STRATFORD-SUB-CASTLE PRIMARY SCHOOL: SCIENCE KNOWLEDGE PROGRESSION

LOWER SCHOOL	Year 1	Year 2	Year 3
Living things and their habitats	Explore and compare differences between things that are living, dead, and things that have never been alive. Identify most living things live in habitats to which they are suited and different habitats provide for the basic needs of different kinds of animals and plants, and 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 different sources of food.
Animals including humans	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.	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.	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. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.
Plants	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.	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. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, 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 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.
Seasonal Changes	Observe changes across the four seasons. (Tree in outdoor learning area) Observe and describe weather associated with the seasons.	Observe changes across the four seasons. (Around school) Observe and describe weather associated with the seasons and how day length varies.	Observe changes across the four seasons. (Around school) Observe and describe weather associated with the seasons and how day length varies.

Light	Recognise that they need 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 their eyes.	Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change.
Everyday materials	Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Describe the simple physical properties of a variety of everyday materials.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Compare and group together a variety of everyday materials on the basis of their simple physical properties.	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
Rocks	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.
Forces and magnets	Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.	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.	Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance.

UPPER SCHOOL	Year 4	Year 5	Year 6
Living things and their habitats	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.	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.	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.

	Recognise that environments can change and that this can sometimes pose dangers to living things.		Give reasons for classifying plants and animals based on specific characteristics.
Sound	Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear.	Recognise that get fainter as the distance from the sound source increases. Find patterns between the volume of a sound and the strength of the vibrations that produced it. sounds	Find patterns between the pitch of a sound and features of the object that produced it.
Electricity	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. Use recognised symbols when representing a simple circuit in a diagram.	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. Use recognised symbols when representing a simple circuit in a diagram.	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.
Earth and Space	Describe the movement of the Moon relative to the Earth. 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.	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Light	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.	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.	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
States of matter	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.
Properties and changes in materials	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. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	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.
Animals including humans	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.	Describe the changes as humans develop to old age.	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.
Forces	Recognise that some mechanisms, including levers, 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 the Earth and the falling object.	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.
Evolution and Inheritance	Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

STRATFORD-SUB-CASTLE PRIMARY SCHOOL: SCIENCE SKILLS PROGRESSION

Year group	Planning and predicting	Investigating and observing	Evaluating and concluding
1	Suggest what might happen Suggest simple ways to test ideas	Make observations using appropriate senses Explore using the senses Make simple comparisons and groupings	Collect evidence to try and answer a questions Communicate findings in simple ways
1 Greater depth	Organise a group of others to carry out an investigation/observations	Communicate observations orally, in drawing, labelling, in simple writing and using ICT	Explain whether what happen was what they expected Use charts to communicate findings
2	With support, suggest some ideas and questions to be investigated Think about how to collect evidence Suggest what might happen Think about and discuss whether comparisons and tests are fair or unfair	Make observations and comparisons using simple equipment and following simple instructions With support, use first-hand experience and simple information sources to answer questions	Record findings in simple ways including tables and graphs Say whether what happened was exactly what happened
2 Greater depth	Choose own equipment which can be used and explain their choices	Begin to recognise whether a comparison or test is unfair	Use comparative adjectives to explain patterns eg bigger, smaller, greater, higher
3	Respond to suggestions and, with support, put forward own ideas about testing Make predictions With support, consider what constitutes a fair test With support, plan and carrying out a fair test	Make observations and comparisons Use first-hand experience and simple information sources to answer questions Measure length, volume and time in standard units of measurement using simple equipment	Communicate finding in a variety of ways Say whether what happened was expected and draw simple conclusions With support, identify simple patterns and suggest explanations
3 Greater depth	Plan out how to perform a task, varying one factor while keeping the others the same	Explain when a comparison or test is unfair Show in the way they perform tasks how to vary one factor while keeping the others the same	Lead a group to communicate findings to the rest of the class using simple resources

Year group	Planning and predicting	Investigating and observing	Evaluating and concluding
4	Recognise why it is important to collect data to answer questions Suggest questions that can be tested Put forward and explain own ideas and testing and making predictions With support, consider what constitutes a fair test	Measure length, volume, time, temperature and force in standard units of measurement using simple equipment	Explain what the evidence shows in a scientific way and whether it supports the prediction Suggest improvements to their work Identify simple trends and patterns
4 Greater depth	Decide on an appropriate approach to their investigation	Explain which result should be chosen from a repeated set of results	Suggest improvements to their work, giving reasons
5	Recognise that scientific ideas are based on evidence and creative thinking Make predictions based on scientific knowledge Suggest methods of testing, including fair testing Suggest how to collect evidence Suggest suitable equipment	Carry out a fair test, explaining why it is fair Understand why observations and measurements need to be repeated Select information from provided sources	Communicate findings in a variety of ways – tables, bar graphs and line graphs, including appropriate use of ICT Identify trends and patterns giving explanations for these Draw conclusions and communicate them using appropriate scientific language
5 Greater depth	Explain predictions in writing using scientific knowledge	Use averages to gain one representative results from a set of repeated results	Begin to explain anomalous Draw own bar and line graphs to explain results.
6	Consider how scientists have combined evidence from observation and measurement with creative thinking to suggest new ideas and explanations for phenomena Make predictions based on scientific knowledge and understanding Suggest methods of testing, including fair testing, and how to collect evidence, ensuring it is sufficient and appropriate	Carry out a fair test identifying key features to be considered Make a variety of relevant observations and measurements using simple apparatus appropriately Decide when observations/measurements need to be checked in order to give more reliable data Select information from a range of sources	Communicate findings in a variety of ways – tables, bar graphs and line graphs, including appropriate use of ICT Identify trends, patterns and results that do not fit the pattern Provide explanations for differences in results Draw conclusions and communicate them using appropriate scientific language
6 Greater Depth	Explain predictions in writing using scientific knowledge and understanding	Understand the difference in how to investigate qualitative and quantitate data	Show how interpretation of evidence leads to new ideas