






Threshold concepts of Science			
Working scientifically	Biology	Chemistry	Physics
<p>*Working scientifically This concept involves learning the methodologies of the discipline on science.</p> <p>5 enquiry types:</p> <p>Comparative fair testing </p> <p>Identifying, classifying and grouping </p> <p>Observing over time </p> <p>Pattern seeking </p> <p>Researching using secondary sources </p>	<p>*Understand Plants This concept involves becoming familiar with different types of plants, their structure and reproduction.</p> <p>*Understand animals and Humans This concept involves becoming familiar with different types of animals, humans and life processes they share.</p> <p>*Investigate living things and habitats This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes.</p> <p>*Understand evolution and inheritance This concept involves understanding that organisms come into existence, adapt, change and evolve and become extinct.</p>	<p>*Investigate materials This concept involves becoming familiar with a range of materials, their properties, uses and how they may be altered or changed.</p>	<p>*Understand movement, forces and magnets This concept involves understanding what causes motion.</p> <p>*Understand the Earth's movement in space This concept involves understating what causes seasonal changes, day and night.</p> <p>*Investigate light and seeing This concept involves understanding how light and reflection affects sight.</p> <p>*Investigate sound and hearing This concept involves understanding how sound is produced, how it travels and how it is heard.</p> <p>*Understand electrical circuits This concept involves understanding circuits and their role in electrical applications.</p>

Science Progression Map

Map of Topics

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	The Human Body Seasonal Changes - Autumn	Everyday materials Seasonal Changes - Winter	Plants Planting A	Planting B Sustainability – Caring for the planet Seasonal changes - Spring	Animals including humans Planting C	Growing and Cooking Seasonal changes - Summer
Year 2	Materials	Animals including humans – Animals Need for Survival	Living things and their habitats	Humans Plants – Light and Dark	Plants – Bulbs and Seeds Sustainability – Plastic	Growing Up Sustainability – Wildlife
Year 3	Light	Nutrition and Diet Sustainability – Food Waste Rocks	Fossils Soil	Plants	Skeletons and Movement	Forces and magnets Biodiversity (Plants B)
Year 4	States of matter Data Collection	Group and classify living things Habitats Deforestation	Sound	Electricity Sustainable energy Data collection B	Digestive system	Food Chains Data collection C
Year 5	Forces Sustainability - Pollution	Space Sustainability – Global warming	Animal Including humans	Animals including humans (continued) Life cycle	Properties and changes of materials	Reproduction A Reproduction B
Year 6	Living things and their habitats	Light Sustainability – Light pollution	Electricity Sustainability – renewable energy	The circulatory system Diet, drugs and lifestyle	Variations Adaptation	Fossils



Gilbert Colvin Primary School – Science Progression Map

Year 1

Working Scientifically	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	<ul style="list-style-type: none"> • Ask simple questions. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use Observations and ideas to suggest answers and questions. • Gather and record data to help in answering questions. 	<p>The Human Body - Seasonal Changes - Autumn</p>	<p>Everyday materials Seasonal Changes - Winter</p>	<p>Plants Planting A</p>	<p>Planting B Sustainability – Caring for the planet Seasonal changes - Spring</p>	<p>Animals including humans Planting C</p>
	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. *Observe changes across the four seasons. *Observe and describe weather associated with the seasons and how day length varies. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. *Compare and group together a variety of everyday materials on the basis of their simple physical properties. *Observe changes across the four seasons. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *How can we care for our planet? *Observe changes across the four seasons. *Observe and describe weather associated with the seasons and how day length varies. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Identify and name a variety of common animals including fish, amphibians, reptiles, birds 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 (fish, amphibians, reptiles, birds and mammals including pets) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Where does my food come from? *Observe and describe weather associated with the seasons and how day length varies.



Gilbert Colvin Primary School – Science Progression Map

Year 2

Working Scientifically	Autumn 1 Materials	Autumn 2 Animals Need for Survival	Spring 1 Living things and their habitats	Spring 2 Humans Plants – Light and Dark	Summer 1 Plants – Bulbs and Seeds Sustainability - Plastic	Summer 2 Growing Up Sustainability – Wildlife
<ul style="list-style-type: none"> • Ask simple questions. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use Observations and ideas to suggest answers and questions. • Gather and record data to help in answering questions. 	<p>Pupils should be taught to:</p> <p>*Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>*Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p>Pupils should be taught to:</p> <p>*Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p>	<p>Pupils should be taught to:</p> <p>*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.</p> <p>*Explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>*Identify and name a variety of plants and animals in their habitats, including microhabitats.</p> <p>*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.</p>	<p>Pupils should be taught to:</p> <p>*Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>*Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Pupils should be taught to:</p> <p>*Observe and describe how seeds and bulbs grow into mature plants.</p> <p>*How is plastic helpful and harmful?</p>	<p>Pupils should be taught to:</p> <p>*Notice that animals, including humans, have offspring which grow into adults.</p> <p>*Why is it important to care for wildlife?</p>



Gilbert Colvin Primary School – Science Progression Map

Year 3

Working Scientifically	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<ul style="list-style-type: none"> • Ask relevant questions. • Set up simple, practical enquiries and comparative and fair tests. • Make accurate measurements using standard units, using a range of equipment. • Gather, record, classify and present data in a variety of ways. • Record findings using simple scientific language, labelled diagrams, bar charts and tables. • Report on findings from enquiries, include oral and written explanations, displays, presentations of results and conclusions. • Use results to draw simple conclusions and suggest improvements, new questions and predictions. • Identify differences, similarities or changes related to scientific ideas and processes. • Use scientific evidence to answer questions and support their findings. 	<p>Light</p>	<p>Nutrition and Diet</p> <p>Sustainability - Food Waste</p> <p>Rocks</p>	<p>Fossils</p> <p>Soil</p>	<p>Plants</p>	<p>Skeletons and Movement</p>	<p>Forces and magnets</p> <p>Biodiversity</p> <p>(Plants B)</p>
	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. *Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Identify that humans and some other animals have skeletons and muscles for support, protection and movement 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Compare how things move on different surfaces. *Notice that some forces need contact between 2 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 2 poles. *Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.



Gilbert Colvin Primary School – Science Progression Map

Year 4

Working Scientifically	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	<ul style="list-style-type: none"> Ask relevant questions. Set up simple, practical enquiries and comparative and fair tests. Make accurate measurements using standard units, using a range of equipment. Gather, record, classify and present data in a variety of ways. Record findings using simple scientific language, labelled diagrams, bar charts and tables. Report on findings from enquiries, include oral and written explanations, displays, presentations of results and conclusions. Use results to draw simple conclusions and suggest improvements, new questions and predictions. Identify differences, similarities or changes related to scientific ideas and processes. Use scientific evidence to answer questions and support their findings. 	<p>States of matter</p> <p>Data Collection</p>	<p>Group and classify living things</p> <p>Habitats</p> <p>Deforestation</p>	<p>Sound</p>	<p>Electricity</p> <p>Sustainable energy</p> <p>Data collection B</p>	<p>Digestive system</p>
	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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 to living things. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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 fainter as the distance from the sound source increases. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Construct and interpret a variety of food chains, identifying producers, predators and prey.



Gilbert Colvin Primary School – Science Progression Map

Year 5

Working Scientifically	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<ul style="list-style-type: none"> Plan enquiries, including recognising and controlling variables. Use appropriate techniques, apparatus and materials during field and lab work. Measure accurately and precisely using a range of equipment. Record data and results using correct scientific model. Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships and conclusions. Present findings in written form, displays and other presentations. Use test results to make predictions to set up further comparative tests and fair tests. Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments. 	<p>Forces</p> <p>Sustainability - Pollution</p>	<p>Space</p> <p>Sustainability – Global warming</p>	<p>Animal Including humans</p>	<p>Animals including humans (continued)</p> <p>Life cycle</p>	<p>Properties and changes of materials</p>	<p>Reproduction A</p> <p>Reproduction B</p>
	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. *Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Describe the changes as humans develop to old age. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *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. *Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> *Describe the life process of reproduction in some plants and animals.



Gilbert Colvin Primary School – Science Progression Map

Year 6

Working Scientifically	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<ul style="list-style-type: none"> Plan enquiries, including recognising and controlling variables. Use appropriate techniques, apparatus and materials during field and lab work. Measure accurately and precisely using a range of equipment. Record data and results using correct scientific model. Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships and conclusions. Present findings in written form, displays and other presentations. Use test results to make predictions to set up further comparative tests and fair tests. Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments. 	<p>Living things and their habitats</p>	<p>Light</p> <p>Sustainability – Light pollution</p>	<p>Electricity</p> <p>Sustainability – renewable energy</p>	<p>The circulatory system</p> <p>Diet, drugs and lifestyle</p>	<p>Variations</p> <p>Adaptation</p>	<p>Fossils</p>
	<p>Pupils should be taught to:</p> <p>*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.</p> <p>*Give reasons for classifying plants and animals based on specific characteristics.</p>	<p>Pupils should be taught to:</p> <p>*Recognise that light appears to travel in straight lines.</p> <p>*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.</p> <p>*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.</p> <p>*Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>Pupils should be taught to:</p> <p>*Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>*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.</p> <p>*Use recognised symbols when representing a simple circuit in a diagram.</p>	<p>Pupils should be taught to:</p> <p>*Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>*Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>*Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p>Pupils should be taught to:</p> <p>*Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>*Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p>Pupils should be taught to:</p> <p>*Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>