



## EYFS Progression of Knowledge in Science

|                                                            | Plants                                                                                                   | Animals                                                                                                                                                                                                                                        | Environment                                                                                                                                                                                                                   | Materials                                                                                                                                                                                                                                                                            | Forces and motion                                                                                                           | Energy, light, sound, electricity                                                |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>2/3 Years</b><br><b>3/4 Years</b><br>(Ages in brackets) | <p>Know plants grow from a planted seed (3/4)</p> <p>Understand plants have to be looked after (3/4)</p> | <p>Know some animals have babies that come from eggs (eg birds, caterpillars) (3/4)</p> <p>Identify <i>dog, cat, bird</i> (3/4)</p> <p>Understand baby dog is a puppy and baby cat a kitten (3/4)</p>                                          | <p>Start to understand that living things have to be looked after (3-4)</p>                                                                                                                                                   | <p>Touch and explore different materials (2/3)</p> <p>Talk about different materials eg contrasting pieces of bark, different rocks/stones, shells, wood, cardboard (3/4)</p> <p>Watch materials changing state eg ice melting (3/4)</p> <p>Play with transparent materials(3/4)</p> | <p>Talk about different forces and how they feel eg push a boat down in water, break a twig, feel magnets pushing (3/4)</p> | <p>Shine a light through a transparent material (3/4)</p>                        |
| <b>Reception</b>                                           | <p>Know plants need water</p> <p><i>Plant, water, life</i></p>                                           | <p>Know basic hygiene, eg wash hands.</p> <p><i>Healthy, clean, dirty</i></p> <p>Can talk about what is the same and what different about friends and family</p> <p>Identify <i>farm animals and pets</i> eg cow, pig, sheep, hen, hamster</p> | <p>Identify different features outdoors eg <i>cold, damp, shady warm</i> areas</p> <p><u>Know that in autumn the leaves turn brown, (ELG processes)</u></p> <p><u>Know that in spring new leaves grow (ELG processes)</u></p> | <p><u>Know that when it is cold water turns to ice (ELG processes)</u></p> <p><u>Know that chocolate melts if it gets warm (ELG processes)</u></p> <p>Choose materials to build with.</p> <p><i>Wood, plastic</i></p>                                                                | <p>Know some things <i>float</i> and some <i>sink</i></p> <p><i>Float, sink, light, heavy</i></p>                           | <p>Feel a sound causing a vibration</p> <p>Notice an object casting a shadow</p> |



# St Ives Science Knowledge Progression

| Year 1 Knowledge progression     | Children working towards national standard...                                                                                                                                                                                      | Children working at national standard ...                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Children working beyond national standard ...<br><i>*(taken from Lks2 NC)</i>                                                                                                                                                                                                                                                                          |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Plants</b>                    | <ul style="list-style-type: none"> <li>know about similarities and differences in relation to living things</li> <li>make observations of animals and plants...and talk about changes</li> </ul>                                   | <ul style="list-style-type: none"> <li>identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li><i>identify and describe the functions of different parts of flowering plants: roots, stem/trunk leaves and flowers</i></li> <li><i>explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</i></li> </ul>                                  |
| <b>Animals, including humans</b> | <ul style="list-style-type: none"> <li>know about similarities and differences in relation to living things</li> <li>make observations of animals and plants and explain why some things occur, and talk about changes.</li> </ul> | <ul style="list-style-type: none"> <li>identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (including pets)</li> <li>identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>identify, name, draw and label the basic parts of the body associated with each sense</li> </ul>                                                                                                                           | <ul style="list-style-type: none"> <li><i>identify that humans and some animals have skeletons and muscles for support, protection and movement.</i></li> <li><i>Construct and interpret a variety of food chains, identifying producers, predators and prey</i></li> </ul>                                                                            |
| <b>Properties of materials</b>   | <ul style="list-style-type: none"> <li>know about similarities and differences in relation to materials</li> </ul>                                                                                                                 | <ul style="list-style-type: none"> <li>distinguish between an object and the material from which it is made</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties</li> <li>describe the simple physical properties of a variety of everyday materials</li> <li>identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> </ul> | <ul style="list-style-type: none"> <li><i>compare and group together different kinds of rocks on the basis of their simple physical properties</i></li> <li><i>recognise that soils are made from rocks and organic matter</i></li> <li><i>compare and group materials together, according to whether they are solids, liquids or gases</i></li> </ul> |
| <b>Seasonal changes</b>          | <ul style="list-style-type: none"> <li>make observations of animals and plants and explain why some things occur, and talk about changes.</li> </ul>                                                                               | <ul style="list-style-type: none"> <li>observe changes across the four seasons</li> <li>observe and describe weather associated with the seasons and how day length varies</li> </ul>                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li><i>recognise that environments can change and that this can sometimes pose dangers to living things</i></li> </ul>                                                                                                                                                                                              |

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# St Ives Science Knowledge Progression

| Y2 Knowledge progression               | Children working towards national standard...                                                                                                                                                                                                                                        | Children working at national standard...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Children working beyond national standard...<br><i>*(taken from Lks2 NC)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Living things in their habitats</b> | <ul style="list-style-type: none"> <li>know about similarities and differences in relation to living things</li> <li>talk about the features of their own immediate environment and how environments might vary from one another. make observations of animals and plants</li> </ul> | <ul style="list-style-type: none"> <li>explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>identify and name a variety of plants and animals in their habitats, including micro-habitats</li> <li>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</li> <li>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</li> </ul> | <ul style="list-style-type: none"> <li><i>identify and name a variety of living things (plants and animals in the local and wider environment, using classification keys to assign them to groups</i></li> <li><i>give reasons for classifying plants and animals based on specific characteristics</i></li> <li><i>recognise that environments can change constantly changing and that this can sometimes pose dangers to specific habitats</i></li> <li><i>construct and interpret a variety of food chains, identifying producers, predators and prey</i></li> </ul>                                                                                                                                                                                                                                      |
| <b>Plants</b>                          | <ul style="list-style-type: none"> <li>They make observations of animals and plants...and talk about changes</li> </ul>                                                                                                                                                              | <ul style="list-style-type: none"> <li>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> <li>observe and describe how seeds and bulbs grow into mature plants</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li><i>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></li> <li><i>investigate the way in which water is transported within plants</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Animals including humans</b>        | <ul style="list-style-type: none"> <li>know about similarities and differences in relation to living things</li> <li>make observations of animals and plants and explain why some things occur, and talk about changes.</li> </ul>                                                   | <ul style="list-style-type: none"> <li>notice that animals, including humans, have offspring which grow into adults</li> <li>find out about and describe the basic needs of animals, including humans, for survival (water, food, air)</li> <li>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul>                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li><i>recognise that environments can change and that this can sometimes pose dangers to living things</i></li> <li><i>Identify that animals, including humans, need the right types and amounts of nutrition, and that they cannot make their own food: they get nutrition from what they eat</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Uses of everyday materials</b>      | <ul style="list-style-type: none"> <li>Know about similarities and differences in relation to materials</li> </ul>                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul>                                                                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li><i>compare and group together different kinds of rocks on the basis of their simple physical properties</i></li> <li><i>recognise that soils are made from rocks and organic matter</i></li> <li><i>describe in simple terms how fossils are formed when things that have lived are trapped within rock</i></li> <li><i>compare and group materials together, according to whether they are solids, liquids or gases</i></li> <li><i>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)</i></li> <li><i>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</i></li> </ul> |



## St Ives Science Knowledge Progression

| Year 3 Knowledge progression    | Children working towards nation standard...                                                                                                                                                                                                                                                                                                                                                                              | Children working at national standard...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Children working beyond national standard...<br><i>*(taken from UKS2 NC)</i>                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Plants</b>                   | <ul style="list-style-type: none"> <li>identify and describe the basic structure of a variety of common flowering plants, including trees</li> <li>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> <li>observe and describe how seeds and bulbs grow into mature plants</li> <li>observe changes across the four seasons</li> </ul>                         | <ul style="list-style-type: none"> <li>identify and describe the functions of different parts of flowering plants: roots, stem/trunk leaves and flowers</li> <li>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</li> <li>investigate the way in which water is transported within plants</li> <li>explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>                                                                                   | <ul style="list-style-type: none"> <li><i>recognise that living things (plants) produce offspring of the same kind but normally offspring vary and are not identical to their parents</i></li> <li><i>describe the life process of reproduction in some plants</i></li> </ul>                                                                                                                                                                                  |
| <b>Animals including humans</b> | <ul style="list-style-type: none"> <li>find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> <li>identify, name, draw and label the basic parts of the human body...</li> </ul>                                                    | <ul style="list-style-type: none"> <li>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</li> <li>identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul>                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li><i>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</i></li> <li><i>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood ( including the pulse and clotting).</i></li> <li><i>describe the ways in which nutrients and water are transported within animals, including humans</i></li> </ul> |
| <b>Rocks</b>                    | <ul style="list-style-type: none"> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties</li> <li>describe the simple physical properties of a variety of everyday materials</li> <li>identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> </ul> | <ul style="list-style-type: none"> <li>compare and group together different kinds of rocks on the basis of their simple physical properties</li> <li>recognise that soils are made from rocks and organic matter</li> <li>describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> </ul>                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li><i>compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</i></li> <li><i>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</i></li> </ul>                |
| <b>Forces and magnets</b>       | <ul style="list-style-type: none"> <li>describe the simple physical properties of a variety of everyday materials (<i>attracted to a magnet or not</i>)</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties(<i>attracted to a magnet or not</i>)</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>compare how things move on different surfaces</li> <li>notice that some forces need contact between two objects but magnetic forces act at a distance</li> <li>observe how magnets attract or repel each other and attract some materials and not others</li> <li>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</li> <li>describe magnets as having two poles</li> <li>predict whether two magnets will attract or repel each other, depending on which poles are facing</li> </ul> | <ul style="list-style-type: none"> <li><i>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</i></li> <li><i>identify the effect of air resistance, water resistance and friction, that act between moving surfaces</i></li> </ul>                                                                                                                                        |
| <b>Light</b>                    | <ul style="list-style-type: none"> <li>describe the simple physical properties of a variety of everyday materials (<i>opaque, translucent, transparent materials</i>)</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties (<i>opaque, translucent, transparent material</i>)</li> </ul>                                                                 | <ul style="list-style-type: none"> <li>recognise that they need light in order to see things and that dark is the absence of light</li> <li>notice that light is reflected from surfaces</li> <li>recognise that shadows are formed when a light source is blocked by a solid object</li> <li>find patterns in the way that the size of shadows change</li> </ul>                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li><i>recognise that light appears to travel in straight lines</i></li> <li><i>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></li> <li><i>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</i></li> </ul>                                 |



## St Ives Science Knowledge Progression

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|  | <ul style="list-style-type: none"><li>▪ observe and describe weather associated with the seasons and how day length varies.</li></ul> | <ul style="list-style-type: none"><li>▪ recognise that light from the Sun can be dangerous and that there are ways to protect our eyes</li></ul> | <ul style="list-style-type: none"><li>▪ <i>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</i></li></ul> |
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## St Ives Science Knowledge Progression

| Year 4 Knowledge progression            | Children working towards national standard...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Children working at national standard...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Children working beyond national standard...<br><i>*(taken from UKS2 NC)</i>                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Animals, including humans</b>        | <ul style="list-style-type: none"> <li>-find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>-describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> <li>-identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>-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</li> </ul>                                 | <ul style="list-style-type: none"> <li>-describe the simple functions of the basic parts of the digestive system in humans</li> <li>-identify the different types of teeth in humans and their simple functions.</li> <li>-Construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>-identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood (including the pulse and clotting).</li> <li>-recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>-describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>                                          |
| <b>Living things and their habitats</b> | <ul style="list-style-type: none"> <li>-identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>-identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>-identify and name a variety of plants and animals in their habitats, including micro-habitats</li> <li>-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</li> </ul> | <ul style="list-style-type: none"> <li>-recognise that living things can be grouped in a variety of ways</li> <li>-explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>-recognise that environments can change constantly changing and that this can sometimes pose dangers to specific habitats</li> </ul>                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>-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</li> <li>-give reasons for classifying plants and animals based on specific characteristics</li> <li>-identify how animals and plants are adapted to suit their environment in different ways and adaption leads to evolution</li> </ul> |
| <b>States of matter</b>                 | <ul style="list-style-type: none"> <li>-describe the simple physical properties of a variety of everyday materials</li> <li>-compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>-compare and group materials together, according to whether they are solids, liquids or gases</li> <li>-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)</li> <li>-identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>-use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>-demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>-Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> </ul>                                                       |
| <b>Electricity</b>                      | <p><i>-(explore battery powered toys and carry out a variety of enquires related to these).</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>-identify common appliances that run on electricity</li> <li>-construct a simple series electrical circuit identifying and naming the basic parts of a simple electrical circuit, including cells, wires, bulbs, switches and buzzers</li> <li>-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</li> <li>-recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>-recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul> | <ul style="list-style-type: none"> <li>-associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>-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</li> <li>-use recognised symbols when representing a simple circuit in a diagram</li> </ul>                                               |



## St Ives Science Knowledge Progression

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| <b>Sound</b> | <p><i>( explore different ways of making and altering sounds ... experiment making sounds of differing volume and pitch)</i></p> <p><i>(observe and name a variety of sources of sound, noticing that we hear with our ears)</i></p> | <ul style="list-style-type: none"><li>-identify how sounds are made, associating some of them with something vibrating</li><li>-recognise that vibrations from sound travel through a medium to the ear</li><li>-recognise that sounds get fainter as the distance from the sound source increases</li><li>-find patterns between the pitch of a sound and features of the object that produced it</li><li>-find patterns between the volume of a sound and the strength of the vibrations that produced it.</li></ul> | <p><i>-(linked to design technology with either children designing sound proofing for a house or ear protectors and designing and making a musical instrument )</i></p> |
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## St Ives Science Knowledge Progression

| Year 5 knowledge progression               | Children working towards national standard...                                                                                                                                                                                                                   | Children working at national standard...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Children working beyond national standard...<br><i>*(taken from KS3 NC)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Animals, including humans</b>           | -(from ks1) notice that animals, including humans, have offspring which grow into adults                                                                                                                                                                        | -describe the changes as humans develop to old age                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <i>-describe reproduction in humans, including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta</i>                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Living things in their habitats</b>     | -explore the part flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal<br>-explore and use classification keys to help group, identify and name a variety of living things in their local environment   | -describe the difference in the life cycles of a mammal, an amphibian an insect and a bird<br>-describe the life process of reproduction in some plants and animals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>-describe the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops<br/>- understand the importance of plant reproduction through insect pollination in human food security<br/>-identify differences between species<br/>-understand heredity as the process by which genetic information is transmitted from one generation to the next</i>                                                                                                                                                                                                                                                                                                                            |
| <b>Properties and changes of materials</b> | -compare and group materials together, according to whether they are solids, liquids or gases<br><br>-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 | -compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets<br>-know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution<br>-use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating<br>-give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic<br>-demonstrate that dissolving, mixing and changes of state are reversible changes<br>-explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, include changes associated with burning and the action of acid on bicarbonate of soda | <i>-describe the different states of matter in terms of particle model...<br/>-explain changes of state in terms of particle model<br/>-explain simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Earth and space</b>                     | -recognise that they need light in order to see things and that dark is the absence of light<br>-recognise that light from the Sun can be dangerous and that there are ways to protect our eyes                                                                 | -describe the movement of the Earth, and other planets relative to the Sun in the solar system<br>-describe the movement of the Moon relative to the Earth<br>-describe the Sun, Earth and Moon as approximately spherical bodies<br>use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <i>-know our Sun as a star, other stars in our galaxy, other galaxies<br/>-understand how we have the seasons and the Earth's tilt, day length at different times of the year, in different hemispheres</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Forces</b>                              | -compare how things move on different surfaces<br><br>-notice that some forces need contact between two objects but magnetic forces act at a distance                                                                                                           | -explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object<br>-identify the effect of air resistance, water resistance and friction, that act between moving surfaces<br>-recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <i>-describe forces as pushes or pulls, arising from the interaction between two objects<br/>-identify non-contact forces: gravity forces acting at a distance on earth and in space, forces between magnets ...<br/>-use force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces<br/>-explain forces: associated with deforming objects; stretching and squashing-springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water<br/>-describe forces being needed to cause an object to stop or start moving, or to change their speed or direction of motion<br/>-know forces can be measured in newtons...</i> |





## St Ives Science Knowledge Progression

| Year 6 Knowledge progression            | Children working towards national standard...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Children working at national standard...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Children working beyond national standard...<br><i>*(taken from KS3 NC)</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Animals, including humans</b>        | <ul style="list-style-type: none"> <li>-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</li> <li>-describe the simple functions of the basic parts of the digestive system in humans</li> <li>-identify the different types of teeth in humans and their simple functions.</li> </ul>                                                                                                                      | <ul style="list-style-type: none"> <li>-identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood (including the pulse and clotting).</li> <li>-recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</li> <li>-describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>                                                                                                       | <ul style="list-style-type: none"> <li>-explain the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases...</li> <li>-describe the content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed</li> <li>-describe the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases</li> <li>-describe the effects of recreational drugs on behaviour, health and life processes</li> </ul> |
| <b>Evolution and inheritance</b>        | <ul style="list-style-type: none"> <li>-recognise that environments can change and that this can sometimes pose dangers to living things</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>-recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>-recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>-identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>                                          | <ul style="list-style-type: none"> <li>-identify differences between species</li> <li>-explain that the variation between species and between individuals within a species means some organisms compete more successfully, which can drive natural selection</li> <li>-describe how changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction</li> </ul>                                                                                             |
| <b>Living things and their habitats</b> | <ul style="list-style-type: none"> <li>-recognise that living things can be grouped in a variety of ways</li> <li>-explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> </ul>                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>-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</li> <li>-give reasons for classifying plants and animals based on specific characteristics</li> </ul>                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>-identify differences between species</li> <li>-describe the variation between individuals within a species being continuous or discontinuous...</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Light</b>                            | <ul style="list-style-type: none"> <li>-recognise that they need light in order to see things and that dark is the absence of light</li> <li>-notice that light is reflected from surfaces</li> <li>-recognise that shadows are formed when a light source is blocked by a solid object</li> <li>-find patterns in the way that the size of shadows change</li> </ul>                                                                                                                                                             | <ul style="list-style-type: none"> <li>-recognise that light appears to travel in straight lines</li> <li>-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</li> <li>-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</li> <li>-use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul> | <ul style="list-style-type: none"> <li>-use of ray model to explain imaging in mirrors...</li> <li>-describe the transmission of light through materials; absorption, diffuse scattering and specular reflection at a surface</li> <li>-explain colours and the different frequencies of light, white light and prisms (qualitative only)</li> </ul>                                                                                                                                                                                                                                 |
| <b>Electricity</b>                      | <ul style="list-style-type: none"> <li>-construct a simple series electrical circuit identifying and naming the basic parts of a simple electrical circuit, including cells, wires, bulbs, switches and buzzers</li> <li>-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</li> <li>-recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> </ul> | <ul style="list-style-type: none"> <li>-associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>-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</li> <li>-use recognised symbols when representing a simple circuit in a diagram</li> </ul>                                                                                                            | <ul style="list-style-type: none"> <li>-talk about electric current...</li> <li>-describe potential difference, measured in volts, battery and bulb rating...</li> <li>-describe differences in resistance between conducting and insulating components</li> </ul>                                                                                                                                                                                                                                                                                                                   |



## St Ives Science Knowledge Progression

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|  | -recognise some common conductors and insulators, and associate metals with being good conductors |  |  |
|--|---------------------------------------------------------------------------------------------------|--|--|

\*Content taken from KS3 NC schools should avoid teaching this in UKS2 and opt to add additional content giving breadth to the topic