Science Progression Document – Key Stage 2

Millhouse Primary School

Curriculum map (Key Stage 2 – 4 year cycle)	Cycle 1 Y3/Y4: Plants: including parts, lifecycle and requirements for life Living things and their habitats: classification of living things Animals including humans: skeletons & nutrition Animals including humans: digestive system & teeth/food chains States of Matter: solids, liquids, gases/ heating and cooling/ water cycle Rocks: Classification of rock types/ simple understanding of fossilisation	Cycle 2 Y3/Y4: Sound: vibrations/ pitch and volume Electricity: simple circuits/ switches/ conductors and insulators Forces and magnets: simple forces, including magnetism Light: sources of light; shadows & reflections Y5/Y6: Light: how light travels/ shadows Electricity: investigating circuits/ circuit diagrams Earth and Space: sun, earth, moon/ day and night Forces: gravity/ air resistance/ friction/ levers, pulleys, gears	Cycle 3 Y3/Y4:Plants: including parts, lifecycle and requirements for life Living things and their habitats: classification of living things Animals including humans: skeletons & nutrition Animals including humans: digestive system & teeth/food chains States of Matter: solids, liquids,gases/ heating and cooling/ water cycle Rocks: Classification of rock types/ simple understanding of fossilisation	Cycle 4 Y3/Y4: Sound: vibrations/ pitch and volume - Spring Electricity: simple circuits/ switches/ conductors and insulators Forces and magnets: simple forces, including magnetism (Autumn) Light: sources of light; shadows & reflections Summer Y5/Y6: Light: how light travels/ shadows Electricity: investigating circuits/ circuit diagrams Earth and Space: sun, earth, moon/ day and night Forces: gravity/ air resistance/ friction/ levers, pulleys, gears

	Y5/Y6: Living things and their habitats: classification, **Living things and their habitats: life cycles/ reproduction in some plants and animals** **Animals including humans: health & lifestyles/ transportation of nutrients and water/ circulatory system** **Animals including humans: describe changes as humans develop & mature** **Evolution & Inheritance** **Properties and changes of materials: classifying materials / mixtures & solutions/ reversible and irreversible changes**		**Y5/Y6: Living things and their habitats: classification,** **Living things and their habitats: life cycles/ reproduction in some plants and animals** **Animals including humans: health & lifestyles/ transportation of nutrients and water/ circulatory system** **Animals including humans: describe changes as humans develop & mature** **Evolution & Inheritance** **Properties and changes of materials: classifying materials / mixtures & solutions/ reversible and irreversible changes**	
Teaching objectives related to NC 2014	**<u>Plants Y3/4</u>** Explore the part the flower plays in the life cycle of flowering plants including pollination, seed formation and seed dispersal.	**<u>Y3/Y4: Sound: vibrations/ pitch and volume</u>** How are sounds made? (vibration)	**<u>Y3/Y4:Plants</u>** Explore the part the flower plays in the life cycle of flowering plants including pollination, seed formation and seed dispersal.	**<u>Y3/Y4: Sound: vibrations/ pitch and volume</u>** How are sounds made? (vibration) Vibrations travel through a medium to the ear

	Explore how is water transported through the plant. Find out the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) **<u>Living things and their habitats (Y3/Y4)</u>** Recognise that living things can be grouped in a variety of ways Find out how to use a key to identify local plants and animals? Know that environments can change and that this can sometimes pose dangers to living things **<u>Animals Including humans: Y3/Y4</u>**	Vibrations travel through a medium to the ear Find patterns between the volume of a sound and the strength of the vibration Find patterns between the pitch of a sound and features of the object that produces it What happens to sound as the distance from the sound source increases **<u>Y3/Y4 Electricity: simple circuits/ switches/ conductors and insulators</u>** What common appliances run on electricity Construct a simple series circuit	How is water transported through the plant. What are the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) **<u>Y3/Y4 Living things and their habitats: classification of living things</u>** Recognise that living things can be grouped in a variety of ways How do I use a key to identify local plants and animals? That environments can change and that this can sometimes pose dangers to living things **<u>Y3/Y4 Animals including humans: skeletons & nutrition</u>**	Find patterns between the volume of a sound and the strength of the vibration Find patterns between the pitch of a sound and features of the object that produces it What happens to sound as the distance from the sound source increases **<u>Y3/Y4; Electricity: simple circuits/ switches/ conductors and insulators</u>** What common appliances run on electricity Construct a simple series circuit Identify the different parts to a circuit including cell, wires, bulbs, switches and buzzers

	Animals including humans need to the right amount of nutrition Animals including humans get their nutrition from what they eat. Find out why do we have a skeleton and what does it protect ? Find out how do animals move their muscles ? Find out how do muscles work ? **States of Matter (y3/Y4)** Compare and group materials together according to whether they are solids, liquids or gases Investigate how do some materials change state when they are heated or cooled?	Identify the different parts to a circuit including cell, wires, bulbs, switches and buzzers Identify whether a lamp will light in a simple series circuit based on whether or not the lamp is part of a complete loop with a battery How does a switch work and will this light the lamp in the simple series circuit What are the common conductors and isolators? Are metals good conductors? **Y3/y4 Forces and magnets: simple forces, including magnetism** Compare how things move on different surfaces	Animals including humans need to the right amount of nutrition Animals including humans get their nutrition from what they eat. Why do we have a skeleton and what does it protect ? How do animals move their muscles ? How do muscles work ? **Y3/y4 Animals including humans: digestive system & teeth/food chains** What are the simple functions of the basic parts of the digestive system in humans ?	Identify whether a lamp will light in a simple series circuit based on whether or not the lamp is part of a complete loop with a battery How does a switch work and will this light the lamp in the simple series circuit What are the common conductors and isolators? Are metals good conductors? **Y3/Y4: Forces and magnets: simple forces, including magnetism** Compare how things move on different surfaces Some forces need contact between two objects but magnetic forces can act at a distance

	Measure or research the temperature at which this change happens in degree Celsius Identify the part played by evaporation and condensation in the water cycle Associate the rate of evaporation with temperature. **Rocks (Y3/Y4)** Compare how things move on different surfaces Some forces need contact between two objects between two objects but magnetic forces act as Describe in simple terms how fossils are formed when things	Some forces need contact between two objects but magnetic forces can act at a distance Magnets can attract, repel each other That magnets can attract some materials and not others That magnets have two poles. Predict whether two magnets will attract or repel each other based On which poles are facing **Y3/Y4 Light: sources of light; shadows & reflections**	What are the different types of teeth in a human and what are their simple functions ? Construct and develop a variety of food chains Identify producers, predators and prey **Y3/Y4 States of Matter: solids, liquids, gases/ heating and cooling/ water cycle** compare and group materials together according to whether they are solids, liquids or gases How do some materials change state when they are heated or cooled? I can measure or research the temperature at which this change happens in degree Celsius	Magnets can attract, repel each other That magnets can attract some materials and not others That magnets have two poles. Predict whether two magnets will attract or repel each other based On which poles are facing **Y3/Y4 Light: sources of light; shadows & reflections** Recognise the need for light to see things and that dark is the absence of light? Light is reflected from surfaces

	have lived and then are trapped within rock Compare and group together different kinds of rocks based on appearance and simple physical properties **<u>Y6: Living things and their habitats: classification</u>** **<u>Y5; Life cycles/reproductions in some animals and plants</u>** Y5:Find out what is the difference between the life cycles of a mammal, an amphibian, and insect and a bird? Y5: Describe the life process of reproduction is some plants and animals Y6: Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including micro-organisms, planets and animals.	Recognise the need for light to see things and that dark is the absence of light? Light is reflected from surfaces Light from the sun can be dangerous and that there are ways to protect your eyes. Recognise the need for light to see things and that dark is the absence of light? Light is reflected from surfaces Light from the sun can be dangerous and that there are ways to protect your eyes. **<u>Y5/Y6: Light: how light travels/ shadows</u>** What direction does light travel?	Identify the part played by evaporation and condensation in the water cycle Associate the rate of evaporation with temperature. **<u>Y3/Y4 Rocks: Classification of rock types/ simple understanding of fossilisation</u>** Compare how things move on different surfaces Some forces need contact between two objects between two objects but magnetic forces act as Describe in simple terms how fossils are formed when things have lived and then are trapped within rock	Light from the sun can be dangerous and that there are ways to protect your eyes. Recognise the need for light to see things and that dark is the absence of light? Light is reflected from surfaces Light from the sun can be dangerous and that there are ways to protect your eyes. **<u>Y5/Y6: Light: how light travels/ shadows</u>** What direction does light travel? Objects are seen because they give out or reflect light into the eye

	Y6: What are the reasons for classifying plants and animals (specific characteristics) **<u>Y6; Animals including humans: health & lifestyles/ transportation of nutrients and water/ circulatory system</u>** Investigate the main parts of the human circulatory system ? Find out the main functions of heart, blood vessels and blood Investigate: What is the impact of diet, exercise, drugs and lifestyle in the way the body functions ? Investigate; What ways are the nutrients and water transported within animals including humans	Objects are seen because they give out or reflect light into the eye How do we see things? (light travels from light sources to our eyes or from light sources to objects then our eyes Understand that light travels in straight lines which explain why shadows have the same shape as the object that cast them **<u>Y5/Y6 Electricity: investigating circuits/ circuit diagrams</u>** How does the number and voltage of cells effect the brightness of a lamp or the volume of a buzzer	Compare and group together different kinds of rocks based on appearance and simple physical properties **<u>Y5/Y6: Living things and their habitats: classification,</u>** **<u>Y5/Y6: Living things and their habitats: life cycles/ reproduction in some plants and animals</u>** Y5:What is the difference between the life cycles of a mammal, an amphibian, and insect and a bird? Y5: Describe the life process of reproduction is some plants and animals Y6: Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences	How do we see things? (light travels from light sources to our eyes or from light sources to objects then our eyes Understand that light travels in straight lines which explain why shadows have the same shape as the object that cast them **<u>Y5/Y6: Electricity: investigating circuits/ circuit diagrams</u>** How does the number and voltage of cells effect the brightness of a lamp or the volume of a buzzer Compare and give reasons for variations in how components function including brightness of bulb, loudness of buzzer, on/off position of switches

	Y5: Animals including humans: describe changes as humans develop & mature What are the changes as humans develop to old age? **Y6; Evolution & Inheritance** Investigate: How do living things change over time ? Find out: What information does a fossil provide? (information about living things that inhabited the Earth millions of years ago) Know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Find out: How do animals and plants adapt to suit their environment? Find out: How does adaptation lead to evolution	Compare and give reasons for variations in how components function including brightness of bulb, loudness of buzzer, on/off position of switches Recognise symbols when representing a simple circuit in a diagram. **Y5/Y6 Earth and Space: sun, earth, moon/ day and night** Describe the movement of the earth and other planets, relative to the Sun in the solar system Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies	including micro-organisms, planets and animals. Y6: What are the reasons for classifying plants and animals (specific characteristics) **Y5/Y6: Animals including humans: health & lifestyles/ transportation of nutrients and water/ circulatory system** Investigate the main parts of the human circulatory system ? Find out the main functions of heart, blood vessels and blood Investigate: What is the impact of diet, exercise, drugs and lifestyle in the way the body functions ?	Recognise symbols when representing a simple circuit in a diagram. **Y5/Y6: Earth and Space: sun, earth, moon/ day and night** Describe the movement of the earth and other planets, relative to the Sun in the solar system Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies Why does the sun seem to move across the sky, rising in the East and setting in the West Why do we have day time and night time?

	Properties and changes of materials: classifying materials / mixtures & solutions/ reversible and irreversible changes Compare and group together everyday materials on the basis of the properties including hardness, solubility, transparency, conductivity (electricity and thermal) and response to magnets Some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Separate solids, liquids and gases through filtering, sieving and evaporating	Why does the sun seem to move across the sky, rising in the East and setting in the West Why do we have day time and night time? **Y5/Y6 Forces: gravity/ air resistance/ friction/ levers, pulleys, gears** explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Investigate; What ways are the nutrients and water transported within animals including humans **Y5/Y6: Animals including humans: describe changes as humans develop & mature** What are the changes as humans develop to old age? **Y5/Y6: Evolution & Inheritance** How do living things change over time ? What information does a fossil provide? (information about living things that inhabited the Earth millions of years ago) Living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents How do animals and plants adapt to suit their environment?	**Y5/Y6:Forces: gravity/ air resistance/ friction/ levers, pulleys, gears** explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving surfaces recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

	Give reasons, based on evidence from comparative and fair tests, for the particular use of everyday materials including wood, plastic and metal Demonstrate that dissolving, mixing and changes of state are reversible changes Changes associated with burning and the action of acid on bicarbonate of soda are irreversible Some changes result in the formation of new materials	recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	How does adaptation lead to evolution **Y5/Y6: Properties and changes of materials: classifying materials / mixtures & solutions/ reversible and irreversible changes** Compare and group together everyday materials on the basis of the properties including hardness, solubility, transparency, conductivity (electricity and thermal) and response to magnets Some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Separate solids, liquids and gases through filtering, sieving and evaporating	

			Give reasons, based on evidence from comparative and fair tests, for the particular use of everyday materials including wood, plastic and metal Demonstrate that dissolving, mixing and changes of state are reversible changes Changes associated with burning and the action of acid on bicarbonate of soda are irreversible Some changes result in the formation of new materials	

Skills of Scientific Enquiry (Working Scientifically) Related to NC 2014 Use each skill at least once a term.	**<u>Year 3 and 4</u>** • **Asking relevant questions and using different types of scientific enquiries to answer them**	**<u>Year 5 and 6</u>** • **Planning different types of scientific enquiries to answer questions, including**

	• Setting up simple practical enquiries, comparative and fair tests • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences,	recognising and controlling variables where necessary • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • Using test results to make predictions to set up further comparative and fair tests • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • Identifying scientific evidence that has been used to support or refute ideas or arguments