

**LEARNING
WITHOUT LIMITS**



**Successful learners
Confident individuals
Responsible Citizens**

Ladybrook Primary School

Science

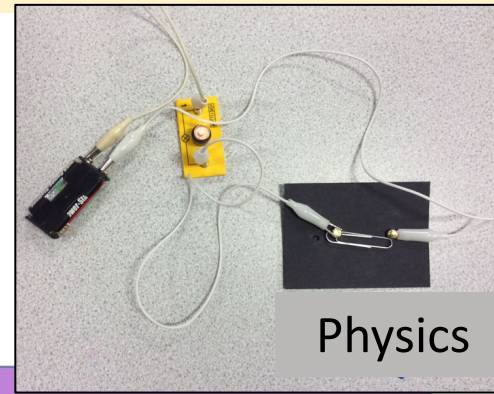


Our school intention for science

Ambitious Curriculum

'The important thing is to never stop questioning.'

Albert Einstein



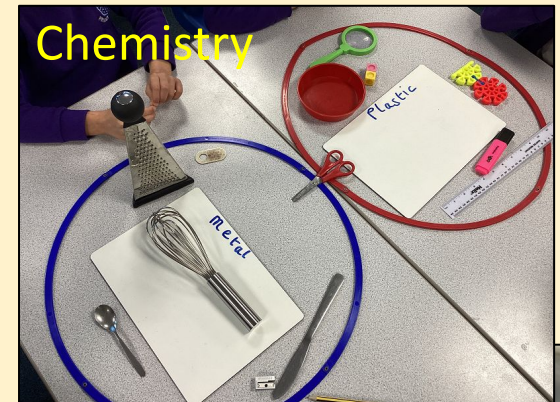
Physics

Our children will...

- Understand the world around them through the different and connected disciplines of biology, chemistry and physics;
- Develop enquiring minds, enabling them to ask scientific questions that can be investigated through different kinds of scientific enquiry;
- Be equipped with the scientific knowledge and skills required to understand the uses and implications of science today and for the future;
- Meet and learn about the jobs of scientists – including past pupils.



Biology



Chemistry





What policy decisions have we made about Science?

- **Science is recognised as a discrete discipline.** Relevant links are made to other areas of the curriculum. E.g. Tally Charts - Maths Water Cycle - Geography
- **Teaching and Learning** – The working scientifically skills are taught alongside the content. Enquiry questions are explicit and icons are used.
- **Vocabulary is a priority within our curriculum design** – it must be taught explicitly and assessment is ongoing. This needs revisiting as vocabulary lists are introduced.
- **Investment in high quality resourcing throughout** – large range of resources available.



What does our Progression for Science look like? Why?

Our starting point in Nursery and Reception is to introduce relevant EYFS Framework objectives from Communication & Language, PSED and Understanding the World.



| Science Skills Progression | | |
|----------------------------|--|---|
| | Nursery | Reception |
| Communication & language | Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" | Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts. ELG: Make comments about what they have heard and ask questions to clarify their understanding |
| PSED | Make healthy choices about food, drink, activity and toothbrushing. | Know and talk about the different factors that support their overall health and wellbeing ELG: Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. |
| Understanding the world | Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Begin to make sense of their own life-story and family's history. Explore how things work. 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. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice. | Explore the natural world around them. Describe what they see, hear and feel while they are outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. ELG: Explore the natural world around them, making observations and drawing pictures of animals and plants. ELG: Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. ELG: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. |



What does our Progression for Science look like? Why?

Progression map – Working Scientifically

Our progression maps for Science have been designed by the team to ensure that steps in learning between year groups for all aspects of the subject are incremental to support sound understanding and long term recall.

We took the decision to provide working scientifically objectives for each year group.



| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|--|---|---|
| 1 Asking Questions: I can explore the world around me and begin to raise my own simple questions | 11 Asking Questions: I can explore the world around me and raise my own simple questions | 21 Asking Questions: I can raise my own questions about the world around me | 35 Asking Questions: I can raise my own relevant questions about the world around me | 50 Asking Questions: I can use my science experiences to explore ideas and raise different kinds of questions | 64 Asking Questions: I can use my science experiences to raise a hypothesis to formulate a question that can be tested |
| 2 I have been introduced to different ways in which I might answer scientific questions | 12 I have been introduced to different ways in which I might answer scientific questions | 22 I can start to make my own decisions about the most appropriate type of scientific enquiry I might use to answer questions | 36 I can start to make my own decisions about the most appropriate type of scientific enquiry I might use to answer questions | 51 With support I can select and plan the most appropriate type of scientific enquiry to use to answer scientific questions | 65 With support I can select and plan the most appropriate type of scientific enquiry to use to answer scientific questions |
| 3 Comparative & Fair tests: With support I can carry out simple tests e.g. Which material is best for the 3 little pigs house? What floats/sinks? | 13 Comparative & Fair tests: I can carry out simple tests and with help I can say if my test is fair e.g. when using different materials to melt ice, ensure the same size container is used. | 23 Comparative & Fair tests: I can help to plan and set up comparative and fair tests and say what I will change and what I will keep the same e.g. Which ramp surface has the most friction? | 37 Comparative & Fair tests: I can help to plan and set up comparative and fair tests recognising the variable that I will change and the variables I will keep the same e.g. Which material is the best at soundproofing? | 52 Comparative & Fair tests: I can recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why e.g. Which size/type of material makes the best parachute? | 66 Comparative & Fair tests: I know how to set up comparative and fair tests and explain which are the independent variables and dependent variables e.g. How can we create the brightest circuit possible? |



What essential knowledge do we want our children to acquire?

Progression map – Content

This has been developed from the National Curriculum Programmes of Study. We have ensured all areas are covered in the correct Key Stage but have moved some topics between year groups to fit with the rest of the Ladybrook Curriculum.

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---------------------------------|---|--|--|---|--------|---|
| Biology | I can identify, draw and label the basic parts of the human body and say which part of the body is associated with each sense. | I can describe and compare the structure of a variety of common animals. | I can identify that humans and some other animals have skeletons and muscles for support, protection and movement. | I can construct and interpret a variety of food chains, identifying producers, predators and prey. | | I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. |
| Animals including humans | I can describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene. I can find out about and describe the basic needs of animals including humans for survival I notice that animals, including humans have offspring which grow into adults. | I can identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals. | I can 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. | | | I can describe the ways in which nutrients and water are transported within animals, including humans. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. I can describe changes as humans develop to old age. I can identify that humans and some other animals have skeletons and muscles for support and protection. I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. |
| | <u>Human and animal body parts:</u> e.g. body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet <u>The five senses:</u> senses, sight, smell, taste, touch, hearing <u>Human senses:</u> sight, pupil, eyelash, eyelid, iris <u>Human senses:</u> hearing, outer ear, middle ear, inner ear, ear drum <u>Human senses:</u> Touch- skin, hand, palm, fingers, thumb, knuckles, fingertips | <u>Names of animal groups:</u> fish, amphibians, reptiles, birds, mammals, vertebrate, invertebrate <u>Characteristics:</u> characteristics, e.g. live young, gills, provide milk, breathes air, moist skin, webbed feet, ear holes, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, <u>names of animals experienced first-hand from each vertebrate group</u> | <u>Food groups and nutrients:</u> fibre, fats (saturated and unsaturated), vitamins, minerals, carbohydrates, sugars, protein, nutrition, nutrients <u>Skeletons and muscles:</u> skeleton, protection, support, movement, organs, bone, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton, muscles, tendons, joints, biceps, triceps, contract, relax, voluntary muscles, involuntary muscles <u>Names of human bones:</u> skull, spine, ribcage, pelvis, cartilage, backbone, clavicle, scapula, humerus, ulna, | <u>Food chains and animal diets:</u> decomposer, food web, producer, consumer, prey, predator, habitat, herbivore, carnivore, omnivore | | <u>Life Cycles:</u> foetus, baby, toddler, child, adolescent, adult and elderly <u>Circulatory systems</u> circulation, heart, pulse, heartbeat, heart rate, lungs, breathing, blood vessels, blood, pump, transported, oxygenated blood, deoxygenated blood, oxygen, carbon dioxide, blood vessels (arteries, veins, capillaries), chambers, plasma, platelets, white blood cells, red blood cells <u>Other</u> nutrient transportation, waste products |



What does our Progression of Science Vocabulary look like? Why?

We have added the vocabulary that we want the children to be exposed to during each topic, to the content progression map. The vocabulary in bold is the vocabulary we expect the children to know and be able to use in a scientific context.

Vocabulary is introduced, modelled and repeated through planned learning opportunities to embed its use.

Next steps: To add working scientifically vocabulary to the working scientifically progression document and medium term planning.

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---------------------------------|---|--|--|---|--------|---|
| Biology | I can identify, draw and label the basic parts of the human body and say which part of the body is associated with each sense. | I can describe and compare the structure of a variety of common animals. | I can identify that humans and some other animals have skeletons and muscles for support, protection and movement. | I can construct and interpret a variety of food chains, identifying producers, predators and prey. | | I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. |
| Animals including humans | I can describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene. I can find out about and describe the basic needs of animals including humans for survival I notice that animals, including humans have offspring which grow into adults. | I can identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals. | I can 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. | | | I can describe the ways in which nutrients and water are transported within animals, including humans. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. I can describe changes as humans develop to old age. I can identify that humans and some other animals have skeletons and muscles for support and protection. I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. |
| | <u>Human and animal body parts:</u> e.g. body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet <u>The five senses:</u> senses, sight, smell, taste, touch, hearing <u>Human senses:</u> sight, pupil, eyelash, eyelid, iris <u>Human senses:</u> hearing, outer ear, middle ear, inner ear, ear drum <u>Human senses:</u> Touch- skin, hand, palm, fingers, thumb, knuckles, fingertips | <u>Names of animal groups:</u> fish, amphibians, reptiles, birds, mammals, vertebrate, invertebrate <u>Characteristics:</u> characteristics, e.g. live young, gills, provide milk, breathes air, moist skin, webbed feet, ear holes, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group | <u>Food groups and nutrients:</u> fibre, fats (saturated and unsaturated), vitamins, minerals, carbohydrates, sugars, protein, nutrition, nutrients <u>Skeletons and muscles:</u> skeleton, protection, support, movement, organs, bone, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton, muscles, tendons, joints, biceps, triceps, contract, relax, voluntary muscles, involuntary muscles <u>Names of human bones:</u> skull, spine, ribcage, pelvis, cartilage, backbone, clavicle, scapula, humerus, ulna, | <u>Food chains and animal diets:</u> decomposer, food web, producer, consumer, prey, predator, habitat, herbivore, carnivore, omnivore | | <u>Life Cycles:</u> foetus, baby, toddler, child, adolescent, adult and elderly <u>Circulatory systems</u> circulation, heart, pulse, heartbeat, heart rate, lungs, breathing, blood vessels, blood, pump, transported, oxygenated blood, deoxygenated blood, oxygen, carbon dioxide, blood vessels (arteries, veins, capillaries), chambers, plasma, platelets, white blood cells, red blood cells <u>Other</u> nutrient transportation, waste products |



How have we sequenced learning from EYFS to Year 6? Why?

Our **clear sequence** for learning begins in Nursery and Reception where we have designed a rich early years' curriculum inspired by high quality picture books.

Broad themes for a half term / term are shared between the 2 classes.

Vocabulary is introduced, modelled and repeated through planned learning opportunities to embed its use

| EYFS | | | | | | |
|----------------------|--|--|--|--|---|---|
| | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Name | Marvellous Me | N - Once upon a time R - Let's Celebrate | Make it | Make it | Growing things | Growing things |
| Main stories Cycle 1 | 3 little Pigs (T4W) N - You choose book | N - Princess /stick stories R - Celebration/stick stories | Gingerbread man (T4W) N - Harry's home R - Martha Maps it out/The way back home (houses and journeys) | Harry and his bucket full of dinosaurs 1 week transport | Supertato/Superworm (N.I) 1 week - People who help us and Dental Nurse visit | What the ladybird heard (N.I) 1 st week - All around the world |
| Main stories Cycle 2 | Goldilocks (T4W) N - You choose book | N - Princess /stick stories R - Celebration/stick stories | The Runaway Pancake N - Harry's home R - Martha Maps it out/The way back home (buildings and journeys) | Naughty Bus | Oliver's Vegetables | The Hungry Caterpillar/ farm stories 1 st week - All around the world |
| Science | Use all their senses in hands-on exploration of natural materials. (N) vocab - <ul style="list-style-type: none"> see hear feel smell taste | Explore collections of materials with similar and/or different properties. (N) vocab - <ul style="list-style-type: none"> same different | Talk about what they see, using a wide vocabulary. (N) | Explore how things work. (N) Talk about the | Plant seeds and care for growing plants. (N) vocab - <ul style="list-style-type: none"> seed | Understand the key features of the life cycle of a plant and an animal. |

| EYFS | | | | | | |
|------|---|--|---|--|--|--|
| | Describe what they see, hear and feel whilst outside. (Rec) | Explore the natural world around them. (Rec) | Understand the effect of changing seasons on the natural world around them. (Rec) vocab - <ul style="list-style-type: none"> summer autumn winter spring change weather | Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. (ELG) | Explore the natural world around them, making observations and drawing pictures of animals and plants. (ELG) | Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. (ELG) |



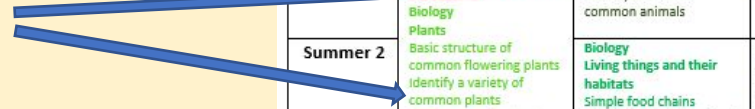
How have we sequenced learning from EYFS to Year 6? Why?

Our progression maps for Science have been designed by the team to ensure that steps in learning between year groups for all aspects of the subject are incremental to support sound understanding and long term recall.

This curriculum map is colour coded to show the teaching of biology, physics and chemistry and where these repeat throughout the year groups.

Curriculum Map - Science

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|-----------------|---|---|---|--|---|---|
| Autumn 1 | Physics Seasonal changes Weather associated with seasons Observing changes across the seasons Biology Animals including humans Basic parts of the human body | | Chemistry Rocks Compare and group rocks Fossil formation Soils | Physics Sound Objects vibrate and travel through medium to ear Patterns in pitch of sound Patterns between volume and vibrations | Chemistry Materials Comparing and grouping Dissolving Separating mixtures Reversible and irreversible changes | |
| Autumn 2 | | | Physics Light Shadow formation and patterns in size Reflection of light Dangers of the sun Darkness | Physics Electricity Common appliances that use electricity Simple circuits including those with switches Conductors and insulators | | Physics Light Light travels in straight lines Shape of shadows How we see things |
| Spring 1 | Physics Seasonal changes Weather associated with seasons Observing changes across the seasons | Chemistry Materials Everyday materials and their properties Comparing and grouping materials Suitability for purpose | Physics Forces & Magnets Compare how things move on different surfaces Magnets repel and attract Grouping objects based on magnetic attraction Magnets have 2 poles | Chemistry Materials The 3 states of matter, solids, liquids and gases Changing state | Physics Forces & Magnets Levers, pulleys and gears Air resistance and friction Gravity | Physics Electricity Electrical symbols in diagrams Comparing how components function How voltage affects components |
| Spring 2 | | | Chemistry Materials Evaporation and condensation and their role in the water cycle | | | Biology Living things and their habitats Classification Life processes in plants and animals Differences in life cycles |
| Summer 1 | Physics Seasonal changes Weather associated with seasons Observing changes across the seasons Biology Plants Basic structure of common flowering plants Identify a variety of common plants Basic needs of a plant Observe how seeds grow into plants Biology Animals including humans Importance of exercise, correct food and hygiene Basic needs of animals That offspring grow into adults | Biology Animals including humans Compare common animals Identify and name common animals | Biology Plants Parts of a plant What plants need to grow How water is transported Life cycle of a plant | Biology Living things and their habitats Using classification keys Grouping living things | Physics Earth and Space Day and night Movement of moon around Earth Movement of Earth and other planets around sun | Biology Animals, including humans Circulatory system Digestive system and teeth Diet, exercise and drugs Changes to old age |
| Summer 2 | | Biology Living things and their habitats Simple food chains Identify plants and animal in their habitats and the suitability of the habitat | Biology Animals including humans Humans and animals have skeletons and muscles Animals need the right type and amount of nutrition | Biology Living things and their habitats The effect of environmental change Biology Animals, including humans Food Chains | | Biology Evolution and Inheritance Suitability of environments Offspring variations Changes in living things over time |





How have we sequenced learning from EYFS to Year 6? Why?

| | |
|--------------------------|---|
| <p>The Natural World</p> | <p>Explore the natural world around them, making observations and drawing pictures of animals and plants. <i>planting seeds, drawing what we have grown, growing vegetables, eating vegetables, farm trip, ducklings</i> Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. <i>field, forest school area, summer hunt,</i> Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter <i>summer hunt, cooking, ice,</i></p> |
|--------------------------|---|

Reception



Year 2

Our **clear sequence** for learning begins in Nursery and Reception.

The concepts are repeated over time to help children build on their scientific knowledge and skills.

Our sequence of lessons in a unit of work will begin with recapping prior knowledge as a baseline for new learning. Key vocabulary is explicitly taught.

| Science | Understanding of the World | | | | |
|--|---|--|---|---|---|
| | Biology – Animals including humans & Living things and their habitats | | | | |
| <p>Content Objectives</p> | <p>I can identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals.</p> | <p>I can describe and compare the structure of a variety of common animals.</p> | <p>I can explore and compare the differences between things that are living, dead and things that have never been alive.</p> | <p>I can identify and name a variety of plants and animals in their habitats, including micro-habitats. I can identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other.</p> | <p>I can identify and name a variety of plants and animals in their habitats, including micro-habitats.</p> |
| <p>Working Scientifically Objectives</p> <p>Ongoing Asking Questions: I can explore the world around me and raise my own simple questions</p> <p>I have been introduced to different ways that I might ask scientific questions</p> | <p>Identifying and classifying: I can use simple features to compare materials and living things and, with help, decide how to sort and group them</p> <p>Recording and presenting evidence: I can record my classifications in prepared tables or sorting rings.</p> | <p>Research: I can ask people questions and use simple secondary sources to find answers e.g. researching living things</p> <p>Answering questions and concluding: With support I can suggest answers to questions and relate these to my evidence (observations, measurements or info from secondary sources)</p> | <p>Identifying and classifying: I can use simple features to compare materials and living things and, with help, decide how to sort and group them</p> <p>Recording and presenting evidence: I can record my classifications in prepared tables or sorting rings.</p> | <p>Research: I can ask people questions and use simple secondary sources to find answers e.g. researching living things</p> | <p>Pattern seeking: With guidance, I can identify simple patterns and talk about whether the pattern was what I expected e.g. do invertebrates all live in the same habitat?</p> <p>Recording and presenting evidence: I can record my measurements in a prepared table, tally chart or block graph.</p> <p>Answering questions and concluding: With support I can suggest answers to questions and relate these to my evidence (observations, measurements or info from secondary sources)</p> |



How have we sequenced learning from EYFS to Year 6? Why?



Year 4

| Science | Understanding of the World | | | | | | | | |
|-----------------------------------|--|--|--|--|---|---|---|---|--|
| | Biology – Animals/ Living things and their habitats | | | | | | | | |
| Content Objectives | I can recognise that living things can be grouped in a variety of ways. | I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment | I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment | I can recognise that environments can change and this can pose dangers to living things | I can describe how animals obtain their food from plants and other animals, using the idea of simple food chains and identify and name different sources of food. | I can describe how animals obtain their food from plants and other animals, using the idea of simple food chains and identify and name different sources of food. | I can describe how animals obtain their food from plants and other animals, using the idea of simple food chains and identify and name different sources of food. | I can describe how animals obtain their food from plants and other animals, using the idea of simple food chains and identify and name different sources of food. | I can recognise that environments can change and this can pose dangers to living things |
| Working Scientifically Objectives | Identifying and classifying: I can talk about criteria for grouping, sorting and classifying; and use Carroll and Venn diagrams and simple keys e.g. classification keys for identifying living things | Identifying and classifying: I can talk about criteria for grouping, sorting and classifying; and use Carroll and Venn diagrams and simple keys e.g. classification keys for identifying living things | Identifying and classifying: I can talk about criteria for grouping, sorting and classifying; and use Carroll and Venn diagrams and simple keys e.g. classification keys for identifying living things | Research: I can recognise when and how secondary sources might help me to answer questions that cannot be answered through practical enquiry | Research: I can recognise when and how secondary sources might help me to answer questions that cannot be answered through practical enquiry | Research: I can recognise when and how secondary sources might help me to answer questions that cannot be answered through practical enquiry | Research: I can recognise when and how secondary sources might help me to answer questions that cannot be answered through practical enquiry | Research: I can recognise when and how secondary sources might help me to answer questions that cannot be answered through practical enquiry | Research: I can recognise when and how secondary sources might help me to answer questions that cannot be answered through practical enquiry |

Year 6

| Science | Understanding of the World | | | | | | |
|-----------------------------------|--|---|---|---|--|--|--|
| | Biology – Animals including humans | | | | | | |
| Content Objectives | I can 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 | I can describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in humans. | I can describe changes as humans develop to old age. | I can name and identify the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. | I can describe the ways in which nutrients and water are transported within animals, including humans I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions | I can identify that humans and some other animals have skeletons and muscles for support and protection | NB I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function via PSHE |
| Working Scientifically Objectives | I can recognise which secondary sources will be the most useful and begin to separate opinion from fact Ongoing: I can use my science experiences to raise a hypothesis to formulate a question that can be tested With support I can select and use the most appropriate type of scientific | I can use and develop keys to identify and describe living things and materials, and identify patterns that might be found in the natural environment Observing over time: I can make my own decisions about what observations to make, what | I can recognise which secondary sources will be the most useful and begin to separate opinion from fact | I can recognise which secondary sources will be the most useful and begin to separate opinion from fact | I can recognise which secondary sources will be the most useful and begin to separate opinion from fact | Taking measurements I can choose the most appropriate equipment to make measurements with increasing precision Pattern Seeking I can look for different causal relationships in my data and identify evidence that refutes or supports my ideas | |



How have we sequenced learning? Why?



Year 2 Medium term planning for Chemistry: Materials

The planning is broken down to show the content objectives, working scientifically objectives, content objectives, content vocabulary and activities starting with an enquiry question.

| Science | | Understanding of the World | | | |
|---|---|---|--|--|---|
| | | Chemistry - Materials | | | |
| Content Objectives | <p>I can distinguish between an object and the material from which it is made.</p> <p>I can describe and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</p> | <p>I can distinguish between an object and the material from which it is made.</p> <p>I can describe the simple physical properties of a variety of everyday materials.</p> <p>I can compare and group together a variety of everyday materials based on their simple physical properties. (E.g., using texture or hard and soft)</p> | <p>I can describe the simple physical properties of a variety of everyday materials.</p> <p>I can compare and group together a variety of everyday materials based on their simple physical properties. (E.g., using texture or hard and soft)</p> | <p>I can identify and compare the suitability of a variety of everyday materials, including wood, brick, metal, plastic, glass, rock, paper and cardboard for particular uses.</p> | <p>I can find out how the shapes of solid objects made from some materials can be changed by squashing, twisting, bending and stretching.</p> |
| Working Scientifically Objectives | <p>Identifying and classifying: I can use simple features to compare materials and living things and, with help, decide how to sort and group them</p> <p>Recording and presenting evidence: I can record my classifications in prepared tables or sorting rings.</p> | <p>Identifying and classifying: I can use simple features to compare materials and living things and, with help, decide how to sort and group them</p> <p>Recording and presenting evidence: I can record my observations using photos, drawings or in writing</p> | <p>Recording and presenting evidence: I can record my observations using photos, drawings or in writing</p> <p>Answering questions and concluding: With support I can suggest answers to questions and relate these to my evidence</p> | | <p>Identifying and classifying: I can use simple features to compare materials and living things and, with help, decide how to sort and group them</p> <p>Recording and presenting evidence: I can record my classifications in prepared tables or sorting rings.</p> |
| Ongoing Asking Questions: I can explore the world around me and raise my own simple questions | | | | | |
| I have been introduced to different ways that I might ask scientific questions | | | | | |
| Vocabulary | <p>Names of materials: wood, plastic, glass, metal, rock, brick, paper, cardboard, rubber, fabric, wool, clay.</p> <p>Other: material, object.</p> | <p>Properties of materials: e.g shiny, dull, stretchy, rough, smooth, bendy, flexible, see through, transparent, not see through, opaque, waterproof, not waterproof, absorbent, not absorbent, stiff, strong, hard wearing.</p> | <p>Properties of materials: bendy, flexible, stiff, rigid, see through, transparent, not see through, opaque, waterproof, not waterproof, absorbent, not absorbent.</p> | <p>Other: suitability</p> | <p>Changing shape: squash, bend, twist, stretch.</p> |
| *Words in bold are those the children should be able to use correctly in a scientific context | | | | | |

| objects based on? | Why are objects made from certain materials? | Can these objects be squashed, bent, twisted and stretched? |
|------------------------------|---|--|
| different | Recap properties of materials. | Introduce the vocabulary bend, squash, stretch and twist. |
| table and activities. or not | Introduce that objects are made from certain materials as these are suitable for the job the object performs. Suitability | Give the children a selection of objects that can be bent, stretched, squashed and/or twisted. |
| opaque | E.g., wellies are waterproof and windows are transparent | Experiment with objects and record findings in a table. |
| | Complete sheet, identifying what material objects are made from and why these are suitable. | |
| | A teapot is not made of chocolate because... | |

| | | |
|---|---|--|
| How have they grouped them? Discuss grouping them by the material they are made from. Discuss the difference between the object and the material they are made from. Make sure children understand the word 'material'. Take photos of the groupings. | Children identify uses of everyday materials. List items made of glass, wood, plastic. Ensure children know the difference between the object and what it is made from. | Record predictions about the objects before testing. Record findings after testing. Write a simple conclusion about what they found out. |
|---|---|--|



How do children demonstrate that they know more and remember more?

AT THE BEGINNING: Children are asked to recall prior learning... 'Last term/year you learnt.... This term you will learn.... This will help you next year when you

THROUGHOUT: (To be recapped with staff)

Vocabulary checks e.g. Can you use the word exoskeleton in a sentence?

Can you give the definition of a mammal?

Mini games e.g. *Can you put the animals in the correct habitat?*

Why can a polar bear not survive in the rainforest?



How do we ensure inclusion in Science?

Learning in science involves children building their knowledge of important concepts and procedures.

Teaching ensures

- learners connect new content to what they already know
- understanding of previously taught concepts and procedures
- regular experience of first hand practical activities to explore and spark interest in scientific enquiry

We do this by

- presenting learning in a way all learners can access it
- breaking down learning of complex ideas into manageable chunks
- use of visuals
- providing vocabulary lists and reviewing regularly
- practising recall of what they have learnt (Slide 11)
- sequencing our learning to ensure each new idea makes logical sense and avoids misconceptions
- using available TAs to support or peer learning
- planning and testing practical enquiries before a lesson
- using questions to encourage learners
- considering the resources we use



How have we constructed and renewed the curriculum for Science?

- **Brief summary of the story so far:**

2020/2021 staff discussed the working scientifically strand of the NC. The working scientifically progression document was rewritten. Staff were introduced to the 5 enquiry types. Staff begin using the enquiry types in their science lessons.

2024/2025 staff reviewed and modified the medium term plans to ensure each lesson showed the content objectives, working scientifically objectives, content vocabulary and activities starting with an enquiry question.

Next steps: To add working scientifically vocabulary to the working scientifically progression document and medium term planning.

- **Subject leader Training:** Primary Science Education Consultancy Ltd 2020.
- **Staff Training:** Staff meeting by Subject Leader – Types of enquiry, Asking questions and recording results, Predictions, conclusions and evaluating.