Progression in Science at Sandhills Primary School

	EYFS	KS1	Lower KS2	Upper KS2
Animals including humans	• Finding out about the different parts of my body. • Talking about how I have changed as I have grown up by looking back at my baby photo. • Learning about and using my five senses to investigate the area around me. • Experiments with the 5 senses, including: 'feely boxes' to guess what is inside; scented paints to smell, and using my sense of taste to try different fruit; listening to different sounds and guessing what they are. • Ways to stay healthy • Oral health activities	**Year 1** • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • Group animals according to what they eat • Identify and name a variety of common animals that are carnivore, herbivore and omnivores • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense • Describe and compare the structure of a variety of common animals (fish, amphibians,	**Year 3** • Identify that humans and some other animals have skeletons and muscles for support, protection and movement • Identify that animals including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat **Year 4** • Describe the simple functions of the basic parts of the digestive system in humans • Construct and interpret a variety of food chains, identifying producers, predators and prey • Identify the different types of teeth in humans and their simple functions	**Year 5** • Describe the changes as humans develop to old age **Year 6** • Identify and name the main parts of the human circulatory system, and describe the function of the heart, blood vessels and blood • Describe the ways in which nutrients and water are transported within animals, including humans • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function

		reptiles, birds and mammals, including pets) **Year 2** • Understand that animals, including humans, have offspring which grow into adults • Describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene		
Earth and Space	• Bubbling planets and craters on the Moon – changing states. • Talking about what planet we live on and where on the planet we live. • Talking about our planet and how we can look after our planet, looking at a globe.			**Year 5** • 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 approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky

Electricity			**Year 4** • Identify common appliance that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identify whether or not a lamp will light a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductors	**Year 6** • 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
Evolution and inheritance		Link to Year 2 animals, including humans		Link to year 5 animals, including humans **Year 6** • 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
Forces and magnets			**Year 3** • Compare how things move on different surfaces • Notice that some forces need contact between two objects, but magnetic forces can act at a distance • Observe how magnets attract or repel each other and attract some materials and not others • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a	**Year 5** • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces • Recognise that some mechanisms, including levellers, pulleys and gears allow a smaller force to have a greater effect • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between

			magnet, and identify some magnetic materials • Describe magnets as having two poles • Predict whether two magnets will attract or repel each other, depending on which poles are facing	the Earth and the falling object
Light	• Discussing how to make shadows and how to make the shadow bigger and smaller.		**Year 3** • Recognise that he/she needs light in order to see things and that dark is the absence of light • Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect eyes • Recognise that shadows are formed when the light from a light source is blocked by a solid object • Find patterns in the way that the size of shadows changes	**Year 6** • Recognise that light appears to travel in straight lines • Use the ideas 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 form light sources to our eyes or from light sources to objects and then to our eyes • Use the ideas that light travels in straight lines to explain why shadows have the same shape as the object that cast them

Living things and their habitats	• Learning about different environments by comparing Sandhills to the farm we visit. • Learning about the life cycles of animals, plants and mini-beasts. • Learning about farm animals. Talking about the life of a farmer and how to look after the animals. Talking about the names of their offspring.	**Year 2** • Explore and compare the differences between things that are living, dead, and things that have never been alive • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including micro-habitats • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food	**Year 4** • Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things	**Year 5** • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals **Year 6** • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics
Materials	• Gingerbread Men science experiments – floating and sinking/changing states. • Science investigations – property of materials – making 3 little pig houses/wrapping up	**Year 1** • Distinguish between an object and the material from which it was made • Identify and name a variety of everyday materials, including		**Year 5** • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical

	• Humpty Dumpty, evaluating which house is the best and why? • Separating and mixing liquids invetsigations. Talking about what has changed.	wood, plastic, glass, metal, water and rock • Describe the simple physical properties of a variety of everyday materials • Compare and group together a variety of everyday materials on the basis of their simple physical properties **Year 2** • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching		and thermal) and response to magnets • Recognise that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metal, wood and plastic • Demonstrate that dissolving, mixing and changes of state are reversible changes • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning

				and the action of acid on bicarbonate of soda
Plants		**Year 1** • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees **Year 2** • Observe and describe how seeds and bulbs grow into mature plants • Describe how plants need water, light and a suitable temperature to grow and stay healthy, and describe the impact of changing these	**Year 3** • Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • Explore and describe the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • Investigate the way in which water is transported within plants • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	
Rocks			**Year 3** • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • Describe in simple terms how fossils are formed	Links to Year 6 evolution and inheritance

			when things that have lived are trapped within rock • Recognise that soils are made from rocks and organic matter	
Seasonal Changes	• Thinking about Harvest and what this means, talking about what I might see in the fields at this time of the year. • Being involved in discussions about what it is like now that it is winter time and how the outside area looks different (frost etc) and how to keep myself warm. • Looking at ice and talking about how it is made and what happens to it. • Taking part in an investigation – where shall we put the ice for it to melt the quickest? • Talking about winter and hibernation. • Listening and commenting on stories which explain how animals hibernate in winter and why. • Talk about Autumn.	**Year 1** • Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies		

	• Discussing the season and what changes around them. • Talking about Spring time and the things I can see happening around me, talking about what has changed.			
Sound			**Year 4** • Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainted as the distance from the sound source increases	
States of Matter			**Year 4** • Compare and group materials together, according to whether	

			• they are solids, liquids or gases • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius • Identify the part played by evaporative and condensation in the water cycle and associate the rate of evaporating with temperature	
Working Scientifically	**Birth to Three** • Explore materials with different properties. • Explore natural materials, indoors and outside. • Explore and respond to different natural phenomena in their setting and on trips. • Make connections between the features of their family and other families. • Notice differences between people **3 and 4-year-olds**	**Year 1** • Ask simple questions and recognise that they can be answered in different ways (seasonal changes, animals including humans, working scientifically set 1 & 2) • Use simple equipment to observe closely (plants, everyday materials, working scientifically set 1 & 2) • Perform simple tests (animals including humans, everyday	**Year 3** • Ask relevant questions and use differed types of scientific enquires to answer them (animals including humans, working scientifically, forces & magnets, plants) • Set up simple practical enquires, comparative and fair tests (rocks, working scientifically, forces and magnets, plants) • Make systematic and careful observations and, where appropriate,	**Year 5** • Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (Properties and changes of materials, living things and their habitats, forces and magnets) • Take measurements, using a range of scientific equipment, with increasingly accuracy and precision, taking repeat readings

Commented [CG1]:

	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary • Explore how things work. • Plant seed and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice. **Children in Reception** • Explore the natural world around them • Describe what they see, hear and feel whilst outside.	materials, working scientifically set 1 & 2) • Identify and classify (plants, seasonal changes, animals including humans, everyday materials, working scientifically set 1 & 2) • Use his/her observation and ideas to suggest answers to questions (plants, seasonal changes, animals including humans, working scientifically set 1& 2) • Gather and record data to help in answering questions (seasonal changes, animals including humans, working scientifically set 1 & Set 2) **Year 2** • Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum (working scientifically, uses of everyday materials)	take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers (rocks, animals including humans, working scientifically) • Gather, record, classify and present data in a variety of ways to help in answering questions (animals including humans, working scientifically, light, plants) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables (animals including humans, plants) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (rocks, animals including humans) • Use results to draw simple conclusion, make prediction for new	when appropriate (Working Scientifically, animals, including humans, forces and magnets) • Record data and results of increasingly complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Properties and changes of materials, Working Scientifically, Living things and their habitats) • Use test results to make predictions to set up further comparative and fair tests (Properties and changes of materials, forces and magnets) • Report and present findings from enquires, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentation (Working Scientifically, Earth and space, living thing and

	• Recognise some environments that are different from the one in which they live. • Understand the effect of changing seasons on the natural world around them.	• Use simple equipment to observe closely including changes over time (working scientifically, animals including humans, living things and their habitats, plants) • Communicate his/her ideas, what he/she does and what he/she finds out in a variety of ways (working scientifically, uses of everyday materials, plants) • Perform simple comparative tests (working scientifically, uses of everyday materials, plants) • Identify, group and classify (animals, including humans, living things and their habitats) • Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns (working scientifically, uses of everyday materials, animals including humans, living	values, suggest improvement and raise further questions (Animals including humans, working scientifically) • Identify differences, similarities or changes related to simple scientific ideas and processes (rocks, working scientifically, light, forces & magnets) • Use straightforward scientific evidence to answer questions or to support his/her findings (rocks, animals including humans, working scientifically, light, forces & magnets, plants) **Year 4** • Ask relevant questions and use different types of scientific enquires to answer them (sound, living things and their habitats, Electricity) • Set up simple practical enquiries, comparative and fair tests (animals including humans, working scientifically,	their habitats, animals including humans, forces and magnets) • Identify scientific evidence that has been used to support or refute ideas or arguments (properties and changes of materials, Working Scientifically, Earth and Space, living things and their habitats, animals, including humans) **Year 6** • Plan different types of scientific enquiries to answer their own or others' questions, including recognising and controlling variables where necessary (Electricity, Working Scientifically & Light) • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Evolution and Inheritance, Electricity, Living Things and their Habitats,

		things and their habitats, plants) • Gather and record data to help in answering questions including from secondary sources of information (working scientifically, animals including humans, living things and their habitats, plants)	sound, living things and their habitats, states of matter) • Make systematic and careful observations and where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers (Working Scientifically, sound, living things and their habitats, states of matter) • Gather, record, classify and present data in a variety of ways to help in answering question (animals including humans, working scientifically, living things and their habitats, electricity) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables (animals including humans, working scientifically, electricity, states of matter)	Animals including Humans, Working Scientifically & Light) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Evolution and Inheritance, Electricity, Living Things and their Habitats, Animals including Humans, Working Scientifically & Light) • Use test results to make predictions to set up further comparative and fair tests (Evolution and Inheritance, Electricity, Animals including humans & Light) • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and write forms such as displays and other presentations (Evolution and Inheritance, Electricity,

			• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (animals including humans, working scientifically, sound, electricity) • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further question (working scientifically, sound, living things and their habitats) • Identify differences, similarities or change related to simple scientific ideas and processes (animals including humans, working scientifically, sound, living things and their habitats, states of matter) • Use straightforward scientific evidence to answer questions or to support his/her findings (animals including humans, Working	Animals including Humans & Light) • Identify scientific evidence that has been used to support or refute ideas or arguments (Evolution and Inheritance, Living Things and their Habitats, Animals including Humans, Working Scientifically & Light) • Describe and evaluate their own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources (Animals including Humans & Working Scientifically) • Group and classify things and recognise patterns (Living Things and their Habitats & Light) • Find things out using a wide range of secondary sources of information (Evolution and

			Scientifically, sound, living things and their habitats, electricity, states of matter)	Inheritance & Working Scientifically) • Use appropriate scientific language and ideas from the national curriculum to explain, evaluate and communicate his/her method and findings (Electricity)

Working scientifically – people to focus on

Year 1

Mae Jaminson – NASA astronaut
Linda Buck – found out about how we smell things
Ole kirk Christiansen

Year 2

Louis Pasteur's work on how germs spread
Charles Macintosh – developed new materials
Rachel Carson – study of the ocean
Marie Maynard Daly

Year 3

Marie Curie – research into x-rays
George Washington Carver – explore the requirement of plants for life and growth

Year 4

Alexander Graham Bell – vibrations from sounds travel through a medium to the ear
Thomas Edison – scientific ideas related to electricity
Frederick McKinley jones – refrigerated trucks

Year 5

David Attenborough – work of naturalists and animal behaviours

Margaret Hamilton's development of the software for the Apollo Moon Missions
Eva Crane – research into the life cycle of bees
Mark dean – coloured Pc monitor

Year 6

Libbie Hyman – classifying plants and animals based on characterises
Alexander Fleming – discovering of penicillin
Dr Daniel hale Williams – performed first prototype open-heart surgery
Mary Leakey – living things have changed over time
Lewis latimer – carbon light bulb