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| Updated July 2021 | Subject Essential Knowledge | | | | | | |
| Embedding our learning culture | Curricular Goal: Know how science can help us to understand the world | | | | | | |
| Learning to Live | Component 1: Working Scientifically | | | | | | |
| | <i>Reception Essential Knowledge</i> | <i>Year 1 Essential Knowledge</i> | <i>Year 2 Essential Knowledge</i> | <i>Year 3 Essential Knowledge</i> | <i>Year 4 Essential Knowledge</i> | <i>Year 5 Essential Knowledge</i> | <i>Year 6 Essential Knowledge</i> |
| Living to Love | Learn new vocabulary | -Identify and classify | - Identify, group and classify | -Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions | - Ask relevant questions and use different types of scientific enquiries to answer them | -Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | - Identify scientific evidence that has been used to support or refute ideas or arguments |
| Loving to Learn | Ask questions to find out more and to check what has been said to them | -Use his/her observations and ideas to suggest answers to questions | -Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns | -Use results to draw simple conclusions, make predictions for new values, | -Set up simple, practical enquiries, comparative and fair tests. | | |
| | Articulate their ideas and thoughts in well-formed sentences. | -Gather and record data to help in answering questions | | | -Make careful observations, take accurate | | -Describe and evaluate their own and other people's scientific ideas related to topics in the NC (including ideas that have |
| | Describe events in some detail. | | - Gather and record data to help in answering | | | -Take measurements, using a range of scientific equipment, with | |
| | Use talk to work out problems and | | | | | | |

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| | <p>organise thinking and activities. Explain how things work and why they might happen.</p> <p>Use new vocabulary in different contexts.</p> | | <p>questions including from secondary sources</p> | <p>suggest improvements and raise further questions</p> <ul style="list-style-type: none"> -Identify differences, similarities or changes related to simple scientific ideas and processes -Use straightforward scientific evidence to answer questions or to support his/her findings | <p>measurements, use a range of equipment including thermometers</p> <ul style="list-style-type: none"> -Gather, record, classify and present data in a variety of ways to help in answering questions -Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables -Report on findings from enquiries including oral and written explanations, displays or presentations of results and conclusions -Use results to draw simple conclusions, | <p>increasing accuracy and precision, taking repeat readings when appropriate</p> <ul style="list-style-type: none"> -Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, scatter graphs, bar and line graphs - Use test results to make predictions to set up further comparative and fair tests. | <p>changed over time) using evidence from a range of sources</p> <ul style="list-style-type: none"> -Group and classify things and recognise patterns -Find things out using a wide range of secondary sources of information Use appropriate scientific language and ideas from the NC to explain, evaluate and communicate his/her methods and findings |
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| | | | | | <p>make predictions, suggest improvement and raise further questions</p> <p>-Identify similarities, differences or changes related to simple scientific ideas and processes</p> <p>-Use straightforward scientific evidence to answer questions or to support his/her findings</p> | | |
| Component 2: Animals including humans | | | | | | | |
| <p>Names of at least 3 animals that would be found in Yorkshire.</p> <p>Some animals eat plants and some animals eat other animals.</p> <p>Humans have senses.</p> | <p>-Group animals according to what they eat -Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>- Describe and compare the structure of a variety</p> | <p>-Understand that animals, including humans, have offspring which grow into adults</p> <p>-Describe the basic needs of animals, including humans, for</p> | <p>-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</p> | <p>-Describe the simple functions of the basic parts of the digestive system</p> <p>-Identify different teeth types and know their simple functions</p> | <p>- Describe the changes as humans develop to old age</p> | <p>-Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> | |

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| | <p>Identify, name, draw and label the basic parts of the human body which are associated with the senses (fingers, nose, mouth, head, legs, hand)</p> <p>We look after our bodies in different ways - staying clean, drinking water and eating our meals.</p> <p>Babies grow into adults.</p> | <p>of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>- Identify, name and draw and label the basic parts of the human body and say which part of the body is associated with each sense</p> | <p>survival (water, food and air)</p> <p>-Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene</p> | <p>-Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> | <p>-Construct and interpret food chains, identifying producers, predators and prey</p> | | <p>-Recognise the impact of diet, exercise, drugs, and lifestyle on the way their bodies function.</p> <p>-Describe the way in which nutrients and water are transported within animals, including humans.</p> |
| Component 3: Materials/States of Matter | | | | | | | |
| | <p>Objects are made from different materials.</p> <p>Objects can feel different and be described as hard, soft, rough, smooth.</p> <p>Explore the natural world around them.</p> | <p>- Distinguish between an object and the material from which it is made</p> <p>-Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock</p> <p>-Describe the simple physical properties of a variety of everyday materials</p> | <p>- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>-Describe how the shapes of solid objects made from some</p> | | <p>-Compare and group materials together</p> <p>-Observe that some materials change state when they are heated or cooled</p> <p>-Measure temperature</p> <p>-Identify the part played by evaporation in</p> | <p>-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</p> | |

- Compare and group together a variety of everyday materials on the basis of their simple physical properties

materials can be changed by squashing, bending, twisting and stretching

the water cycle and associate the rate of evaporate with temperature

-Recognise that some materials will dissolve in a liquid to form a solution, and describe how to recover a substance from a solution

-Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating

- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, woods and plastic

Component 4: Plants

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| <p>There are different kinds of plants and trees.</p> <p>All plants have roots, a stem, flower and petals.</p> <p>Plants need food and water to survive.</p> <p>Explore the natural world around them.</p> | <p>-Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>-Identify and describe the basic structure of a variety of common flowering plants, including trees</p> | <p>-Observe and describe how seeds and bulbs grow into mature plants</p> <p>-Describe how plants need water, light and a suitable temperature to grow and stay healthy, and describe the impact of changing these</p> | <p>-Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>- Explore and describe 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</p> <p>-Investigate the way in which water is transported within plants</p> <p>-Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed</p> | | | |
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formation and seed dispersal

Component 5: Living things and their habitats

Explore the natural world around them, making observations and drawing pictures of animals and plants.

Recognise some environments that are different to the one in which they live.

Explore the natural world around them.

-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 micro-habitats

-Recognise that living things can be grouped in a variety of ways

-Explore and use classification keys to help group Identify and name living things in their environment

-Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things

-Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird

-Describe the life processes 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 micro-organisms, plants and animals.

-Give reasons for classifying plants and animals based on specific characteristics.

-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

Component 6: Seasonal Changes

Weather changes throughout the year.
This changes your day to day life (warm, cold, hot, wet, windy)
Understanding the effect of changing seasons on the natural world around them.

- Observe changes across the four seasons
-Observe and describe weather associated with the seasons and how day length varies

Component 7: Forces and magnets

-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 minerals and not others

- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials

- 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

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| | | | | <ul style="list-style-type: none"> -Describe magnets as having two poles -Predict whether two magnets will attract or repel each other, depending on which poles are facing | | | |
| Component 8: Light | | | | | | | |
| | | | | <ul style="list-style-type: none"> -Recognise that he/she needs 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 eyes -Recognise that shadows are formed when | | | <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 -Explain that we see things because light travels from light sources to our eyes or from light sources to |

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| | | | | <p>the light from a light source is blocked by a solid object</p> <p>-Find patterns in the way that the size of shadows change</p> | | | <p>objects and then to our eyes</p> <p>-Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> |
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| Component 9: Rocks | | | | | | | |
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| | <p>Explore the natural world around them.</p> | | | <p>- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>-Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>- Recognise that soils are made from rocks and organic matter</p> | | | |
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Component 10: Earth and Space

-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

Component 11: Electricity

-Construct a simple series electrical circuit and name the main parts

-Identify whether or not a lamp will light in a simple circuit

-Recognise that a switch opens and closes a circuit

-Recognise some common conductors

-Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.

-Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.

-Use recognised symbols when representing a simple circuit in a diagram.

Component 12: Evolution and Inheritance

-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.

Component 13: Sound

- Identify how sounds are made
- Recognise vibrations travel
- Find patterns between pitch of a sound and features of the object that produced it
- Find patterns between the volume of a sound and the strength of the vibrations that produced it
- Recognise that sounds get fainter as the distance from the sound source increases