

Science Progression



Our learning has been organised into the following key learning concepts:

| | Autumn | | Spring | | Summer | |
|---|--------------------------|-----------------|------------------------------------|-------------------------------------|--------------------|-----------------------------------|
| KS1 Repeat yearly. | Animals including Humans | | Everyday Materials and Their Uses. | | Plants | Living Things and Their Habitats. |
| | Seasonal Changes | | | | | |
| KS2 Cycle A | Animals including Humans | Light | Electricity | Rocks. Evolution and Inheritance | Forces and Magnets | Living Things and their Habitats. |
| KS2 Cycle B | Animals including Humans | Earth and Space | Materials | Sound | Plants | Living Things and their Habitats |



Plants

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| Nursery | <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. |
| Reception | |
| Year 1 | <ul style="list-style-type: none"> • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. • Identify and describe the basic structure of a variety of common flowering plants, including trees. |
| Year 2 | <ul style="list-style-type: none"> • Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. |
| Year 3 | <ul style="list-style-type: none"> • Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported within plants. |
| Year 4 | <ul style="list-style-type: none"> • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. |
| Year 5 | <ul style="list-style-type: none"> • <i>Describe how seed dispersal ensures that new plants survive</i> • <i>Describe how nutrients are taken in through plant roots</i> • <i>Recognise that leaves use light to make food for the plant</i> |
| Year 6 | <ul style="list-style-type: none"> • <i>Find out and describe how keys are a way of identifying different living things.</i> |

Living things and their Habitats

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| Nursery | <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Begin to understand the need to respect and care for the natural environment and all living things. |
| Reception | <ul style="list-style-type: none"> • Draw information from a simple map. • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live. |
| Year 1 | |
| Year 2 | <ul style="list-style-type: none"> • Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including microhabitats. • 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. |
| Year 3 | <ul style="list-style-type: none"> • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things. |
| Year 4 | |
| Year 5 | <ul style="list-style-type: none"> • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals. • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. |
| Year 6 | <ul style="list-style-type: none"> • Give reasons for classifying plants and animals based on specific characteristics. |

Animals inc. Humans

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| Nursery | <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Begin to make sense of their own life-story and family's history. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. |
| Reception | <ul style="list-style-type: none"> • Talk about members of their immediate family and community. • Name and describe people who are familiar to them. • Recognise some environments that are different to the one in which they live. |
| Year 1 | <ul style="list-style-type: none"> • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. |
| Year 2 | <ul style="list-style-type: none"> • Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. |
| Year 3 | <ul style="list-style-type: none"> • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement. |
| Year 4 | <ul style="list-style-type: none"> • Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions. • Construct and interpret a variety of food chains, identifying producers, predators and prey. |
| Year 5 | <ul style="list-style-type: none"> • Describe the changes as humans develop to old age. • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. |
| Year 6 | <ul style="list-style-type: none"> • Describe the ways in which nutrients and water are transported within animals, including humans |

| Seasonal Changes | | Earth and Space |
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| Nursery | | |
| Reception | <ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them. | <ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. |
| Year 1 | <ul style="list-style-type: none"> • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. | |
| Year 2 | | |
| Year 3 | | <ul style="list-style-type: none"> • <i>Observe how the Sun appears to move across the sky from East to West</i> • <i>Observe how the apparent movement of the Sun across the sky causes shadows to change</i> • <i>Describe how we can see the Moon because the Sun's light reflects off it</i> • <i>Describe how the Earth and Moon go around the Sun in one year</i> • <i>Recognise that humans have been to the Moon</i> |
| Year 4 | | |
| Year 5 | | <ul style="list-style-type: none"> • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. |
| Year 6 | | |

Materials

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| Nursery | <ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about the differences between materials and changes they notice. |
| Reception | <ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. |
| Year 1 | <ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. |
| Year 2 | <ul style="list-style-type: none"> • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. |
| Year 3 | <ul style="list-style-type: none"> • Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). |
| Year 4 | <ul style="list-style-type: none"> • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. |
| Year 5 | <ul style="list-style-type: none"> • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. |
| Year 6 | <ul style="list-style-type: none"> • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. |

| Rocks | | Evolution and Inheritance |
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| Nursery | | |
| Reception | | |
| Year 1 | | |
| Year 2 | | |
| Year 3 | <ul style="list-style-type: none"> • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter. | |
| Year 4 | | |
| Year 5 | | <ul style="list-style-type: none"> • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. |
| Year 6 | | |

Light

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| Nursery | <ul style="list-style-type: none"> • Explore how things work. • Talk about the differences in materials and changes they notice. |
| Reception | <ul style="list-style-type: none"> • Describe what they see, hear and feel whilst outside. |
| Year 1 | |
| Year 2 | |
| Year 3 | <ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. |
| Year 4 | <ul style="list-style-type: none"> • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change. |
| Year 5 | <ul style="list-style-type: none"> • Recognise that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. |
| Year 6 | <ul style="list-style-type: none"> • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. |

Forces

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| Nursery | <ul style="list-style-type: none"> • Explore how things work. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice. |
| Reception | <ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. |
| Year 1 | |
| Year 2 | |
| Year 3 | <ul style="list-style-type: none"> • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. |
| Year 4 | <ul style="list-style-type: none"> • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. |
| Year 5 | <ul style="list-style-type: none"> • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. |
| Year 6 | |

Sound

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| Nursery | <ul style="list-style-type: none"> • Explore how things work. |
| Reception | <ul style="list-style-type: none"> • Describe what they see, hear and feel whilst outside. |
| Year 1 | |
| Year 2 | |
| Year 3 | <ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. |
| Year 4 | <ul style="list-style-type: none"> • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases. |
| Year 5 | <ul style="list-style-type: none"> • <i>Recognise that sounds can be high or low (pitched)</i> • <i>Describe how sounds are made when objects vibrate</i> • <i>Recognise that not all objects can be seen to vibrate</i> |
| Year 6 | <ul style="list-style-type: none"> • <i>Recognise that vibrations can travel at different speeds through different mediums</i> |

Electricity

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| Nursery | <ul style="list-style-type: none"> • Explore how things work. |
| Reception | |
| Year 1 | |
| Year 2 | |
| Year 3 | <ul style="list-style-type: none"> • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. |
| Year 4 | <ul style="list-style-type: none"> • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors. |
| Year 5 | <ul style="list-style-type: none"> • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. |
| Year 6 | <ul style="list-style-type: none"> • Use recognised symbols when representing a simple circuit in a diagram. |

Biology

Chemistry

Physics

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Any objectives that appear in **red** have been taken from the North Yorkshire Science plans and are non-statutory objectives.

| Plan | Do | Review |
|---|---|---|
| Identifying, Classifying and grouping | | |
| <p>Ask questions about how and why things are similar or different.</p> <p>Decide what to observe to identify or sort things.</p> | <p>Make comparisons between simple features of objects, materials or living things.</p> <p>Sort objects by observable and behavioural features.</p> <p>Record my observations, using words or pictures, in sorting circles or tables.</p> | <p>Identify similarities and differences and talk about them using simple scientific language.</p> <p>Use my observations to suggest how and why things are similar or different.</p> <p>Try to use my records to help sort or identify other things.</p> |
| Observing over time | | |
| <p>Ask questions about how and why things change.</p> <p>With help, identify changes to observe and measure and suggest how to do it.</p> | <p>Use non-standard units and simple equipment to observe or measure change.</p> <p>Record in words or pictures, or in simple prepared formats such as tables and charts.</p> | <p>Identify simple changes and talk about them using simple scientific language.</p> <p>Sequence the changes.</p> <p>Use my observations to suggest how and why things change.</p> |
| Pattern seeking | | |
| <p>Ask questions about why and how things are linked.</p> <p>With help, decide what patterns to observe and measure and suggest how to do it.</p> | <p>Use non-standard units and simple equipment to observe or measure events that might be related.</p> <p>Record in words or pictures, or in simple prepared formats such as tables, tally charts and maps.</p> | <p>Identify simple patterns and talk about them using simple scientific language.</p> <p>Make links between two sets of observations.</p> <p>Use my observations to suggest why and how things are linked.</p> |
| Research using secondary sources | | |
| <p>Ask questions about the way things are and the way they work.</p> <p>With help, make suggestions about how to find things out.</p> | <p>Use books and simple electronic media to find things out.</p> <p>Ask questions to find out what people do and to find out how things work.</p> <p>Record in words or pictures what I found out.</p> | <p>Begin to use simple scientific language to talk about what I have found out.</p> <p>Talk about whether the information source was useful and whether or not it answered my questions.</p> <p>Give an opinion about some of the things I found out.</p> |
| Comparative and fair testing | | |
| <p>Ask questions about why and how and what if.</p> <p>With help, notice links between cause and effect.</p> <p>With help, plan simple comparative tests.</p> | <p>Use non-standard units and simple equipment to observe or measure data.</p> <p>Record in words or pictures, or in simple prepared formats such as tables and tally charts.</p> | <p>Interpret and talk about my data using simple scientific language.</p> <p>Use my observations to suggest why there are links between cause and effect.</p> |

Key Stage 2 – Year 3 and 4

| Plan | Do | Review |
|---|--|---|
| Identifying, Classifying and grouping | | |
| <p>Talk about things that can be grouped and decide when questions can be answered by sorting and classifying.</p> <p>Talk about what criteria I will use to sort and classify things.</p> <p>Decide what equipment to use to identify and classify things.</p> | <p>Carry out simple tests to sort and classify according to properties or behaviour.</p> <p>Use Carroll diagrams, Venn diagrams and more complex tables to sort things.</p> <p>Use simple keys and branching databases to identify things.</p> <p>Make simple branching databases (keys) for things that have clear differences.</p> | <p>Draw simple conclusions and answer questions about the things I have sorted and classified.</p> <p>Communicate the similarities and differences I identified using scientific ideas.</p> <p>Suggest improvements to the way I sort and identify things.</p> |
| Observing over time | | |
| <p>Talk about things changing and decide when questions can be answered by observing over time.</p> <p>Decide what observations to make, how often and what equipment to use.</p> | <p>Select and use a range of equipment accurately to collect data using standard units.</p> <p>Make records using tables, bar charts or labelled diagrams.</p> <p>Begin to use and interpret graphs produced by e.g. dataloggers</p> | <p>Draw simple conclusions and answer questions using the changes I observed, make predictions for new values, and raise further questions.</p> <p>Communicate the changes using scientific ideas.</p> <p>Suggest improvements to the way I observe.</p> |
| Pattern seeking | | |
| <p>Talk about where patterns might be found and decide when questions can be investigated by pattern seeking.</p> <p>Decide on which sets of data to collect, what observations to make and what equipment to use.</p> | <p>Select and use a range of equipment accurately to collect data using standard units.</p> <p>Make records using tables, bar charts or simple scatter graphs.</p> <p>Begin to use and interpret data collected through e.g. dataloggers.</p> | <p>Draw simple conclusions and answer questions about simple patterns between two sets of data, and raise further questions.</p> <p>Communicate the patterns using scientific ideas.</p> <p>Suggest improvements to the way I looked for patterns.</p> |
| Research using secondary sources | | |
| <p>Talk about how things are and the way they work and decide when questions can be answered by research using secondary sources.</p> | <p>Use information sources to find the information I need.</p> <p>Record what I found out in my own words.</p> <p>Present information in different ways.</p> | <p>Draw simple conclusions and answer questions from what I found out, and raise further questions.</p> <p>Communicate what the information and data means using scientific ideas.</p> <p>Suggest ways to improve how I find out things.</p> |
| Comparative and fair testing | | |
| <p>Talk about links between cause and effect and (with help) pose a relevant fair test question.</p> <p>Plan a fair test and decide what data to collect.</p> <p>Decide what equipment to use to make observations.</p> | <p>Select and use a range of equipment accurately to collect data using standard units.</p> <p>Make records using tables and bar charts.</p> <p>Begin to use and interpret data collected though e.g. dataloggers.</p> | <p>Draw simple conclusions and answer questions from my fair tests, make predictions for new values and raise further questions.</p> <p>Communicate and explain simple causal relationships using scientific ideas.</p> <p>Suggest ways that I can improve my fair tests.</p> |

Key Stage 2 – Year 5 and 6

| Plan | Do | Review |
|---|--|--|
| Identifying, classifying and grouping | | |
| <p>Recognise when identifying and classifying will be the best way to answer my question.</p> <p>Decide what equipment, tests and secondary sources of information to use to identify and classify things.</p> | <p>Use a series of tests to sort and classify materials.</p> <p>Use secondary sources to identify and classify things.</p> <p>Make my own classification keys and branching databases with four or more items.</p> <p>Use more than one piece of scientific evidence to identify and classify things.</p> | <p>Draw valid conclusions when sorting and classifying.</p> <p>Report and explain what I have done using scientific ideas.</p> <p>Evaluate how well my key/branching database worked.</p> |
| Observing over time | | |
| <p>Recognise when observing changes over time will be the best way to answer my question.</p> <p>Decide how detailed my observations need to be and what equipment to use, to make my observations/measurements as accurate as possible.</p> | <p>Select scientific equipment and use it with increasing accuracy. I take repeat readings when appropriate.</p> <p>Record data and results of increasing complexity.</p> <p>Present data in line graphs.</p> <p>Recognise the effect of changing the time and number of observations.</p> | <p>Draw valid conclusions from data about changes.</p> <p>Interpret changes in the data.</p> <p>Report and explain changes using scientific ideas.</p> <p>Evaluate how well I observed over time.</p> <p>Use my results to predict and set up further observations.</p> |
| Pattern seeking | | |
| <p>Recognise when variables cannot be controlled and pattern seeking will be the best way to answer my question.</p> <p>Decide how detailed my data needs to be and which equipment to use, to make my measurements/observations as accurate as possible.</p> | <p>Select scientific equipment and use it with increasing accuracy. I take repeat readings when appropriate.</p> <p>Record data and results of increasing complexity.</p> <p>Present data in scatter graphs and frequency charts.</p> <p>Recognise patterns in results.</p> <p>Recognise the effect of sample size on reliability.</p> | <p>Draw valid conclusions from data about patterns and recognise their limitations.</p> <p>Report and explain cause and effect patterns using scientific ideas.</p> <p>Evaluate how well I looked for patterns.</p> <p>Use my results to predict and set up further pattern seeking.</p> |
| Research using secondary sources | | |
| <p>Recognise when research using secondary sources will be the best way to answer my question.</p> <p>Decide which sources of information might answer my question.</p> | <p>Use relevant information and data from a range of secondary sources.</p> <p>Recognise how data has been obtained.</p> <p>Present my findings in a variety of suitable formats.</p> | <p>Draw valid conclusions from my research.</p> <p>Begin to notice when information and data is biased or based on opinion rather than facts.</p> <p>Evaluate how well my research has answered my questions and recognise that some scientific questions may not have been answered definitively.</p> |
| Comparative and fair testing | | |
| <p>Recognise when variables need to be controlled and a fair test is the best way to answer my question.</p> <p>Plan a fair test, recognising the most suitable variables to measure, change and keep the same and what equipment to use to make my measurements as accurate as possible.</p> | <p>Select scientific equipment and use it with increasing accuracy, I take repeat readings when appropriate.</p> <p>Record data and results of increasing complexity.</p> <p>Present data in line, bar and scatter graphs.</p> | <p>Draw valid conclusions based on the data.</p> <p>Report and explain causal relationships using scientific ideas,</p> <p>Evaluate the effectiveness of my fair testing, recognising variables that were difficult to control and where my results were trustworthy.</p> <p>Use my results to predict and set up further comparative or fair tests.</p> |

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| | | Identify scientific evidence that supports or refute ideas or arguments. |
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