

Science at Meadows First School (Vision and Ethos)

The 5 principles of our curriculum are: *Unique Child, Positive Relationships, Key Knowledge & Skills, Love of Learning, Global Citizens* We embed these 5 principles within our Science Curriculum as follows:

We equip children with the **Science skills, vocabulary and knowledge** necessary for the next stage of their learning journey. Knowledge and skills are sequential and built upon to develop progress in **Science** across the school. Vocabulary development plays a vital role in this. We want children to be able to **use Science** as a means for communication and to use language skilfully. For example children can form predictions and explain their reasoning using scientific vocabulary. Similarly, children will also be able to analyse and draw conclusions from experiments and investigations clearly and precisely.

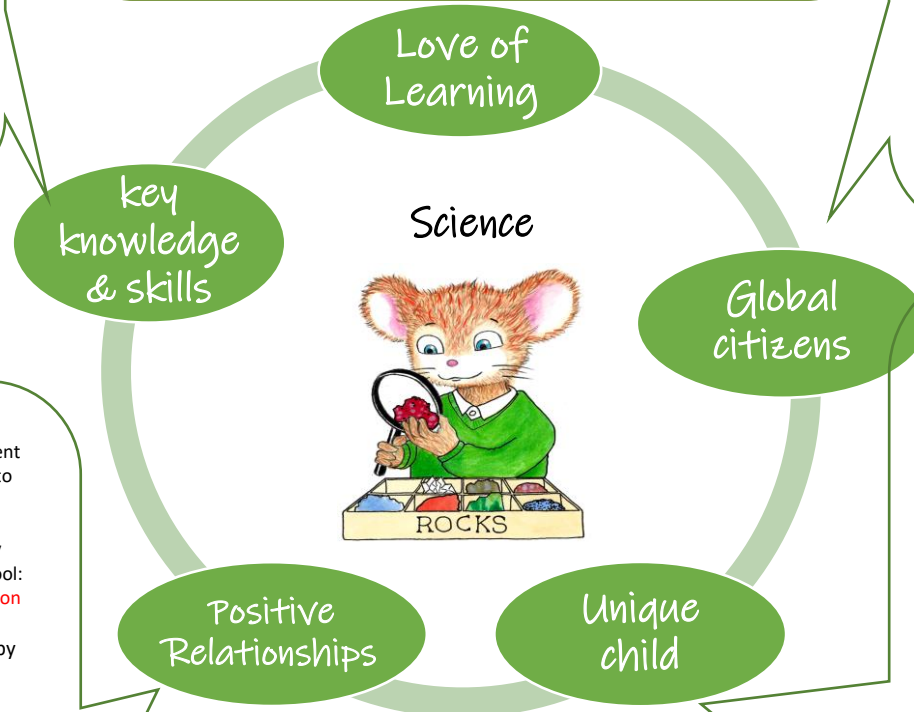
Our **theme-based, literature rich** curriculum embeds deep learning, ignites curiosity and broadens our children's awareness of cultural capital in **Science**.
For example, our children are interested to their local habitats in various ways. From collecting natural objects in the Wyre forest, to visiting farms in Reception and finally learning about variation in Year 4 at the Birmingham Botanical gardens. Year 3 learn about working scientifically as they investigate rocks and soils at the Birmingham Think Tank. Throughout the year the school will have many visitors to help children think scientifically including the animal man in Year 1, the dentist in Year 3 and the Marine Conservation Society in Year 2.
We want children to develop a thirst for learning by using memorable and purposeful learning experiences. For example, every year the entire school will take part in STEM week. This week helps children to understand the real life links between all the STEM subjects as well as inspiring children to become scientists in the future.

We want our children to use the vibrancy of our great country, to learn from other cultures, respect diversity, and appreciate what they have. We achieve this by providing a strong SMSC curriculum, with British Values and our core values placed at the heart of everything we do. This feeds into the **Science** curriculum

We want children to feel empowered to make a difference and affect changes as **global citizens** to their community and the world in which they live. E.g children will learn about the harmful effects of global warming throughout their time at Meadows. They will learn how local and global habitats are under threat and how this affects the animals that live there. Children in Year 2 will team up with the Marine Conservation Society and Year 4 will look at the advantages of alternative and renewable fuel sources.

The **Science** curriculum at Meadows supports the development of positive, respectful relationships. We encourage children to work together in **Science**, supporting and encouraging each other, as well as reflecting on and critically evaluating each other's work. We enable parents to support their children by involving them in their education and inviting them into school: eg during STEM week children will be given projects to work on at home alongside their parents.
Life in 21st Century Britain can be busy and stressful and by allowing children time to be immersed in Science and explore the richness of the world around them can aid wellbeing and reduce stress
We know how to keep ourselves safe in **Science**, using equipment carefully and safely. We are proud of what we can achieve!

At Meadows First School we can all become **Scientists!** We develop the holistic child, acknowledging their unique needs and ensuring all children are able to access the **Science** curriculum. EG: we support all of our children with a range of equipment that caters for all needs. All of our children will have their Science work proudly displayed around the school and each year the whole school comes together to work on a single project during STEM week at the end of which children will present their findings and investigations to the rest of the school.
Children use meadows Mouse to develop lifelong learning habits to be;
Enthusiastic: to ask questions about the world around them and to come up with ways of investigating their ideas.
Determined: We encourage a growth mindset, with high expectations, so children are capable of understanding why an experiment may have gone wrong and knowing that this is a natural part of the scientific process.
Focused: We want them to have no ceiling to their achievements and to grow up wanting to be climatologists, geologists, astronauts and botanists.
Organised: We aim for our children to be independent and confident to use equipment safely as well as selecting the right equipment for the right piece of work.

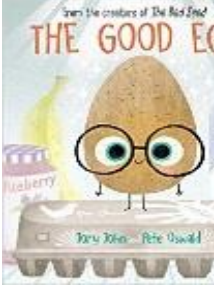
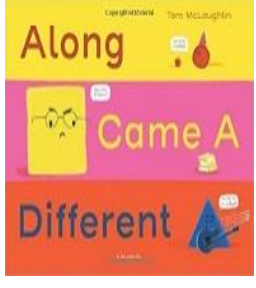

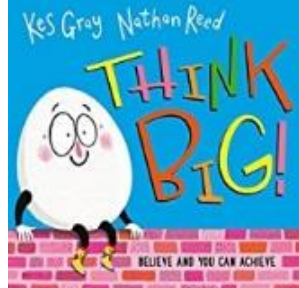
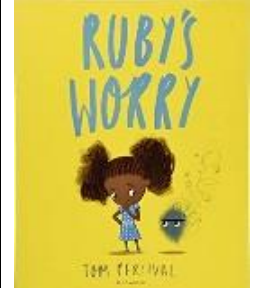
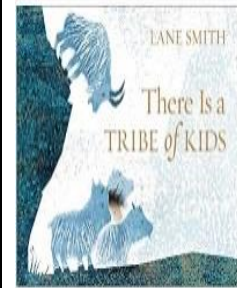


MEADOWS FIRST SCHOOL LONG TERM PLAN - Science

Intent: With a focus on Meadows curriculum; Unique child, Positive relationships, Key knowledge and skills, Love of Learning, Global Citizens - we will

- Engage children as learners at many levels through linking ideas with practical experience.
- Help children to learn to question and discuss scientific issues that may affect their own lives.
- Help children develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought.
- Show children how major scientific ideas contribute to technological change and how this impacts on improving the quality of our everyday lives.
- Help children recognise the cultural significance of science and trace its development.
- To increase the child's knowledge and understanding of the world.
- To develop attitudes of curiosity, originality, co-operation, perseverance, open-mindedness, self-criticism, responsibility and independence in thinking.
- To enable children to effectively and confidently communicate their scientific predictions and discoveries as they are given the opportunity to observe, describe, illustrate, hypothesise, evaluate and interpret, using appropriate scientific vocabulary.
- To develop children's understanding of the effects of their actions on the environment.

| | | <i>Autumn Term</i> | | <i>Spring Term</i> | | <i>Summer Term</i> | |
|--------------------------|--------------------------------|---|--|---|--|---|---|
| <i>Implementation</i> | | <i>Autumn 1</i> | <i>Autumn 2</i> | <i>Spring 1</i> | <i>Spring 2</i> | <i>Summer 1</i> | <i>Summer 2</i> |
| <i>Rights Respecting</i> | | <i>I have the right to Friends. Article 15</i> | <i>I have the right to be safe. Article 19.</i> | <i>I have the right to be listened to. Article 12:</i> | <i>I have the right to play and rest. Article 31</i> | <i>I have the right to water/ food. Article 24</i> | <i>The right to a good quality education. Article 28</i> |
| Year N | Theme | Settling In Marvellous Me | Celebrations Special times | STEM Machines! | My Wonderful World People | My wonderful World Nature | Fantasy Fun Transition |
| | Focus- skills/knowledge | <p><i>Can they notice detailed features of objects in their environment? (22-36 Months)</i></p> <p><i>Can they comment and ask questions about aspects of their familiar world such as the place where they live or the natural world? (30-50 Months)</i></p> | <p><i>Can they show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images?</i></p> <p><i>Do they know that information can be retrieved from computers? (30-50 Months) UOW: T</i></p> | <p><i>Can they talk about why things happen and how things work?</i></p> <p><i>Can they show care and concern for living things and the environment? (30-50 Months UOW:TW)</i></p> <p><i>Can they show an interest in</i></p> | <p><i>Can they comment and ask questions about aspects of their familiar world such as the place where they live or the natural world? (30-50 Months)</i></p> <p><i>Can they talk about some of the things they have observed such as plants, animals, natural and found objects? (30-50 Months)</i></p> | <p><i>Can they develop an understanding of growth, decay and changes over time? (30-50 Months)</i></p> <p><i>Do they know that information can be retrieved from computers? (30-50 Months) UOW: T</i></p> | <p><i>Can they look closely at similarities, differences, patterns and change? (40-60 months)</i></p> <p><i>Can they show some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health? (40-60 Months PD:HSC)</i></p> |

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| | | Can they tell adults when hungry or tired or when they want to rest or play? Can they observe the effects of activity on their bodies? (30-50 Months PD: HSC) | | technological toys with knobs or pulleys, or real objects such as cameras or mobile phones? (30-50 Months) UOW: T | Do they know that information can be retrieved from computers? (30-50 Months) UOW: T | | |
| | Significant Book |  |  |  |  |  |  |
| Year R | Theme | Marvellous Me Where the Wild Things Are | Marvellous me | Around the world & beyond (part 1) | Around the world & beyond (part 2) | Once upon a tale | All creatures great & small |
| | <i>Skills</i> | | Changing seasons Can they talk about the features of their own immediate environment and how environments might vary from one another? Can they make observations of animals and plants and explain why some things occur, and talk about changes? | Cold Countries Can they talk about the features of their own immediate environment and how environments might vary from one another? Can they make observations of animals and plants and explain why some things | Growing plants from seeds Do they know about similarities and differences in relation to places, objects, materials and living things? Can they make observations of animals and plants and explain why some things occur, and talk about changes? | | Animals Can they make observations of animals and plants and explain why some things occur, and talk about changes? Do they know about similarities and differences in relation to places, objects, materials and living things? |

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| | | | | occur, and talk about changes? | | | |
| | Significant Book | |  |  |  | |  |
| Year 1 | Theme | Making SENSE of our world | Memory box | Our Town, Bromsgrove | Animal Allsorts | Let's Explore Africa | Famous For More than Five Minutes |
| | <i>Focus-skills/knowledge</i> | <p>Can they label the human body? Can they say which senses go with which body part?</p> <p>Can they observe changes across the four seasons?</p> <p>Can they observe and describe seasonal weather and how days get longer and shorter?</p> | <p>Can they distinguish between an object and the material from which it is made?</p> <p>Can they identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock?</p> <p>Can they describe the properties of everyday materials?</p> <p>Can they compare and group materials based on their physical properties?</p> <p>Can they observe changes across the four seasons?</p> <p>Can they observe and describe seasonal weather and how days get longer and shorter?</p> | | <p>Can they name different animals including fish, amphibians, reptiles, birds and mammals?</p> <p>Can they say which animals are carnivores, herbivores or omnivores?</p> <p>Can they describe and compare different animals (fish, amphibians, reptiles, birds and mammals)?</p> <p>Can they observe changes across the four seasons?</p> <p>Can they observe and describe seasonal weather and how days get longer and shorter?</p> | <p>Can they name different plants?</p> <p>Can they label the parts of a flower and tree?</p> <p>Can they observe changes across the four seasons?</p> <p>Can they observe and describe seasonal weather and how days get longer and shorter?</p> | |

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| | <i>Working Scientifically</i> | 1a, 1b. 3a, 3b. 4b | 1a. 2a, 2c, 2e, 2d. 3a, 3b. 4c. | | 1c. 3a. 4a, 4b. | 1a. 2b, 2c, 2d, 2e, 2f, 2g. | |
| | <i>Significant person</i> | Linda Brown Buck | Ole Kirk Christiansen | | Carl Hagenback | Jane Colden | |
| <i>Year 2</i> | Theme | Oh I do like to be Beside the Seaside | Keeping healthy | Chocolate-That's Not Fair! | Knights and Castles | Go Wild (plants & animals) | Pirates |
| | <i>Focus-skills/knowledge</i> | | <p>Can they notice that animals have offspring which grow into adults?</p> <p>Can they find out about and describe the basic needs of animals for survival?</p> <p>Can they explain why it is important to stay healthy?</p> | | <p>Can they compare which materials would be best suited for particular uses?</p> <p>Can they find out how solid objects can be changed by squashing, bending, twisting and stretching?</p> | <p>Can they explore and compare the differences between things that are living, dead, and things that have never been alive?</p> <p>Can they identify that most living things live in habitats to which they are suited?</p> <p>Can they describe how different habitats provide for the basic needs of different kinds of animals and plants?</p> <p>Can they identify and name a variety of plants and animals in their habitats, including microhabitats?</p> <p>Can they describe how animals obtain their food from plants and other animals?</p> <p>Can they use a simple food chain and identify</p> | <p>Can they observe and describe how seeds and bulbs grow into mature plants ?</p> <p>Can they find out and describe how plants need water, light and a suitable temperature to grow?</p> |

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| | | | | | | and name different sources of food? | |
| | <i>Working Scientifically</i> | | 1a, 1b, 1c 2d, 2e, 2f, 3a, 3b, 4b | | 1a, 1b. 2a, 2b, 2c, 2d, 2e, 2f, 2g 3a, 3d 4b | 1a, 1b. 2b, 2c, 2d, 2e, 2f, 3a, 3b 4a, 4b | 1a, 1b, 1c 2b, 2c, 2d, 2e, 2f, 2g 3a 3b 3d |
| | <i>Significant person</i> | | Louis Pasteur | | Charles Macintosh | Rachel Carson | Eden Project |
| Year 3 | Theme | Stone Age to Iron Age | Can I Run Faster Than Usain Bolt? Happy, Healthy Bodies | Forces and Magnets Light | Rocks and Soils Year 3 Production | Life of Plants Romans vs Britain | Blue Planet |
| | <i>Focus- skills/knowledge</i> | | <p>Can they 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>Can they identify that humans and some other animals have skeletons and muscles for support, protection and movement?</p> | <p>Can they recognise that they need light in order to see things and that dark is the absence of light?</p> <p>Can they notice that light is reflected from surfaces</p> <p>Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes?</p> <p>Can they recognise that shadows are formed when the</p> | <p>Can they compare and group together different kinds of rocks on the basis of their appearance and simple physical properties? Can they describe in simple terms how fossils are formed when things that have lived are trapped within rock?</p> <p>Can they recognise that soils are made from rocks and organic matter?</p> | <p>Can they identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers? Can they 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?</p> <p>Can they investigate the way in which water is transported within plants?</p> <p>Can they explore the part that flowers play in the life cycle of flowering plants, including pollination,</p> | |

light from a light source is blocked by an opaque object?

Can they find patterns in the way that the size of shadows change?

Can they compare how materials move on different surfaces?

Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance?

Can they observe how magnets attract or repel each other and attract some materials and not others?

Can they compare and group together a variety of everyday materials on the basis of whether

seed formation and seed dispersal?

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| | | | | <p><i>they are attracted to a magnet, and identify some magnetic materials?</i></p> <p><i>Can they describe magnets as having two poles?</i></p> <p><i>Can they predict whether two magnets will attract or repel each other, depending on which poles are facing?</i></p> | | | |
| | <i>Working Scientifically</i> | | <p><i>1a, 1b, 2a, 2b, 2c, 2d, 2e, 2f, 2h 3a, 3b, 3c</i></p> | <p><i>1a, 1b. 2a, 2b, 2c, 2d, 2e, 2f, 2g, 2h. 3a, 3b, 3c.</i></p> | <p><i>1a 1b 1c 2a 2b 2c 2d 2e 2f 2g 2h 3a 3b 3c 4a 4c</i></p> | <p><i>1a 1b 1c 2a 2b 2c 2d 2e 2f 2g 2h 3a 4a, 4b</i></p> | |
| | <i>Significant person</i> | | <p><i>Marie Curie</i></p> | <p><i>Michael Faraday</i></p> | <p><i>Inge Lehmann</i></p> | <p><i>George Washington Carver</i></p> | |
| Year 4 | Theme | Were the Dark Ages really dark? | Switch it Off Sound and Electricity | The Amazing Amazon | Beautiful Bromsgrove/ animals and habitats | The Good, The Bad, the Ugly States of Matter | Where does my Food go? |
| | <i>Focus- skills/knowledge</i> | | <p><i>Can they identify how sounds are made, associating some of them with something vibrating?</i></p> <p><i>Can they recognise that vibrations from sounds travel</i></p> | | <p><i>Can they recognise that living things can be grouped in a variety of ways?</i></p> <p><i>Can they explore and use classification keys to help</i></p> | <p><i>Can they compare and group materials together, according to whether they are solids, liquids or gases?</i></p> <p><i>Can they observe that some materials change</i></p> | <p><i>Can they describe the simple functions of the basic parts of the digestive system in humans?</i></p> <p><i>Can they identify the</i></p> |

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| | | | <p><i>through a medium to the ear?</i></p> <p><i>Can they find patterns between the pitch of a sound and features of the object that produced it?</i></p> <p><i>Can they find patterns between the volume of a sound and the strength of the vibrations that produced it?</i></p> <p><i>Can they recognise that sounds get fainter as the distance from the sound source increases?</i></p> <p><i>Can they identify common appliances that run on electricity? Can they construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers?</i></p> <p><i>Can they 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?</i></p> <p><i>Can they recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit?</i></p> <p><i>Can they recognise some common conductors and insulators, and associate metals with being good conductors</i></p> | | <p><i>group, identify and name a variety of living things in their local and wider environment?</i></p> <p><i>Can they recognise that environments can change and that this can sometimes pose dangers to living things?</i></p> | <p><i>state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)?</i></p> <p><i>Can they identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature?</i></p> | <p><i>different types of teeth in humans and their simple functions?</i></p> <p><i>Can they construct and interpret a variety of food chains, identifying producers, predators and prey?</i></p> |
| | <p><i>Working Scientifically</i></p> | | <p>1a, 1b, 2a, 2b, 2c, 2d, 2e, 2g, 2i, 2j 3a, 3b, 3c. 4a.</p> | | <p>1a 2a, 2b, 2c, 2d, 2e, 2g, 2h, 2i</p> | <p>1a, 1b, 2a, 2b, 2c, 2d, 2e, 2g, 2h, 2i, 3a, 3b, 3c 4a, 4b, 4c,</p> | <p>1a, 2a, 2b, 2c, 2d, 2e, 2g, 2j, 3a, 3b, 3c 4a,</p> |

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| | <i>Significant person</i> | | Alexander Graham Bell Thomas Edison | | Charles Darwin Gerald Durrell | Lord Kelvin | Washington Sheffield |
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| Working Scientifically | EYFS | Year 1 | Year 2 | Year 3 | Year 4 |
|--|--|--|--|--|---|
| 1. Questioning and Enquiring | <i>Show curiosity about objects, events and people. Playing & Exploring Questions why things happen Speaking: 30-50 months Engage in open-ended activity Playing & Exploring Take a risk, engage in new experiences and learn by trial and error Playing & Exploring Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Develop ideas of grouping, sequences, cause and effect Creating & Thinking Critically Know about similarities and differences in relation to places, objects, materials and living things ELG: The World Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world The World: 30-50 months Closely observes what animals, people and vehicles do The World 8-20 months Use senses to explore the world around them Playing & Exploring Make links and notice patterns in their experience Creating & Thinking Critically Choose the resources they need for</i> | <ul style="list-style-type: none"> a) Ask simple questions about the world around us . b) Begin to recognise that questions can be answered in different ways . c) Use simple secondary resources to find answers. | <ul style="list-style-type: none"> a) Ask questions about the world around us. b) Recognise that they can be answered in different ways(changes over time, noticing patterns, grouping and classifying, comparative and fair tests, research). c) Find information using computers and books. | <ul style="list-style-type: none"> a) Ask some relevant questions and use different types of scientific enquiries to answer them. b) Begin to make decisions about which types of enquiry will be the best way of answering questions (observing over time, noticing patterns, grouping and classifying, fair tests, secondary sources). c) Begin to decide when and how to use secondary sources and carry out own research. | <ul style="list-style-type: none"> a) Ask increasingly relevant scientific questions and use different types of scientific enquiries to answer them. b) Make some decisions about which types of enquiry will be the best way of answering questions including observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative and fair tests, finding things out. c) They can decide when and how research will help and carry out research on their own. |
| 2. Investigating, recording and reporting findings, drawing conclusions | | <ul style="list-style-type: none"> a) Carry out simple tests with support. b) Begin to say what might happen in an investigation. c) Begin to say what happened in an investigation . d) Gather and record data with adult support e) Begin to record simple data. f) Begin to talk about what they have found out and how they found it out. g) Begin to say what happened in their investigation and whether they were surprised at the results or not. | <ul style="list-style-type: none"> a) Carry out simple tests Begin to make predictions and give a reason. b) Say what happened in an investigation. c) Gather and record data Record and communicate findings in a range of ways-use simple tables. Talk about what they have found out and how they found it out. d) To say what happened in my investigation and whether I was surprised at the results or not. e) To begin to say what they would change in their investigation. | <ul style="list-style-type: none"> a) Set up some simple, practical enquiries, comparative and fair tests. b) Begin to recognise when a fair test is necessary and help decide how to set it up. c) Make predictions with reasons. d) Gather, record and begin to classify data in a variety of ways. e) Begin to record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. f) Begin to use results to draw simple conclusions, make predictions, suggest improvements and raise further questions. g) With help, I can look for changes, patterns, similarities and differences in data. h) Begin to suggest how I could improve an investigation | <ul style="list-style-type: none"> a) Set up practical enquiries, comparative and fair tests. b) Recognise when a fair test is necessary and decide how to set it up. c) Make predictions drawing on previous experience and knowledge. d) Gather, record and classify data in a variety of ways. e) Record findings using simple scientific language, drawings, labelled diagrams, bar charts, keys and tables. f) Record on findings using oral and written explanations, displays or presentations. g) Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions. h) Can spot patterns in results and look for changes, similarities and differences. |

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| | <p>their chosen activities ELG: Self Confidence & Self Awareness Handle equipment and tools effectively ELG: Moving & Handling Create simple representations of events, people and objects Being Imaginative: 40-60+ months Answer how and why questions about their experiences ELG: Understanding Make observations of animals and plants and explain why some things occur, and talk about changes ELG: The World Develop their own narratives and explanations by connecting ideas or events ELG: Speaking Builds up vocabulary that reflects the breadth of their experience Understanding: 30-50 months</p> | | | | <p>i) Say what they have found out linking cause and effect. j) Suggest improvements to an investigation.</p> |
| <p>3. Observing, measuring and pattern seeking</p> | | <p>a) Talk about what that can see. b) Use simple equipment with support.</p> | <p>a) Observe closely using simple equipment. b) To observe changes over time with guidance and begin to notice patterns and relationships. c) To know how to use simple equipment safely. d) Use simple measurements and equipment (hand lenses, egg timers etc.) Begin to progress from non standard units to mm cm ml l etc.</p> | <p>a) Begin to make systematic and careful observations and where appropriate, take accurate measurements using standard units using a range if equipment- e.g. thermometers, data loggers. b) Learn to use some new equipment- e.g. data loggers. c) Begin to measure accurately using standard units including time in mins and secs</p> | <p>a) Make systematic and careful observations and where appropriate, take accurate measurements using standard units using a range if equipment- e.g. thermometers, data loggers. b) Help make decisions about what observations to make, how long to make them for and the type of equipment that might be used. c) Can choose from a selection of equipment.</p> |
| <p>4. Identifying, grouping and classifying</p> | | <p>a) Identify and classify with some support. b) Begin to observe and identify, compare and describe. c) With support, decide how to group objects and materials.</p> | <p>a) Identify and classify. Decide how to sort and group objects, materials and living things.</p> | <p>a) Begin to identify differences, similarities, or changes related to simple scientific ideas or processes. b) Begin to talk about criteria for grouping, sorting and classifying. c) Begin to compare and group according to behaviour or properties.</p> | <p>a) Identify similarities, differences or changes related to simple scientific ideas or processes. b) Talk about criteria for grouping, sorting and classifying and use simple keys. c) Compare and group according to behaviour or properties.</p> |

Science Skills Progression

| Working Scientifically | EYFS | Year 1 | Year 2 | Year 3 | Year 4 |
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| 1. Questioning and Enquiring | <p>Show curiosity about objects, events and people.</p> <p>Playing & Exploring Questions why things happen Speaking: 30-50 months Engage in open-ended activity</p> <p>Playing & Exploring Take a risk, engage in new experiences and learn by trial and error</p> <p>Playing & Exploring Find ways to solve problems / find new ways to do things / test their ideas</p> <p>Creating & Thinking Critically Develop ideas of grouping, sequences, cause and effect</p> | <p>d) Ask simple questions about the world around us .</p> <p>e) Begin to recognise that questions can be answered in different ways .</p> <p>f) Use simple secondary resources to find answers.</p> | <p>d) Ask questions about the world around us.</p> <p>e) Recognise that they can be answered in different ways(changes over time, noticing patterns, grouping and classifying, comparative and fair tests, research).</p> <p>f) Find information using computers and books.</p> | <p>d) Ask some relevant questions and use different types of scientific enquiries to answer them.</p> <p>e) Begin to make decisions about which types of enquiry will be the best way of answering questions (observing over time, noticing patterns, grouping and classifying, fair tests, secondary sources).</p> <p>f) Begin to decide when and how to use secondary sources and carry out own research.</p> | <p>d) Ask increasingly relevant scientific questions and use different types of scientific enquiries to answer them.</p> <p>e) Make some decisions about which types of enquiry will be the best way of answering questions including observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative and fair tests, finding things out.</p> <p>f) They can decide when and how research will help and carry out research on their own.</p> |
| 2. Investigating, recording and reporting findings, drawing conclusions | <p>Know about similarities and differences in relation to places, objects, materials and living things ELG: The World Comments and asks questions about aspects of their familiar world such as the place where they</p> | <p>h) Carry out simple tests with support.</p> <p>i) Begin to say what might happen in an investigation.</p> <p>j) Begin to say what happened in an investigation .</p> <p>k) Gather and record data with adult support</p> <p>l) Begin to record simple data.</p> | <p>f) Carry out simple tests</p> <p>g) Begin to make predictions and give a reason.</p> <p>h) Say what happened in an investigation.</p> <p>i) Gather and record data</p> <p>j) Record and communicate findings in a range of ways- use simple tables. Talk about what they have found</p> | <p>i) Set up some simple, practical enquiries, comparative and fair tests.</p> <p>j) Begin to recognise when a fair test is necessary and help decide how to set it up.</p> <p>k) Make predictions with reasons.</p> <p>l) Gather, record and begin to classify data in a variety of ways.</p> | <p>k) Set up practical enquiries, comparative and fair tests.</p> <p>l) Recognise when a fair test is necessary and decide how to set it up.</p> <p>m) Make predictions drawing on previous experience and knowledge.</p> <p>n) Gather, record and classify data in a variety of ways.</p> <p>o) Record findings using simple scientific language, drawings, labelled</p> |

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| | <p>live or the natural world The World: 30-50 months Closely observes what animals, people and vehicles do The World 8-20 months Use senses to explore the world around them Playing & Exploring Make links and notice patterns in their experience Creating & Thinking Critically Choose the resources they need for their chosen activities ELG: Self Confidence & Self Awareness Handle equipment and tools effectively ELG: Moving & Handling Create simple representations of events, people and objects Being Imaginative: 40-60+ months Answer how and why questions about their experiences ELG: Understanding Make observations of animals and plants and explain why some things occur, and talk about changes ELG: The World Develop their own narratives and explanations by</p> | <p>m) Begin to talk about what they have found out and how they found it out. n) Begin to say what happened in their investigation and whether they were surprised at the results or not.</p> | <p>out and how they found it out. k) To say what happened in my investigation and whether I was surprised at the results or not. l) To begin to say what they would change in their investigation.</p> | <p>m) Begin to record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. n) Begin to use results to draw simple conclusions, make predictions, suggest improvements and raise further questions. o) With help, I can look for changes, patterns, similarities and differences in data. p) Begin to suggest how I could improve an investigation</p> | <p>diagrams, bar charts, keys and tables. p) Record on findings using oral and written explanations, displays or presentations. q) Use results to draw simple conclusions, make predictions, suggest improvements and raise further questions. r) Can spot patterns in results and look for changes, similarities and differences. s) Say what they have found out linking cause and effect. t) Suggest improvements to an investigation.</p> |
| <p>3. Observing, measuring and pattern seeking</p> | <p>Moving & Handling Create simple representations of events, people and objects Being Imaginative: 40-60+ months Answer how and why questions about their experiences ELG: Understanding Make observations of animals and plants and explain why some things occur, and talk about changes ELG: The World Develop their own narratives and explanations by</p> | <p>c) Talk about what that can see. d) Use simple equipment with support.</p> | <p>e) Observe closely using simple equipment. f) To observe changes over time with guidance and begin to notice patterns and relationships. g) To know how to use simple equipment safely. h) Use simple measurements and equipment (hand lenses, egg timers etc.) Begin to progress from non standard units to mm cm ml l etc.</p> | <p>d) Begin to make systematic and careful observations and where appropriate, take accurate measurements using standard units using a range if equipment- e.g. thermometers, data loggers. e) Learn to use some new equipment- e.g. data loggers. f) Begin to measure accurately using standard units including time in mins and secs</p> | <p>d) Make systematic and careful observations and where appropriate, take accurate measurements using standard units using a range if equipment- e.g. thermometers, data loggers. e) Help make decisions about what observations to make, how long to make them for and the type of equipment that might be used. f) Can choose from a selection of equipment.</p> |

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| 4. Identifying, grouping and classifying | <i>connecting ideas or events ELG: Speaking Builds up vocabulary that reflects the breadth of their experience Understanding: 30-50 months</i> | <i>d) Identify and classify with some support. e) Begin to observe and identify, compare and describe. f) With support, decide how to group objects and materials.</i> | <i>b) Identify and classify. c) Decide how to sort and group objects, materials and living things.</i> | <i>d) Begin to identify differences, similarities, or changes related to simple scientific ideas or processes. e) Begin to talk about criteria for grouping, sorting and classifying. f) Begin to compare and group according to behaviour or properties.</i> | <i>d) Identify similarities, differences or changes related to simple scientific ideas or processes. e) Talk about criteria for grouping, sorting and classifying and use simple keys. f) Compare and group according to behaviour or properties.</i> |
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| | EYFS | Year 1 | Year 2 | Year 3 | Year 4 |
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| Plants | <i>Developing an understanding of growth, decay and changes over time. Shows care and concern for living things and the environment.</i> | <i>Can they name different plants? Can they label the parts of a flower and tree?</i> | <i>Can they observe and describe how seeds and bulbs grow into mature plants ? Can they find out and describe how plants need water, light and a suitable temperature to grow?</i> | <i>Can they identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers? Can they 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? Can they investigate the way in which water is transported within plants? Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal?</i> | |
| Animals (including Humans) | <i>Shows a desire to help with dressing/undressing and hygiene routines. Develops own likes and dislikes in food and drink.</i> | <i>Can they name different animals including fish, amphibians, reptiles, birds and mammals? Can they say which animals</i> | <i>Can they notice that animals have offspring which grow into adults? Can they find out about and describe the basic needs of</i> | <i>Can they identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their</i> | <i>Can they describe the simple functions of the basic parts of the digestive system in humans? Can they identify the different types of teeth in humans and their</i> |

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| | <p>Willing to try new food textures and tastes. Observes the effects of activity on their bodies. Understands that equipment and tools have to be used safely. Eats a healthy range of foodstuffs and understands need for variety in food. Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe. They manage their own basic hygiene and personal needs successfully, including dressing and going to the toilet independently.</p> | <p>are carnivores, herbivores or omnivores? Can they describe and compare different animals (fish, amphibians, reptiles, birds and mammals)? Can they label the human body? Can they say which senses go with which body part?</p> | <p>animals for survival? Can they explain why it is important to stay healthy?</p> | <p>own food; they get nutrition from what they eat? Can they identify that humans and some other animals have skeletons and muscles for support, protection and movement?</p> | <p>simple functions? Can they construct and interpret a variety of food chains, identifying producers, predators and prey?</p> |
| Everyday Materials | <p>Explores objects by linking together different approaches: shaking, hitting, looking, feeling, tasting, mouthing, pulling, turning and poking. Remembers where objects belong. Matches parts of objects that fit together, e.g. puts lid on teapot. Talks about why things happen and how things work. Children know about similarities and differences in relation to places, objects, materials and living things.</p> | <p>Can they distinguish between an object and the material from which it is made? Can they identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock? Can they describe the properties of everyday materials? Can they compare and group materials based on their physical properties?</p> | <p>Can they compare which materials would be best suited for particular uses? Can they find out how solid objects can be changed by squashing, bending, twisting and stretching?</p> | | <p>Can they compare and group materials together, according to whether they are solids, liquids or gases? Can they 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)? Can they identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature?</p> |
| Living Things and their habitats | <p>Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world. Can talk about some of the things they have observed such</p> | | <p>Can they explore and compare the differences between things that are living, dead, and things that have never been alive? Can they identify that most</p> | | <p>Can they recognise that living things can be grouped in a variety of ways? Can they explore and use classification keys to help group,</p> |

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| | <p>as plants, animals, natural and found objects. materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p> | | <p>living things live in habitats to which they are suited? Can they describe how different habitats provide for the basic needs of different kinds of animals and plants? Can they identify and name a variety of plants and animals in their habitats, including microhabitats? Can they describe how animals obtain their food from plants and other animals? Can they use a simple food chain and identify and name different sources of food?</p> | | <p>identify and name a variety of living things in their local and wider environment? Can they recognise that environments can change and that this can sometimes pose dangers to living things?</p> |
| Seasonal Changes | | <p>Can they observe changes across the four seasons? Can they observe and describe seasonal weather and how days get longer and shorter?</p> | | | |
| Rocks | | | | <p>Can they compare and group together different kinds of rocks on the basis of their appearance and simple physical properties? Can they describe in simple terms how fossils are formed when things that have lived are trapped within rock? Can they recognise that soils are made from rocks and organic matter?</p> | |

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| Light | | | | <p><i>Can they recognise that they need light in order to see things and that dark is the absence of light?</i></p> <p><i>Can they notice that light is reflected from surfaces</i></p> <p><i>Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes?</i></p> <p><i>Can they recognise that shadows are formed when the light from a light source is blocked by an opaque object?</i></p> <p><i>Can they find patterns in the way that the size of shadows change?</i></p> | |
| Forces and Magnets | | | | <p><i>Can they compare how materials move on different surfaces?</i></p> <p><i>Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance?</i></p> <p><i>Can they observe how magnets attract or repel each other and attract some materials and not others?</i></p> <p><i>Can they compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials?</i></p> <p><i>Can they describe magnets as having two poles?</i></p> <p><i>Can they predict whether two magnets will attract or repel each other, depending on which poles are facing?</i></p> | |

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| <i>Sound</i> | | | | | <p><i>Can they identify how sounds are made, associating some of them with something vibrating?</i></p> <p><i>Can they recognise that vibrations from sounds travel through a medium to the ear?</i></p> <p><i>Can they find patterns between the pitch of a sound and features of the object that produced it?</i></p> <p><i>Can they find patterns between the volume of a sound and the strength of the vibrations that produced it?</i></p> <p><i>Can they recognise that sounds get fainter as the distance from the sound source increases?</i></p> |
| <i>Electricity</i> | | | | | <p><i>Can they identify common appliances that run on electricity?</i></p> <p><i>Can they construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers?</i></p> <p><i>Can they 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?</i></p> <p><i>Can they recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit?</i></p> |

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| | | | | | <i>Can they recognise some common conductors and insulators, and associate metals with being good conductors?</i> |
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Science

Our Science curriculum provides the foundation for the understanding of the physical and biological aspects of the world. We use it as a bridge between many subjects, so that it contributes to a broad and balanced, rigorous, relevant and enjoyable curriculum.



We aim to encourage all of our children to see themselves as scientists, by providing them with opportunities to work scientifically and to develop a sense of excitement and curiosity about natural phenomena.



During lessons they will carry out a range of scientific enquiries that will help them to answer the scientific questions they have about the world around them. In doing this, they will develop their skills of prediction, observing over time, pattern seeking, identifying, classifying, grouping, fair testing and drawing inference from evidence.



The Programmes of Study laid down in the National Curriculum, along with close liaison with schools in our pyramid and ongoing assessment, allow us to maintain continuity and progression across phases.