



Our Global Explorer Curriculum St Nicholas Primary Science Progression Grid

At St Nicholas we believe that science is crucial to a child's understanding of, and approach to, our World and the way in which we function. The ability to find amazement in everyday things, question 'why?' and then search for an answer is a key approach to learning in all subjects. In science we intend to encourage this use of questioning in order to develop inquisitive and independent learners. Through a science curriculum that will ensure the effective delivery of both key investigative skills and key scientific knowledge, we will teach our children to approach their enquiries in a systematic and comprehensive way.

Key Concepts

Biology	Chemistry	Physics
<ul style="list-style-type: none"> • Understand plants This concept involves becoming familiar with different types of plants, their structure and reproduction. • Understand animals and humans This concept involves becoming familiar with different types of animals, humans and the life processes they share. • Investigate living things This concept involves becoming familiar with a wider range of living things, including insects and understanding life processes. • Understand evolution and inheritance This concept involves understanding that organisms come into existence, adapt, change, evolve and become extinct. 	<ul style="list-style-type: none"> • Investigate materials This concept involves becoming familiar with a range of materials, their properties, their uses and how they may be altered or changed. 	<ul style="list-style-type: none"> • Understand movement, forces and magnets This concept involves understanding what causes motion. • Understand the Earth's movement This concept involves understanding what causes seasonal changes, a day and a night. • Investigate light and seeing This concept involves understanding how light and reflection affect sight. • Investigate sound and hearing This concept involves becoming familiar with how sound is made and exploring the patterns with pitch and volume. • Understand electrical circuits This concept involves understanding circuits and their role in electrical applications.

Working Scientifically						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Skills Progression	<p>With support:</p> <ul style="list-style-type: none"> - Ask simple questions and recognise that they can be answered in different ways. -Explore the world around them. 	<p>With increasing independence:</p> <ul style="list-style-type: none"> - Ask simple questions and recognise that they can be answered in different ways. -Explore the world around them. 	<p>With support:</p> <ul style="list-style-type: none"> -- Ask relevant questions and use different types of scientific enquiries to answer them. -Set up simple practical enquiries, comparative and fair tests. 	<p>With increasing independence:</p> <ul style="list-style-type: none"> -- Ask relevant questions and use different types of scientific enquiries to answer them. -Set up simple practical enquiries, comparative and fair tests. 	<p>With a little support:</p> <ul style="list-style-type: none"> - Ask relevant questions. - Plan different types of scientific enquiries to answer <i>their own questions</i>, recognising and controlling variables. - Use test results to make predictions. 	<p>Mostly independently:</p> <ul style="list-style-type: none"> - Ask relevant questions. - Plan different types of scientific enquiries to answer <i>their own questions</i>, recognising and controlling variables. - Use test results to make predictions.
	<p>With support:</p> <ul style="list-style-type: none"> - Observe closely, using simple equipment. - Perform simple tests. -Identify and classify. -Gather and record data to help in answering questions. - Experience different types of scientific enquiries. - Ask people questions and use simple secondary sources to find answers. - Use simple measurements and equipment. 	<p>With increasing independence:</p> <ul style="list-style-type: none"> - Observe closely, using simple equipment. - Perform simple tests. -Identify and classify. -Gather and record data to help in answering questions. - Experience different types of scientific enquiries. - Ask people questions and use simple secondary sources to find answers. - Use simple measurements and equipment. 	<p>With support:</p> <ul style="list-style-type: none"> -Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, with a range of equipment, including thermometers and data loggers. -Gather, record, classify and present 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. 	<p>With increasing independence:</p> <ul style="list-style-type: none"> -Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, with a range of equipment, including thermometers and data loggers. -Gather, record, classify and present 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. 	<p>With a little support:</p> <ul style="list-style-type: none"> - Take measurements using a range of scientific equipment with increasing accuracy and precision, taking repeat readings when appropriate. - Record data and results of increasing complexity using scientific diagrams and labels, tables, line graphs and classification keys 	<p>Mostly independently:</p> <ul style="list-style-type: none"> - Take measurements using a range of scientific equipment with increasing accuracy and precision, taking repeat readings when appropriate. - Record data and results of increasing complexity using scientific diagrams and labels, tables, line graphs and classification keys
	<p>With support:</p> <ul style="list-style-type: none"> - Use their observations and ideas to suggest answers to questions. 	<p>With increasing independence:</p> <ul style="list-style-type: none"> - Use their observations and ideas to suggest answers to questions. 	<p>With support:</p> <ul style="list-style-type: none"> -Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. -Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. -Identify differences, similarities or changes related to simple scientific ideas and processes. -Use straightforward scientific evidence to answer questions or to support their findings. 	<p>With increasing independence:</p> <ul style="list-style-type: none"> -Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. -Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. -Identify differences, similarities or changes related to simple scientific ideas and processes. -Use straightforward scientific evidence to answer questions or to support their findings. 	<p>With a little support:</p> <ul style="list-style-type: none"> - Set up further comparative and fair tests. - Report and present findings from enquiries, including conclusions and causal relationships, in oral and written forms such as displays and other presentations, using scientific language - Explain degrees of trust in results. - Identify and evaluate scientific evidence that has been used to support or refute ideas or arguments. 	<p>Mostly independently:</p> <ul style="list-style-type: none"> - Set up further comparative and fair tests. - Report and present findings from enquiries, including conclusions and causal relationships, in oral and written forms such as displays and other presentations, using scientific language - Explain degrees of trust in results. - Identify and evaluate scientific evidence that has been used to support or refute ideas or arguments.

Key Concepts	Year 1
Biology	
<p>Understand plants I can identify and name a variety of common wild and garden plants, including deciduous and evergreen. I can identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p>Understand animals and humans I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p>Term 1 - All About Me – changes in height and growth (complete in Term 5) Key Concept: Biology</p> <ul style="list-style-type: none"> Understand animals and humans To be able to identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Key Question: Which parts of me will change over the year? <p>Term 2 – Identifying Animals Key Concept: Biology</p> <ul style="list-style-type: none"> Understand animals and humans To be able to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. To be able to identify and name a variety of common animals that are carnivores, herbivores and omnivores. To be able to describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). Key Question: What do different animals need to survive? <p>Term 3 – Seasonal Changes Key Concept: Physics</p> <ul style="list-style-type: none"> Understand the Earth’s movement To be able to observe changes across the four seasons. To be able to observe and describe weather associated with the seasons and how day length varies. Key Question: Why do we have seasons? <p>Term 4 – Identifying plants Key Concept: Biology</p> <ul style="list-style-type: none"> Understand plants To be able to identify and name a variety of common wild and garden plants, including deciduous and evergreen. To be able to identify and describe the basic structure of a variety of common flowering plants, including trees. Key Question: What do the different parts of a plant do?
Chemistry	
<p>Investigate materials I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. I can describe the simple physical properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	
Physics	
<p>Understand the Earth’s movement I can observe changes across the four seasons. I can observe and describe weather associated with the seasons and how day length varies.</p>	

Term 5 – My Body

Key Concept: Biology

- **Understand animals and humans**

To be able to identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Key Question: What is it like to be human?

Term 6 – Everyday Materials

Key Concept: Chemistry

- **Investigate materials**

To be able to distinguish between an object and the material from which it is made.

To be able to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.

To be able to describe the simple physical properties of a variety of everyday materials.

To be able to compare and group together a variety of everyday materials on the basis of their simple physical properties.

Key Question: Which material is best for my object and why?

Key Concepts	Year 2
<p>Biology</p> <p>Understand plants I can observe and describe how seeds and bulbs grow into mature plants. I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Understand animals and humans I can notice that animals, including humans, have offspring which grow into adults. I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air). I can describe the importance for humans of exercise eating the right amounts of different types of food, and hygiene.</p> <p>Investigate living things I can explore and compare the differences between things that are living, dead, and things that have never been alive. I can 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. I can identify and name a variety of plants and animals in their habitats, including microhabitats. I can 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>Term 1 – Exploring everyday Materials Key Concept: Chemistry</p> <ul style="list-style-type: none"> Investigate materials To be able to identify and compare the suitability of a variety of everyday materials, including wood, metal, glass, plastic, brick, rock, paper and cardboard for particular uses. To be able to find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Key Question: What can we find out about different materials? <p>Term 2 – Awe and Wonder</p> <p>Term 3 – Living in habitats Key Concept: Biology</p> <ul style="list-style-type: none"> Investigate living things To be able to explore and compare the differences between things that are living, dead, and things that have never been alive. To be able to 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. To be able to identify and name a variety of plants and animals in their habitats, including microhabitats. To 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. Key Question: Where do animals live and why?
<p>Chemistry</p> <p>Investigate materials I can identify and compare the suitability of a variety of everyday materials, including wood, metal, glass, plastic, brick, rock, paper and cardboard for particular uses. I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Term 4 – Growth and survival Key Concept: Biology</p> <ul style="list-style-type: none"> Understand animals and humans To notice that animals, including humans, have offspring which grow into adults. To find out about and describe the basic needs of animals, including humans, for survival (water, food and air).
<p>Physics</p> <p>Understand movement, forces and magnets (non-statutory for Year 2 – introduction to KS2)</p> <p>Understand electrical circuits (non-statutory for Year 2 – introduction to KS2)</p>	

To be able to describe the importance for humans of exercise eating the right amounts of different types of food, and hygiene.

Key Question: What do humans and animals need to survive?

Term 5 – Super Scientists

Key Concept: Physics (*non-statutory for Year 2*)

- **Understand movement, forces and magnets**

Notice and describe how things move, using simple comparisons such as faster and slower.

Compare how different things move.

- **Understand electrical circuits**

Identify common appliances that run on electricity.

Construct a simple series electrical circuit.

Key Question: Why are the inventions of the famous scientists so important in modern life?

Term 6 – Growing plants

Key Concept: Biology

- **Understand plants**

I can observe and describe how seeds and bulbs grow into mature plants.

I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Key Question: What do plants need to grow well?

Key Concepts	Year 3
<p>Biology</p> <p>Understand plants I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can 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. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p>Understand animals and humans I can identify that animals, including humans, need the right amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. I can identify that humans and some other animals have skeleton and muscles for support, protection and movement.</p> <p>Investigate living things I can recognise that living things can be grouped in a variety of ways I can explore and use classification keys. I can recognise that environments can change and that this can sometimes pose dangers to specific habitats.</p>	<p>Term 1 – Rocks and Soils Key Concept: Chemistry</p> <ul style="list-style-type: none"> Investigate Materials To compare and group different kinds of rocks on the basis of their appearance and simple physical properties. To be able to describe in simple terms how fossils are formed when things that have lived are trapped within rock. To be able to recognise that soils are made from rocks and organic matter. Key Question: How are rocks formed? <p>Term 2 – Health and Movement Key Concept: Biology</p> <ul style="list-style-type: none"> Understand animals and humans To identify that animals, including humans, need the right amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. To identify that humans and some other animals have skeleton and muscles for support, protection and movement. Key Question: How do we move and grow?
<p>Chemistry</p> <p>Investigate materials I can compare and group different kinds of rocks on the basis of their appearance and simple physical properties. I can describe in simple terms how fossils are formed when things that have lived are trapped within rock. I can recognise that soils are made from rocks and organic matter.</p>	<p>Term 3 – Light and shadow Key Concept: Physics</p> <ul style="list-style-type: none"> Investigate light and seeing To be able to recognise that we need light in order to see things and that dark is the absence of light. To notice that light is reflected from surfaces. To recognise that light from the sun can be dangerous and that there are ways to protect our eyes. To recognise that shadows are formed when the light from a light source is blocked by an opaque object. To find patterns in the way the shadows change. Key Question: How does light help us see?
<p>Physics</p> <p>Investigate light and seeing I can recognise that we need light in order to see things and that dark is the absence of light. I can notice that light is reflected from surfaces. I can recognise that light from the sun can be dangerous and that there are ways to protect our eyes. I can recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p>	

I can find patterns in the way the shadows change.

Understand movement, forces and magnets

I can compare how things move on different surfaces.

I can notice that some forces need contact between two objects but magnetic forces can act at a distance.

I can observe how magnets attract or repel each other and describe magnets as having two poles.

I can 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.

I can predict whether two magnets will attract or repel each other depending on which poles are facing.

Term 4 – Desert Life

Key Concept: Biology

- **Investigate living things**

To recognise that living things can be grouped in a variety of ways.

To be able to explore and use classification keys.

To recognise that environments can change and that this can sometimes pose dangers to specific habitats.

Key Question: How do we classify living things?

Term 5 – Forces and magnets

Key Concept: Physics

- **Understand movement, forces and magnets**

To compare how things move on different surfaces.

I can notice that some forces need contact between two objects but magnetic forces can act at a distance.

I can observe how magnets attract or repel each other and describe magnets as having two poles.

I can 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.

I can predict whether two magnets will attract or repel each other depending on which poles are facing.

Key Question: How do objects move?

Term 6 – How plants grow

Key Concept: Biology

- **Understand plants**

I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.

I can 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.

I can investigate the way in which water is transported within plants.

I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Key Question: What do the different parts of a plant do to ensure the plant grows well?

Key Concepts	Fox Year A
Biology	
<p>Understand animals and humans I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can give reasons for classifying plants and animals based on specific characteristics.</p> <p>Investigate living things I can recognise that living things can be grouped in a variety of ways I can explore and use classification keys. I can recognise that environments can change and that this can sometimes pose dangers to specific habitats.</p>	<p>Term 1 – Seeing light Key Concept: Physics</p> <ul style="list-style-type: none"> Investigate light and seeing To recognise that light appears to travel in straight lines. To 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. To be able to explain that we see things because light travels from light sources to objects and then to our eyes. To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. <p>Key Question: How does light help us to see?</p>
Chemistry	
<p>Investigate materials I can compare and group materials together, according to whether they are solids, liquids or gases. I can 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. I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Term 2 – Earth and Space Key Concept: Physics</p> <ul style="list-style-type: none"> Understand the Earth’s movement To be able to describe the movement of the Earth and other planets relative to the sun in the solar system. To be able to describe the movement of the Earth and other planets relative to the Earth. To be able to describe the sun, Earth and moon as approximately spherical bodies. To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. <p>Key Question: How do planets move?</p>
Physics	
<p>Understand movement, forces and magnets I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p> <p>Understand the Earth’s movement I can describe the movement of the Earth and other planets relative to the sun in the solar system. I can describe the movement of the Earth and other planets relative to the Earth.</p>	<p>Term 3 – States of Matter Key Concept: Chemistry</p> <ul style="list-style-type: none"> Investigate materials To compare and group materials together, according to whether they are solids, liquids or gases. To 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.

I can describe the sun, Earth and moon as approximately spherical bodies.

I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Investigate light and seeing

I can recognise that light appears to travel in straight lines.

I can 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.

I can explain that we see things because light travels from light sources to objects and then to our eyes.

I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Key Question: Am I a solid, liquid or a gas?

Term 4 – Forces in Action

Key Concept: Physics

- **Understand movement, forces and magnets**

To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

To identify the effects of air resistance, water resistance and friction that act between moving surfaces.

To recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.

Key Question: How do forces affect things?

Term 5 – Digestion

Key Concept: Biology

- **Understand animals and humans**

To describe the simple functions of the basic parts of the digestive system in humans.

To be able to identify the different types of teeth in humans and their simple functions.

To give reasons for classifying plants and animals based on specific characteristics.

Key Question: What happens to the food we eat?

Term 6 – Living in environments

Key Concept: Biology

- **Investigate living things**

To recognise that living things can be grouped in a variety of ways
I can explore and use classification keys.

I can recognise that environments can change and that this can sometimes pose dangers to specific habitats.

Key Question: How do we classify living things?

Key Concepts	Owl Year A
<p>Biology</p> <p>Understand animals and humans I can describe the changes as humans develop to old age (PSHE Term 6 link)</p> <p>Investigate living things I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.</p>	<p>Term 1 – Forces in Action Key Concept: Physics</p> <ul style="list-style-type: none"> Understand movement, forces and magnets To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. To identify the effects of air resistance, water resistance and friction that act between moving surfaces. To recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. <p>Key Question: How do forces affect things?</p>
<p>Chemistry</p> <p>Investigate materials check Viking Science Awe and Wonder</p>	<p>Term 2 – Seeing light Key Concept: Physics</p> <ul style="list-style-type: none"> Investigate light and seeing To recognise that light appears to travel in straight lines. To 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. To be able to explain that we see things because light travels from light sources to objects and then to our eyes. To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. <p>Key Question: How does light travel?</p>
<p>Physics</p> <p>Understand movement, forces and magnets I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p> <p>Understand the Earth’s movement I can describe the movement of the Earth and other planets relative to the sun in the solar system. I can describe the movement of the Earth and other planets relative to the Earth. I can describe the sun, Earth and moon as approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>Investigate light and seeing I can recognise that light appears to travel in straight lines. I can 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>Term 3 – Viking Science Investigate materials Key Question: How can materials change and can the change be reversed?</p> <p>Term 4 – Earth and Space Key Concept: Physics</p> <ul style="list-style-type: none"> Understand the Earth’s movement To be able to describe the movement of the Earth and other planets relative to the sun in the solar system. To be able to describe the movement of the Earth and other planets relative to the Earth.

I can explain that we see things because light travels from light sources to objects and then to our eyes.

I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

To be able to describe the sun, Earth and moon as approximately spherical bodies.

To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Key Question: Why do we have night and day?

Term 5 – Life cycles

Key Concept: Biology

- **Investigate living things**

To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.

To describe the life process of reproduction in some plants and animals.

Key Question: How do plants and animals reproduce?

Term 6 – Changes and reproduction

- **Understand animals and humans**

To be able to describe the changes as humans develop to old age (PSHE Term 6 link)

Key Question: What changes will I encounter as I get older?