carry blood around the body. • The heart pushes blood around the body. • The blood is a red liquid that carries oxygen, red blood cells and white bloods. • The impact of diet, exercise, drugs and lifestyle on the body's function	I know ... • Light travels in straight lines. • When light hits an object, it reflects off the object and travels in a straight line to our eyes. • How to sort surfaces into reflective and non-reflective • A periscope allows us to see things that are otherwise out of sight. • Light bounces off a mirror at the same angle it hits. • Light travelling horizontally meets the first mirror in the periscope at 45 degrees and bounces off at 45 degrees making 90 degree altogether so it ends up travelling vertically downwards.
Investigations and Working Scientifically to be covered	Investigation: How does voltage (number of batteries) affect the brightness of lamps? Investigation: How does voltage (number of batteries) affect the volume of a buzzer?	Investigating cross breeds Investigating variation in the classroom – height, weight, hair colour, shoe size etc Data collection and graph drawing to analyse. What differences are environmental and what differences are inherited from our parents?	How many groups can plants be organised into and what care their characteristics?	Investigating nutrition content using food labels – Which is the unhealthiest chocolate bar/snack? How healthy are ready meals? Investigating the effect of exercise on our heart rate How do muscles work? Modelling with paper tubes and rubber bands – investigating	What is the relationship between the distance from the object to the shadow and the size of the shadow? What happens to the length and position of a shadow throughout the day Investigating light levels in the school/local environment – identifying sources. Data collection and bar graph

					analysis
KPIs for Working Scientifically	I know … • How to select the most appropriate line of enquiry • How to explain my predictions • How to base predictions on previous findings • How to choose the most appropriate equipment to take measurements • How to recognise and control variables • How to decide which observations to make • How to take measurements with accuracy and precision • How to choose the most effective approach to record and report results • How to identify and explain patterns and causal relationships • How to draw conclusions • How to suggest improvements to methodology				
Assessment questions	What do the number and voltage of cells impact in a circuit? Can you draw a simple circuit? Can you draw the symbol for a bulb? How do variations in components work?	What are fossils? What do living things produce? Why do offspring vary from each other? How do animals adapt to their environment? How do plants adapt to their environment? What can adaption lead to?	What did Carl Linnaeus do? How can living things be classified? What are the sub groups of vertebrates? What are the sub groups of invertebrates?	What are the main parts of the human circulatory system? What are the blood vessels that carry the blood? What does the heart do to the blood? What is blood? How does diet/ exercise/ drugs/ lifestyle affect the body's function?	How does light travel? How do we see objects? How do you sort surfaces into reflective and nonreflective? What does a periscope allow us to see? How does a periscope work?