Science Progression of Skills and Knowledge

Year Group Early Years Foundation Stage (EYFS)	Understanding the World: The Natural World
Nursery	• 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 • Plant seeds 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
Reception	• Explore the natural world around them • Describe what they see, hear and feel whilst outside • 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
Early Learning Goal (ELG)	ELG The Natural World: • Explore the natural world around them, making observations and drawing pictures of animals and plants • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

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Biology: Plants; Animals, including humans; Seasonal change; Living things and habitats; Fossils; Variation and adaptation
Chemistry: Everyday materials; Soils & Rocks; States of matter; Properties and changes of materials
Physics: Forces and magnets; Light; Sound; Electricity; Earth and space

Year Group	Plants	Animals, including humans	Seasonal change	Everyday materials	Sustainability
Y1	Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers	Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets) Identify, name draw and label the basic parts of the human body and say which parts of the body are associated with each sense	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, 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 physical properties	Understand that everyone should care for the planet and that our actions can help or harm the Earth, humans, animals and plants. Identify simple ways to care for the environment, including reusing and recycling, and understand that much of our food comes from crops.

Year Group	Plants	Animals, including humans	Living things and habitats	Everyday materials	Sustainability
Y2	Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	Notice that animals, including humans, have offspring which grow into adults Find out about and 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	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	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Understand that humans, plants and animals depend on each other and that it is important to care for local wildlife. Recognise that plastic can be helpful and harmful and identify ways to reduce plastic waste, including reusing and recycling.

Year Group	Plants	Animals, including humans	Soils, Rocks & Fossils	Forces and magnets	Light	Sustainability
Y3	Identify and describe the functions of different parts of plants: roots, stem, leaves and flowers. Explore 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 ways in which water is transported within plants Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	Identify that animals, including humans, need the right types and amount of nutrition in their diet, and that they cannot make their own food (they get nutrition from what they eat) Identify that humans and some animals have skeletons and muscles for support, movement and protection (for internal body parts)	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 when things that have lived are trapped within rock Recognise that soils are made from rocks and organic matter	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 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	Recognise that humans need light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces differently Recognise that light from the sun can be dangerous and that there are ways to protect our eyes Recognise that shadows are formed when the light from a light source is blocked by an opaque object Find and explain patterns in the way that the sizes of shadows change	Understand that human actions can affect the planet and biodiversity. Recognise the impact of food waste and identify ways to reduce it, and understand how actions such as rewilding can increase biodiversity and protect living things.

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Year Group	Animals, including humans	Living things and habitats	States of matter	Sound	Electricity	Sustainability
Y4	Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey	Recognise that living things can be grouped in a variety of ways Explore, use and create classification keys to help group, identify and name a variety of living things in the local and wider environment Recognise that environments can change and that this can have positive & negative impacts, including sometimes posing danger to living things	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 (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Identify how sounds are made, associating some of them with something vibrating Recognise that vibrations from a sound 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 fainter as the distance from the sound source increases	Identify common appliances 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 in 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	Understand that energy use and the demand for natural resources can impact the planet. Recognise the difference between renewable and non-renewable energy, understand how deforestation affects habitats and biodiversity, and identify ways to reduce environmental impact.

Year Group	Animals, including humans	Living things and habitats	Properties & changes of materials	Forces	Earth and space	Sustainability
Y5	Describe the changes as humans develop from birth to old age Indicate stages in the growth and development of humans, including changes in puberty (through a timeline or similar)	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	Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets Know 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 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	Explain that unsupported objects fall towards the Earth because of the force of gravity 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	Describe the Sun, Earth and Moon as approximately spherical bodies 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 Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	Understand how human activity contributes to global warming and pollution. Explain how greenhouse gases and fossil fuels contribute to climate change, recognise the impacts on living things and habitats, and understand how reducing carbon footprints and plastic pollution can lessen environmental impact.

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Year Group	Animals, including humans	Living things and habitats	Variation and adaptation	Light	Electricity	Sustainability
Y6	Identify and name the main parts of the human circulatory system, and explain 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	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	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 Explain variations that occur within offspring as well as across a species Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	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; explain how shadows differ based on the position of the light source	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	Understand how different forms of energy use and pollution affect the environment. Compare renewable and non-renewable energy sources, explain how renewable energy can reduce the impact of global warming, and understand the effects of light pollution on humans, animals and habitats.

Working scientifically

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ask Questions	Ask simple questions.	Ask simple questions and recognise that they can be answered in different ways.	Ask questions and understand there are different enquiry types they could use to answer them.	Ask relevant questions and use different types of scientific enquiry to answer them.	Ask scientific questions and begin to understand which questions would be best suited to each enquiry type.	Ask relevant scientific questions and choose which enquiry type would be best suited to answer them.
Plan	Planning is not explicitly mentioned in the KS1 curriculum however, if appropriate, children can verbally state what they will investigate, what they will change and what they will keep the same.		Make relevant predictions. Identify what they will change, observe and keep the same. With support, set up simple practical enquiries.	Make predictions based on simple scientific knowledge. Identify what they will change, observe or measure and keep the same. Set up simple practical enquiries, comparative and fair tests	Make predictions based on scientific knowledge. With support, plan different types of scientific enquiry. Where appropriate, identify the dependent, independent and controlled variables.	Make predictions based on scientific knowledge. Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
Make Observations	Observe closely.	Observe closely, using simple equipment.	Make careful observations using scientific equipment.	Make systematic and careful observations using scientific equipment.	Use a range of scientific equipment to make systematic and careful observations	Use a range of scientific equipment to make systematic and careful observations with increased complexity.
Take measurements	Carry out simple tests using non-standard measurements when appropriate	Perform simple tests using standard units when appropriate	Perform tests and simple experiments and take measurements using standard units	Take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Take accurate measurements using a range of scientific equipment. Start to take repeat readings when appropriate.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
Gather, record and classify data	Collect and record simple data. Sort objects and living things into groups based on simple properties.	Collect and record data to help in answering questions. Identifying and classifying.	Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables.	Collect, record and classify data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	Record data using scientific diagrams and labels, classification keys, tables, bar and line graphs	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
Present findings	Explain what they found out to an adult or a partner	Talk about what they have found out and how they found it out. (non-statutory)	Report on findings from enquiries, including oral and written explanations.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Report and present findings from enquiries, including conclusions and begin to identify causal relationships in oral and written forms such as displays and other presentations	Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
Answer questions and make conclusions	Answer simple questions	Use their observations and ideas to suggest answers to questions.	Make simple conclusions. Use results, findings or observations to answer questions.	Use straight-forward scientific evidence to answer questions or to support their findings. Use results to draw simple conclusions. Begin to identify differences, similarities or changes related to simple ideas or processes	Make conclusions based on scientific evidence and from their own testing and findings. Identify scientific evidence and use it to answer questions.	Make conclusions based on scientific evidence and from their own testing and findings. Identify scientific evidence that has been used to support or refute ideas or arguments.

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Evaluate	Evaluating is not explicitly mentioned in the KS1 curriculum.	Suggest questions for further investigation	Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Continue to use results to draw simple conclusions, suggest improvements and raise further questions for possible testing	Use test results to make predictions to set up further comparative and fair tests. Provide some simple examples of how to extend the investigation