
SCIENCE



PORTSWOOD PRIMARY SCHOOL

KEY INFORMATION

SCIENCE INTENT



At Portswood Primary School, we believe in providing our children with **first-hand experiences using our own backyard and investigation** to **nurture** their sense of **excitement** and **curiosity** about the world around them.

Our **aims** for science reflect those of the **National Curriculum**.

Pupils Should:

- ❖ develop scientific knowledge and conceptual understanding
- ❖ develop understanding of the nature, processes and methods of science through different types of science enquiries
- ❖ be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

Our science curriculum endeavours to **inspire awe and wonder** in our pupils using real-life contexts and the local environment. Children have a natural curiosity about the world we live in and we strive to provide them with the **key knowledge and skills** to better understand our ever-changing environment. We also aim to equip the learners with the ability to **ask and answer questions** through the use of **scientific enquiry** or inspiring secondary sources where appropriate.

Science provides the opportunity for children to **problem solve** when **investigating**, enabling the application of **transferable skills** such as observation, data collection and interpretation. We believe that these experiences **challenge our pupils thinking and concepts**, this in turn fosters **reflective, critical and logical thinkers**. Therefore, these **memorable learning experiences** provide our pupils with the desire to make a positive difference to their world throughout their time at school and beyond.

SCIENCE IMPLEMENTATION



Science is taught each term at Portswood Primary School.

One or two units of learning are planned and taught each term. This may be taught as discrete lessons each week or delivered in blocked units of time, if needed. This blocked teaching allows for pupils to become immersed in learning.



Teaching is whole-class based, supported by appropriate differentiation. Pupils will experience working independently, in pairs or in small groups at different stages of the programme of study. Working with others allows for the skills of communication and co-operation to be promoted, as well as allowing pupils with expertise in specific areas to demonstrate these strengths.



In the Early Years stage, Science should be a part of child initiated learning. This may be through Discovery Time, Star Jobs or as part of outdoor learning, rather than through subject specific teaching.



This reflects the areas of learning and development in the **Early Years Frame work:**

- ❖ Understanding the world involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment



SCIENCE IMPLEMENTATION



Long term curriculum planning, for Science is created so that each Programme of Study (POS) component is taught in accordance with the National Curriculum throughout the course of the academic year.

In each unit of planning pupils will be taught how to:

Work Scientifically



At Portswood Primary School, we use a science **process wheel** to exemplify the **enquiry process**. Each lesson is structured and taught based on one aspect of the process wheel.

There are six components of the **process wheel**:



Asking and Predicting:

What do I already know that will help?
What do I think will happen?

Planning:

What will I do to find the answer to the question?

Observing:

What can I see?
What can I measure?

Recording:

How can I record what I have found out?

Concluding:

What did I find out?
What does this mean?

Evaluating:

Where does this lead me?
What will I do next?

The process wheel does not have to be used in any particular order, and some learning will focus only on one or two of the components at any time. Asking and predicting is often used as the starting point for wider enquiry work.

SCIENCE IMPLEMENTATION



The following strands within the curriculum allows pupils to gain, retain and build upon knowledge.

These strands are:



Plants



Animals,
including
humans



Every day materials
-uses
-properties and
changes



Seasonal
changes



Living things
and their
habitats



Rocks



Light



Forces and
magnets



States of
matter



Sound



Electricity



Earth and Space



Evolution and
inheritance

To support the retention of key concepts, and the ability to apply them fluently, the curriculum is organised so that key scientific strands are visited more than once during the programme of study.



Science

Early Years Foundation Stage



How science fits within the Early Years Curriculum:

In EYFS the teachers plan a range of learning activities that provide opportunities to learn about science within the early years curriculum. The teacher plays a vital role in narrating what is happening and therefore modelling and introducing language. The acquisition of technical language is the basis for future learning within science. The teachers also use the children's interests and curiosity to engage children learning about science.

How is science assessed within the Early Years Curriculum:

The most relevant statements for science are taken from the following areas of learning:

- Communication and Language
- Personal, Social and Emotional
- Understanding the World

Early Learning Goals

Communication and Language

- Make comments about what they have heard and ask questions to clarify their understanding

Personal, Social and Emotional

- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.



Science

Early Years Foundation Stage



Understanding the World

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- 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.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

How science prepares children to entry into Key Stage 1:

The science learning that takes place in early years learning prepares them to successfully enter Y1 by:

- Encouraging them to ask questions
- Make observations and talk about what they have noticed
- Look for similarities and differences and group accordingly
- To be interested in the world around them
- To develop technical language that will help them describe and clearly express what they have noticed or think
- To recognise the change in seasons
- To start to develop knowledge and vocabulary relating to the programmes of study in key stage 1 (Plants; Animals, including humans; Living things and their habitats; Seasonal change and Everyday materials).

Science

Early Years Foundation Stage



The key skills of science within the Early Years Curriculum (including links to KS1 programme of study):

Working scientifically progression of skills

In EYFS children will learn:

- Show curiosity and ask questions
- Make observations using their senses and simple equipment
- Make direct comparisons
- Identify, sort and group
- Record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets
- Talk about what they have done and found out
- Use their observations to help them to answer their questions



In key stage 1 the learning in EYFS is built on by:

- Asking questions and recognising that they can be answered in different ways
- Making observations and taking measurements
- Engaging in practical enquiry to answer questions
- Recording and presenting evidence
- Answering questions and concluding



Science

Early Years Foundation Stage



The key skills of science within the Early Years Curriculum (including links to KS1 programme of study):

Substantive learning progression of skills

In Nursery the children will learn:

- 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.
- Use all their senses in hands-on exploration of natural materials.
- Begin to make sense of their own life-story and family's history.
- Explore collections of materials with similar and/or different properties.
- Talk about the differences between materials and changes they notice.
- Plant seeds and care for growing plants.
- Explore how things work.
- Explore and talk about different forces they can feel.



Science

Early Years Foundation Stage



The key skills of science within the Early Years Curriculum (including links to KS1 programme of study):

In Reception the children will learn:

- Recognise some environments that are different to the one in which they live.
- Talk about members of their immediate family and community.
- Name and describe people who are familiar to them.
- Explore the natural world around them.
- Describe what they see, hear and feel whilst outside.
- Understand the effect of changing seasons on the natural world around them.



SUBJECT NAME HERE

Early Years Foundation Stage



The key skills of science within the Early Years Curriculum (including links to KS1 programme of study):

In KS1 the children will learn:

- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 – Animals, including humans)
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 – Animals, including humans)
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans)
- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 – Animals, including humans)
- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 – Plants)
- Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 – Plants)
- Explore and compare the differences between things that are living, dead, and things that have never been alive. (Y2 – Living things in their habitat)
- Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 – Living things in their habitat)

SUBJECT NAME HERE

Early Years Foundation Stage



**The key skills of science within the Early Years Curriculum
(including links to KS1 programme of study):**

In KS1 the children will learn:

- Observe changes across the four seasons. (Y1 – Seasonal changes)
- Observe and describe weather associated with the seasons and how day length varies. (Y1 – Seasonal changes)
- Distinguish between an object and the material from which it is made. (Y1 – Everyday materials)
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 – Everyday materials)
- Describe the simple physical properties of a variety of everyday materials. (Y1 – Everyday materials)
- Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 – Everyday materials)

SCIENCE IMPLEMENTATION



Whole School Provision for Science

| | Autumn Term | | Spring Term | | Summer Term | |
|--------|----------------------------------|---------------------------|-------------------------|----------------------------------|---------------------------|---------------------------|
| | <i>Autumn 1</i> | <i>Autumn 2</i> | <i>Spring 1</i> | <i>Spring 2</i> | <i>Summer 1</i> | <i>Summer 2</i> |
| Year 1 | Seasonal change | | Seasonal change | | Seasonal change | |
| | Animals, including humans | | Everyday materials | | Plants | |
| Year 2 | Living things and their habitat | | Every day materials | Plants | Animals, including humans | Animals, including humans |
| | The Hyacinth plant project | | | | | |
| Year 3 | Rocks | Animals, including humans | Forces and magnets | Forces and magnets | Plants | Light |
| Year 4 | Living things and their habitats | Electricity | Sound | Sound | States of matter | Animals, including humans |
| | | | Bird box project | | | |
| Year 5 | Forces | Properties of materials | Properties of materials | Living things and their habitats | Earth and Space | Animals, including humans |
| Year 6 | Living things and their habitats | Evolution and inheritance | Light | Animals, including humans | Electricity | |

There should be an emphasis on the teaching and modelling of appropriate scientific language in order to develop the ability to accurately communicate key concepts with others.



SCIENCE

Key Skills: Working Scientifically IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|---|--|---|---|---|
| <p>Show curiosity and ask questions Make observations using their senses and simple equipment Make direct comparisons Identify, sort and group Record their observations by drawing, taking photographs, using sorting rings or boxes Use their observations to help them to answer their questions</p> | <p>Show curiosity and ask questions Make observations using their senses and simple equipment Make direct comparisons Identify, sort and group Record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets Use their observations to help them to answer their questions</p> | <p>Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Performing simple tests Identifying and classifying Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions</p> | <p>Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings</p> | <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Using test results to make predictions to set up further comparative and fair tests Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Identifying scientific evidence that has been used to support or refute ideas or arguments</p> |



SCIENCE

Key Skills: Working Scientifically IMPLEMENTATION



Key Stage 1:

- ❖ asking simple questions and recognising that they can be answered in different ways
- ❖ observing closely, using simple equipment
- ❖ performing simple tests
- ❖ identifying and classifying
- ❖ using their observations and ideas to suggest answers to questions
- ❖ gathering and recording data to help in answering questions.

Lower Key Stage 2:

- ❖ asking relevant questions and using different types of scientific enquiries to answer them
- ❖ setting up simple practical enquiries, comparative and fair tests
- ❖ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- ❖ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- ❖ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- ❖ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- ❖ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- ❖ identifying differences, similarities or changes related to simple scientific ideas and processes
- ❖ using straightforward scientific evidence to answer questions or to support their findings



SCIENCE

Key Skills: Working Scientifically IMPLEMENTATION



Upper Key Stage 2:

- ❖ planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- ❖ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- ❖ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- ❖ using test results to make predictions to set up further comparative and fair tests
- ❖ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- ❖ identifying scientific evidence that has been used to support or refute ideas or arguments



SCIENCE

Curriculum Strand: Plants IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|---|-----------|--|---|-------------------|
| <p>Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant. Begin to understand the need to respect and care for the natural environment and all living things.</p> | | <p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Y1) Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1) Observe and describe how seeds and bulbs grow into mature plants. (Y2) Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. (Y2)</p> | <p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers (Y3) 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 (Y3) Investigate the way in which water is transported within plants (Y3) Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal (Y3)</p> | |



SCIENCE

Curriculum Strand: Plants IMPLEMENTATION



Key Stage 1

Year 1:

Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees

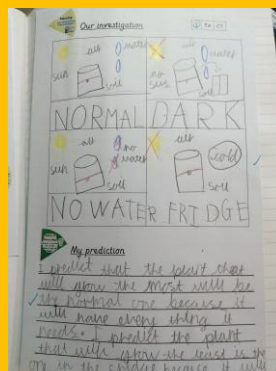
Identify and describe the basic structure of a variety of common flowering plants, including trees



Year 2:

Observe and describe how seeds and bulbs grow into mature plants

Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy



SCIENCE

Curriculum Strand: Plants IMPLEMENTATION



Lower Key Stage 2

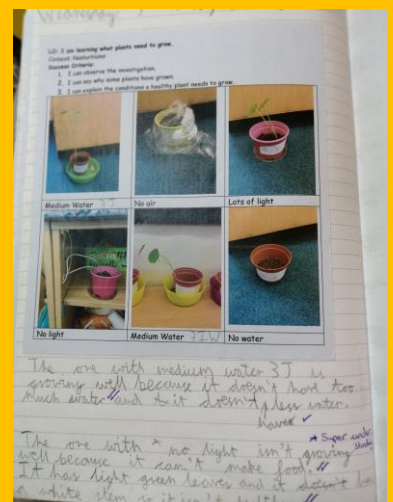
Year 3:

Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant

Investigate the way in which water is transported within plants

Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal



SCIENCE

Curriculum Strand: Animals, including humans IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|--|--|---|---|--|
| <p>Understand the key features of the life cycle of an animal.</p> <p>Begin to understand the need to respect and care for the natural environment and all living things.</p> <p>Use all their senses in hands-on exploration of natural materials.</p> <p>Begin to make sense of their own life-story and family's history.</p> | <p>Recognise some environments that are different to the one in which they live.</p> <p>Talk about members of their immediate family and community.</p> <p>Name and describe people who are familiar to them.</p> <p>Describe what they see, hear and feel whilst outside.</p> | <p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1)</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1)</p> <p>Describe and compare the structure of a variety of common animals (Y1)</p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1)</p> <p>Notice that animals, including humans, have offspring which grow into adults (Y2)</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) (Y2)</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene (Y2)</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 (Y3)</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement (Y3)</p> <p>Describe the simple functions of the basic parts of the digestive system in humans (Y4)</p> <p>Identify the different types of teeth in humans and their simple functions (Y4)</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4)</p> | <p>Describe the changes as humans develop to old age. (Y5)</p> <p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood (Y6)</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function (Y6)</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans (Y6)</p> |



SCIENCE

Curriculum Strand: Animals, including humans IMPLEMENTATION



Key Stage 1

Year 1:

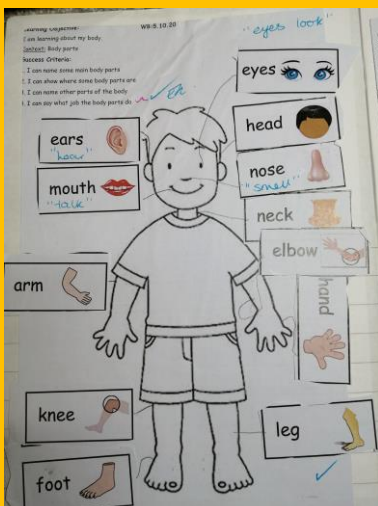


Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals

Identify and name a variety of common animals that are carnivores, herbivores and omnivores






Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)

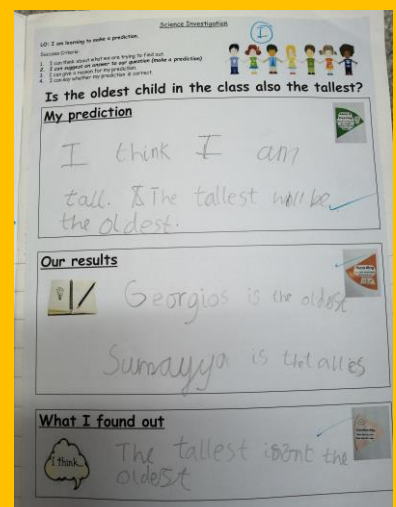
Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense



Animal Groups

Write which group each animal belongs to and why.

| shark | toad | penguin | elephant | crocodile |
|---|---|---|---|---|
|  |  |  |  |  |
| A shark is a fish | A toad is a reptile | A penguin is a bird | An elephant is a reptile | A crocodile is a reptile |
| I know this because it is under water | I know this because it lives on land and has a hand | I know this because it is soft (feathers) | I know this because it lives it got hair | I know this because it lives in Africa |



SCIENCE

Curriculum Strand: Animals, including humans
IMPLEMENTATION



Key Stage 1

Year 2:



Notice that animals, including humans, have offspring which grow into adults

Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)

Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene



SCIENCE

Curriculum Strand: Animals, including humans IMPLEMENTATION

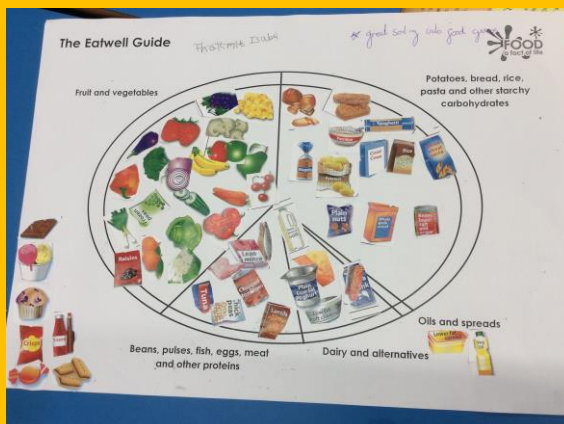
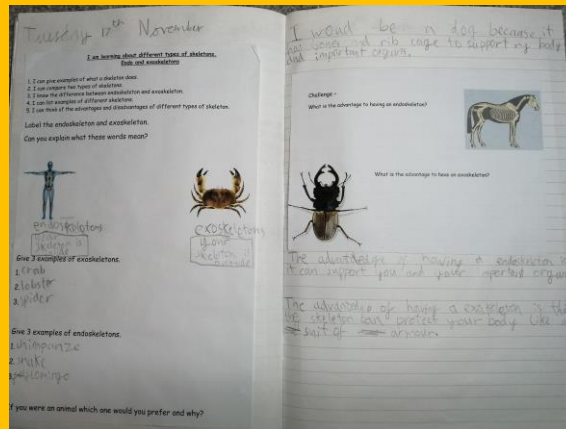
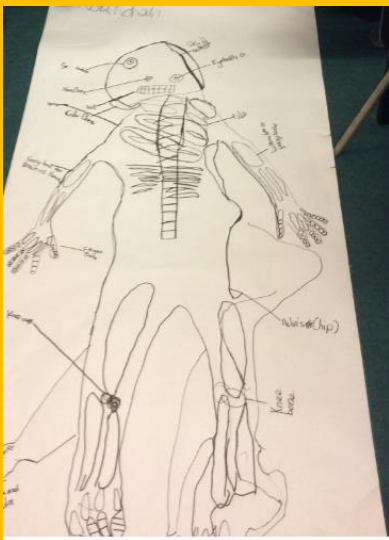


Lower Key Stage 2

Year 3:

Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat

Identify that humans and some other animals have skeletons and muscles for support, protection and movement



SCIENCE

Curriculum Strand: Animals, including humans
IMPLEMENTATION



Lower Key Stage 2

Year 4:

Describe the simple functions of the basic parts of the digestive system in humans

Identify the different types of teeth in humans and their simple functions

Construct and interpret a variety of food chains, identifying producers, predators and prey



Upper Key Stage 2

Year 5:

Describe the changes as humans develop to old age



SCIENCE

Curriculum Strand: Animals, including humans IMPLEMENTATION



Upper Key Stage 2

Year 6:

Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood

Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function

Describe the ways in which nutrients and water are transported within animals, including humans

Challenge

What is the difference between a vein and an artery?

Veins carry deoxygenated blood to the heart but arteries carry oxygenated blood around the body.

Can you add labels to say where the blood is going / from?

I am learning to plan a scientific investigation
Which activity increases my heart rate the most?

You will need to include:

- What you are investigating
- Variables – what will change
- Fair test – what will stay the same
- Method
- Prediction
- Results
- Conclusion

We are investigating which activity increases heart rate the most.

Variables:

The exercise (Star jumps, jogging on the spot, plank)

Fair test:

Everyone will do the same exercise
Everyone will take their own heart rate at the same time
Everyone will have the same amount of rest

Method:

- Record resting HR
- Complete exercise 1
- Take own HR
- Record the resting HR
- Repeat for 2/3

Prediction: I think that star jumps will increase my heart rate the most because they use lots of movement and therefore the muscles need lots of oxygen to work.

SCIENCE

Curriculum Strand: Everyday materials IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|--|---|---|--|--|
| <p>Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice.</p> | <p>Explore the natural world around them. Describe what they see, hear and feel whilst outside.</p> | <p>Distinguish between an object and the material from which it is made. (Y1) Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1) Describe the simple physical properties of a variety of everyday materials. (Y1) Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (Y2) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (Y2)</p> | <p>Compare and group materials together, according to whether they are solids, liquids or gases (Y4) 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) (Y4) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature (Y4)</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 (Y5) Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution (Y5) Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating (Y5) Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic (Y5) Demonstrate that dissolving, mixing and changes of state are reversible changes (Y5) Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda (Y5)</p> |



SCIENCE

Curriculum Strand: Everyday materials IMPLEMENTATION



Key Stage 1

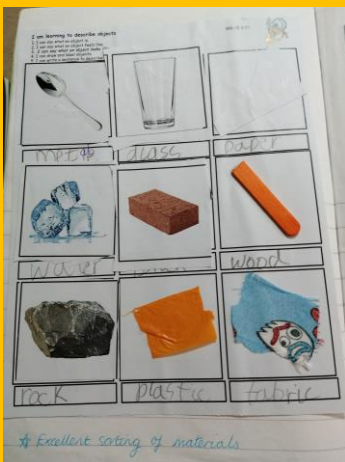
Year 1:

Distinguish between an object and the material from which it is made

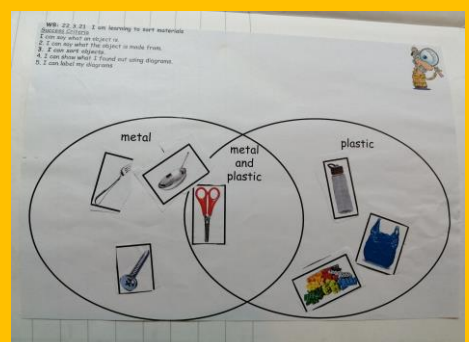
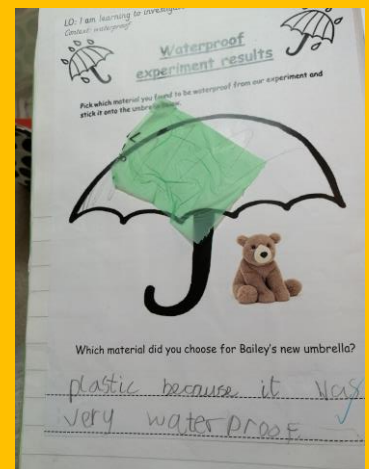
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock

Describe the simple physical properties of a variety of everyday materials

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



| Material | Was the material waterproof? |
|-----------------|---|
| 1. Tissue | <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 2. Plastic bag | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 3. Kitchen roll | <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 4. Cardboard | <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 5. Fabric | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |



SCIENCE

Curriculum Strand: Everyday materials IMPLEMENTATION

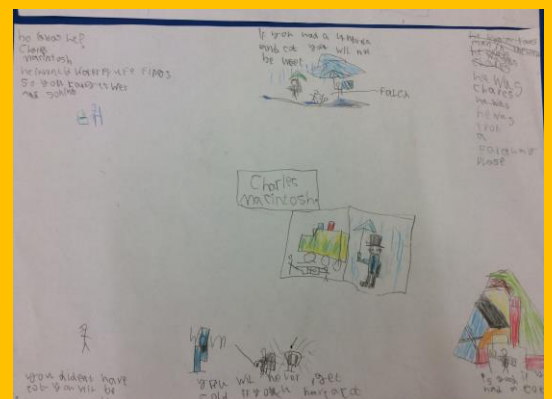
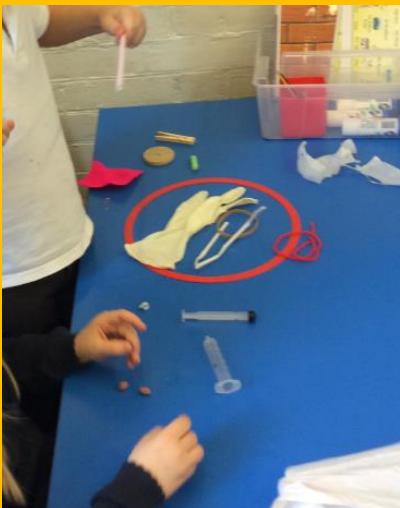
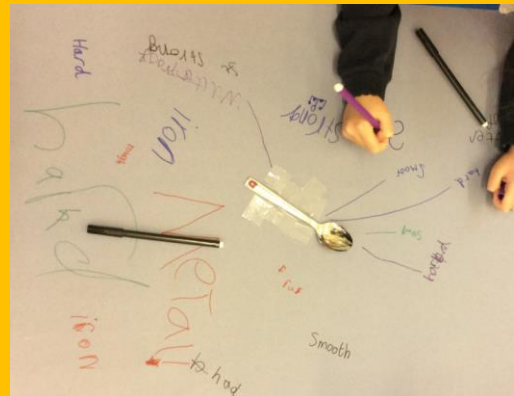


Key Stage 1

Year 2:

Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses

Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.



SCIENCE

Curriculum Strand: Everyday materials IMPLEMENTATION



Upper Key Stage 2

Year 5:



Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.



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

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



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

Demonstrate that dissolving, mixing and changes of state are reversible changes



Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

SCIENCE

Curriculum Strand: Seasonal Change IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|---------|--|---|-------------------|-------------------|
| | Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them. | Observe changes across the four seasons. (Y1) Observe and describe weather associated with the seasons and how day length varies. (Y1) | | |

Key Stage 1

Year 1:

Observe changes across the four seasons

Observe and describe weather associated with the seasons and how day length varies



SCIENCE

Curriculum Strand: Living things and their habitats IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|--|---|--|--|--|
| <p>Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Begin to understand the need to respect and care for the natural environment and all living things.</p> | <p>Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live.</p> | <p>Explore and compare the differences between things that are living, dead, and things that have never been alive (Y2) 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 (Y2) Identify and name a variety of plants and animals in their habitats, including microhabitats (Y2) 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. (Y2)</p> | <p>Recognise that living things can be grouped in a variety of ways (Y4) Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (Y4) Recognise that environments can change and that this can sometimes pose dangers to living things (Y4)</p> | <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird(Y5) Describe the life process of reproduction in some plants and animals (Y5) 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 (Y6) Give reasons for classifying plants and animals based on specific characteristics. (Y6)</p> |



SCIENCE



Curriculum Strand: Living things and their habitats IMPLEMENTATION

Key Stage 1

Year 2:

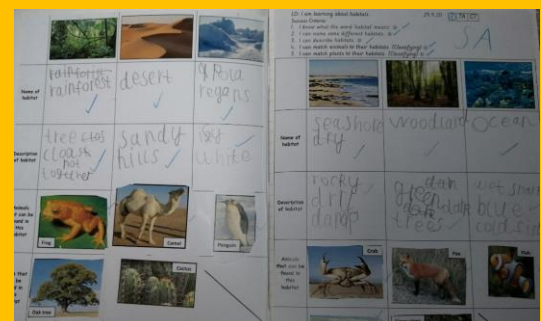
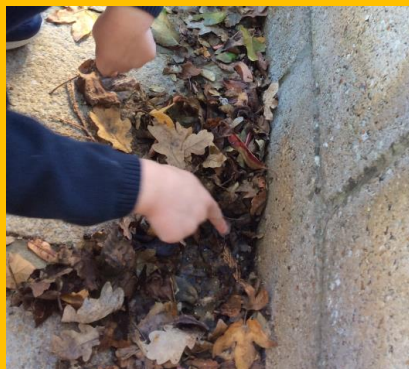
Explore and compare the differences between things that are living, dead, and things that have never been alive

Know the characteristics of living things

Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other

Identify and name a variety of plants and animals in their habitats, including microhabitats

Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food



SCIENCE



Curriculum Strand: Living things and their habitats IMPLEMENTATION

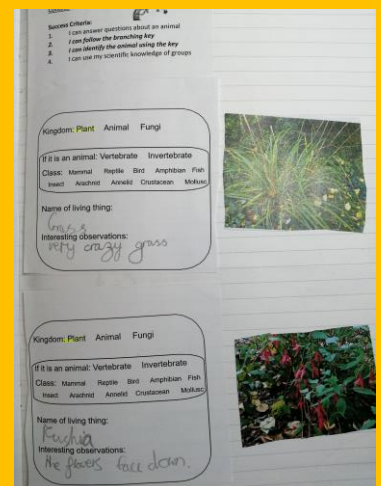
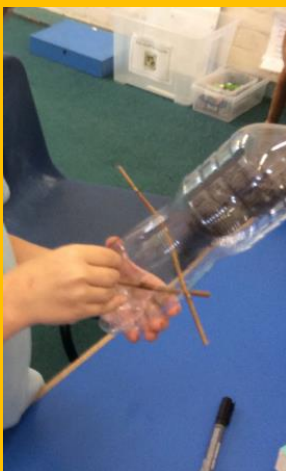
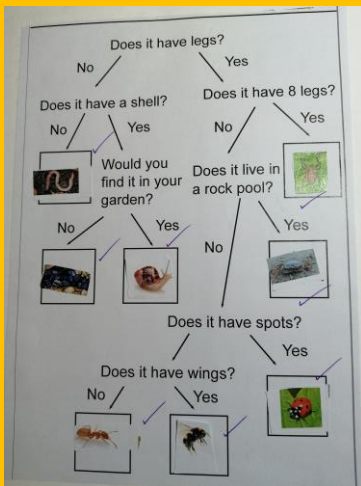
Lower Key Stage 2

Year 4:

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

Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment

Recognise that environments can change and that this can sometimes pose dangers to living things



SCIENCE

Curriculum Strand: Living things and their habitats
IMPLEMENTATION

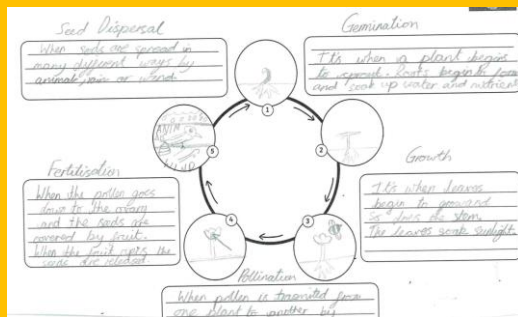


Upper Key Stage 2

Year 5:

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

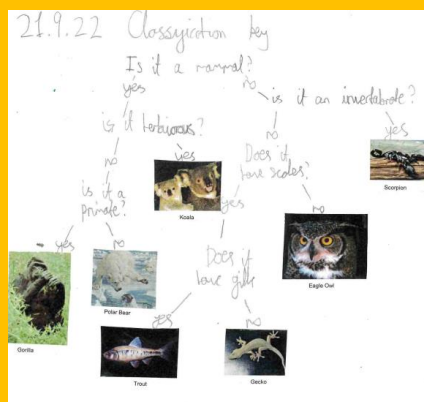
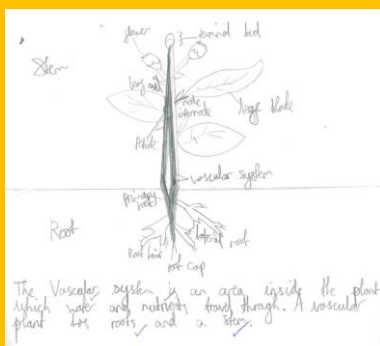
Describe the life process of reproduction in some plants and animals



Year 6:

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



SCIENCE

Curriculum Strand: Rocks IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|---------|-----------|-------------|--|-------------------|
| | | | <p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties (Y3)</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock (Y3)</p> <p>Recognise that soils are made from rocks and organic matter. (Y3)</p> | |

Lower Key Stage 2

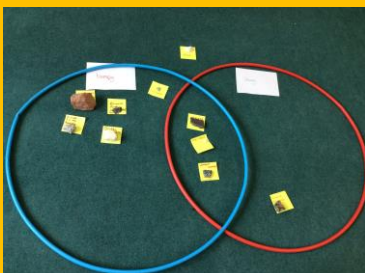


Year 3:

Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties

Describe in simple terms how fossils are formed when things that have lived are trapped within rock

Recognise that soils are made from rocks and organic matter



SCIENCE

Curriculum Strand: Light IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|--|--|-------------|---|--|
| <p>Explore how things work. Talk about the differences in materials and changes they notice.</p> | <p>Describe what they see, hear and feel whilst outside.</p> | | <p>Recognise that they need light in order to see things and that dark is the absence of light. (Y3) Notice that light is reflected from surfaces. (Y3) Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3) Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3) Find patterns in the way that the size of shadows change. (Y3)</p> | <p>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 (Y6) Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes (Y6) Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them (Y6)</p> |



SCIENCE

Curriculum Strand: Light

IMPLEMENTATION



Lower Key Stage 2



Year 3:

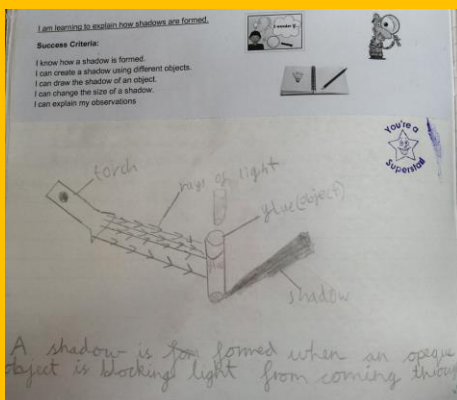
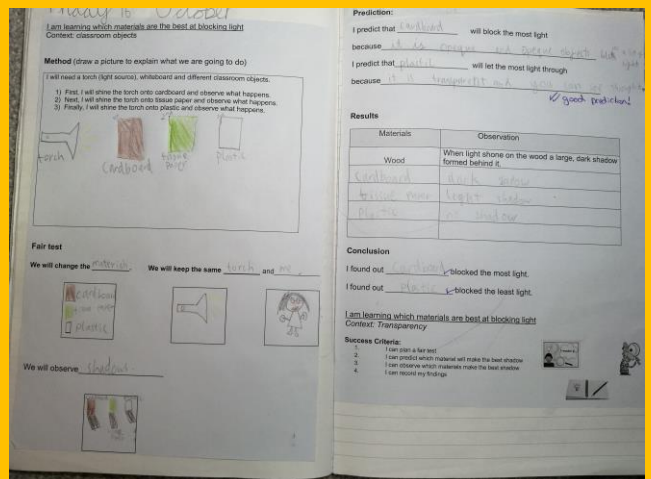
Recognise that they need light in order to see things and that dark is the absence of light

Notice that light is reflected from surfaces

Recognise that light from the sun can be dangerous and that there are ways to protect their eyes

Recognise that shadows are formed when the light from a light source is blocked by an opaque object

Find patterns in the way that the size of shadows change.



SCIENCE

Curriculum Strand: Light

IMPLEMENTATION



Upper Key Stage 2



Year 6:

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 objects and then to our eyes

Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them



SCIENCE

Curriculum Strand: Forces and Magnets IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|--|---|--|---|---|
| <p>Explore how things work. Explore and talk about different forces they can feel. Talk about the differences between materials and changes they notice.</p> | <p>Explore the natural world around them. Describe what they see, hear and feel whilst outside.</p> | <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2)</p> | <p>Compare how things move on different surfaces. (Y3) Observe how magnets attract or repel each other and attract some materials and not others. (Y3) 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. (Y3) Describe magnets as having two poles. (Y3) Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3)</p> | <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object (Y5) Identify the effects of air resistance, water resistance and friction, that act between moving surfaces (Y5) Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect (Y5)</p> |



SCIENCE

Curriculum Strand: Forces and Magnets IMPLEMENTATION



Lower Key Stage 2

Year 3:

Compare how things move on different surfaces



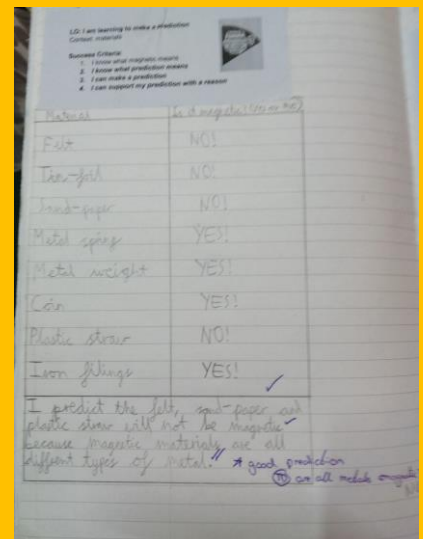
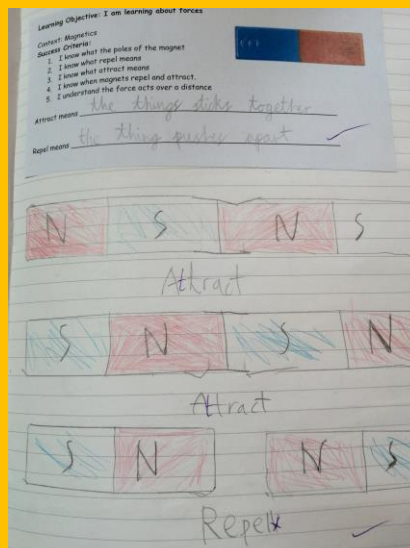
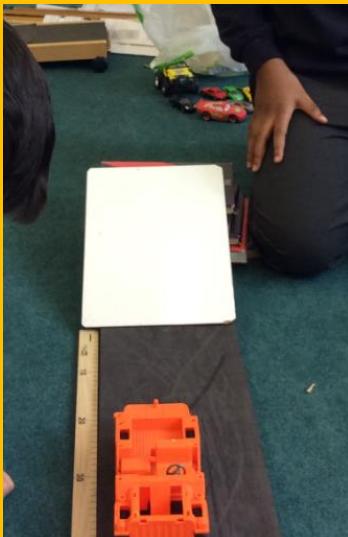
Notice that some forces need contact between two objects, but magnetic forces can act at a distance

Observe how magnets attract or repel each other and attract some materials and not others

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

Describe magnets as having two poles

Predict whether two magnets will attract or repel each other, depending on which poles are facing



SCIENCE

Curriculum Strand: Forces and Magnets IMPLEMENTATION



Upper Key Stage 2

Year 5:

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.



SCIENCE

Curriculum Strand: States of matter IMPLEMENTATION



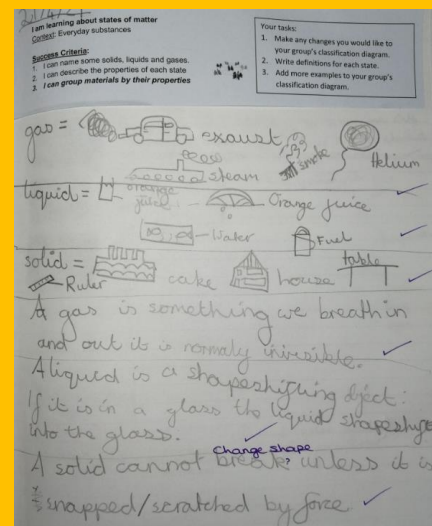
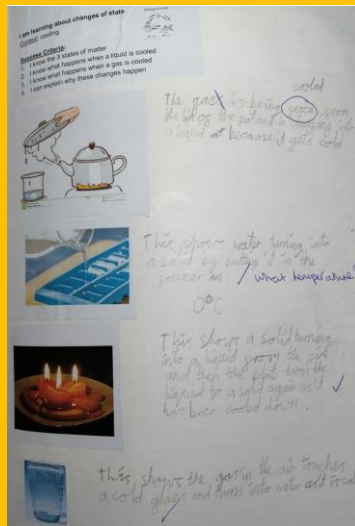
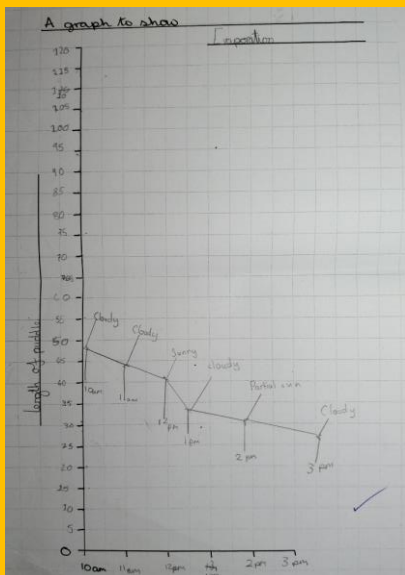
Lower Key Stage 2

Year 4:

Compare and group materials together, according to whether they are solids, liquids or gases

Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius ($^{\circ}\text{C}$)

Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.



SCIENCE

Curriculum Strand: States of matter IMPLEMENTATION



Upper Key Stage 2

Year 5:



Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

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

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

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

Demonstrate that dissolving, mixing and changes of state are reversible changes



SCIENCE

Curriculum Strand: Sound IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|---|--|-------------|--|-------------------|
| <p>Use drawing to represent ideas like movement or loud noises. Listen with increased attention to sounds. Respond to what they have heard, expressing their thoughts and feelings.</p> | <p>Describe what they see, hear and feel whilst outside.</p> | | <p>Identify how sounds are made, associating some of them with something vibrating. (Y4 – Sound) Recognise that vibrations from sounds travel through a medium to the ear. (Y4 – Sound) Find patterns between the pitch of a sound and features of the object that produced it. (Y4 – Sound) Find patterns between the volume of a sound and the strength of the vibrations that produced it. (Y4 – Sound) Recognise that sounds get fainter as the distance from the sound source increases. (Y4 – Sound)</p> | |



SCIENCE

Curriculum Strand: Sound IMPLEMENTATION



Lower Key Stage 2

Year 4:

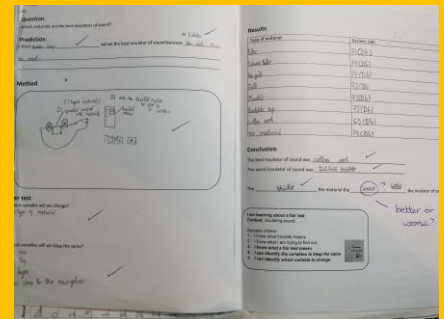
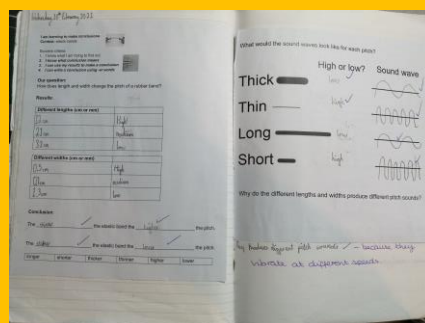
Identify how sounds are made, associating some of them with something vibrating

Recognise that vibrations from sounds travel through a medium to the ear

Find patterns between the pitch of a sound and features of the object that produced it

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



SCIENCE

Curriculum Strand: Electricity IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|--------------------------|-----------|-------------|--|---|
| Explore how things work. | | | <p>Identify common appliances that run on electricity (Y4)</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers(Y4)</p> <p>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 (Y4)</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit (Y4)</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors (Y4)</p> | <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit(Y6)</p> <p>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 (Y6)</p> <p>Use recognised symbols when representing a simple circuit in a diagram. (Y6)</p> |



SCIENCE

Curriculum Strand: Electricity IMPLEMENTATION



Lower Key Stage 2

Year 4:

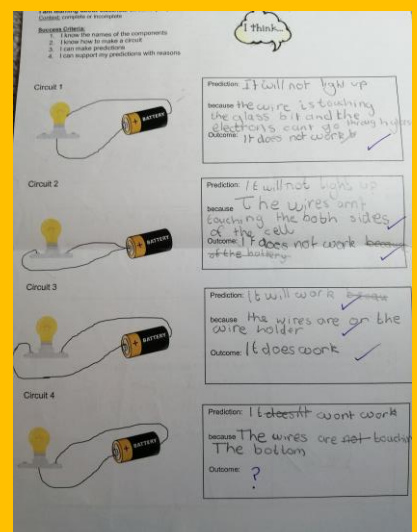
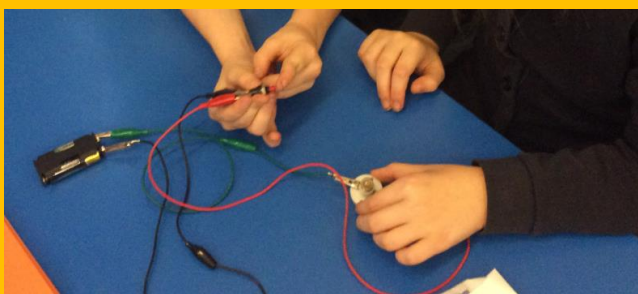
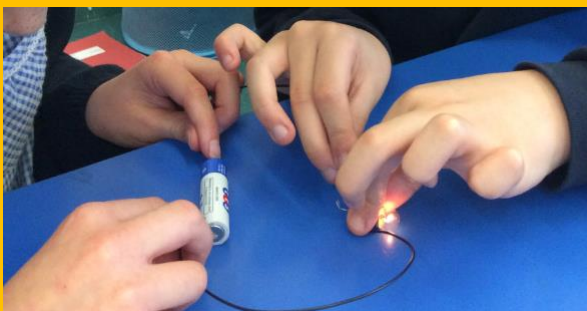
Identify common appliances that run on electricity

Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers

Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery

Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit

Recognise some common conductors and insulators, and associate metals with being good conductors.



SCIENCE

Curriculum Strand: Electricity IMPLEMENTATION



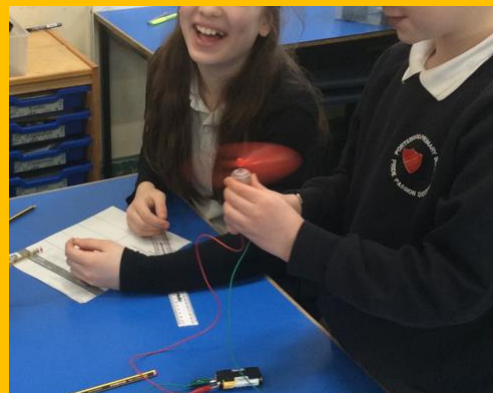
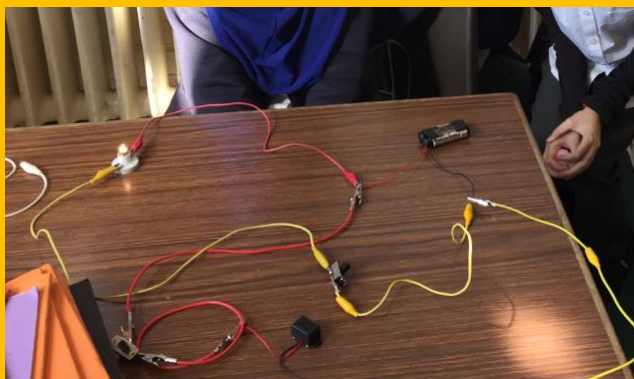
Upper Key Stage 2

Year 6:

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



SCIENCE

Curriculum Strand: Earth and Space IMPLEMENTATION



| Nursery | Reception | Key Stage 1 | Lower Key Stage 2 | Upper Key Stage 2 |
|---------|--|-------------|-------------------|---|
| | <p>Explore the natural world around them. Describe what they see, hear and feel whilst outside</p> | | | <p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. (Y5) Describe the movement of the Moon relative to the Earth. (Y5) Describe the Sun, Earth and Moon as approximately spherical bodies. (Y5) Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5)</p> |

Upper Key Stage 2

Year 5:

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



SCIENCE

Curriculum Strand: Evolution and Inheritance IMPLEMENTATION



Upper Key Stage 2

Year 6:

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



Natural Selection

Imagine all the trees changed again.
Can you design a moth's pattern which would camouflage it if all trees looked like the picture?



Can you explain natural selection in your own words? (you can use the peppered moths as an example)

Natural selection is the process in which organisms best suited to their environment reproduce while those who aren't die out. Therefore traits of the successful organisms are passed down to their offspring who reproduce and give traits to their descendants.

SCIENCE IMPACT



At Portswood Primary school we pride ourselves on providing high quality teaching and memorable, but purposeful, learning opportunities that draw on children's natural curiosity for the world around them.

Through our science lessons, children gain appropriate scientific knowledge and the skills needed to carry out enquiries, interpret the results, derive conclusions and reflect and ask further questions.

This is evidenced in the high quality outcomes in children's book and was seen in the whole school review in Autumn 2019:

'The subject leader wants the pupils in the phase to be 'logical and critical thinkers supported by teachers who foster curiosity'. This was seen in learning walks.'

Children are enthusiastic about their learning in science and enjoy any opportunity to share their knowledge.

'Pupils have a wealth of knowledge and talk eagerly about it. Some pupils have future careers in mind related to science.' (Whole school review 2019)

When talking with pupils across the key stages, they will talk positively about their learning in science and most often refer to the practical enquiry sessions or creative opportunities where they apply the knowledge learnt in a topic.

This has been seen in the whole school review in Autumn 2019:

'Science provision is strong in the upper key stage and pupils achieve very well. Learning is engaging and taught creatively.'

Science lessons give children the opportunity to learn new facts, share knowledge they have from individual passions and to think and question. They also enjoy the opportunity to work with a partner or small groups to plan and investigate questions or hypothesis in enquiry sessions.

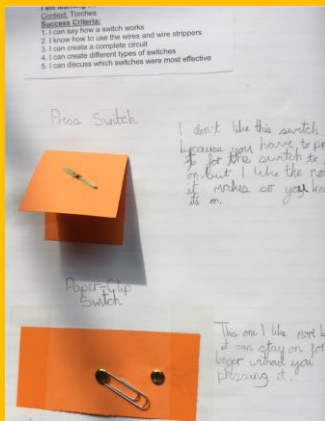
SCIENCE IMPACT



The medium term planning for science follows the national curriculum and therefore the learning is revisited and built upon over a child's time in school. For example, electricity is taught in year 4 and year 6.

In year 4 the children learn the names of the components, make a circuit and recognise when the circuit is complete, include a switch within a circuit and name insulators and conductors. In year 6 the children learn how the brightness of a bulb or volume of a buzzer is related the numbers of cells and use and recognise the symbols used in a circuit diagram.

As a school, we strive to link our learning in science to other curriculum areas where purposeful links can be made. For example, in year 4 the children use their knowledge of electrical circuits to design and make a working torch in DT and in year 5 the children learn about Earth and space while learning about the Mayans in history and their understanding of the movement of the Earth and the names of the planets in French.



SCIENCE IMPACT



Science is celebrated at Portswood Primary school with high quality displays showing the current learning taking place and the science process wheel used to guide the enquiry process. Displays are also seen around school and share the learning taking place across different key stages.



Planning is differentiated to accommodate and support the needs of all pupils. This is clearly seen in children's books.

2. I am learning about the properties of materials.

Object: Material: Properties:

| Object | Material | Properties |
|---------|----------|------------|
| belt | leather | soft |
| | metal | bendy |
| box | plastic | hard |
| | wood | wet |
| spoon | metal | shiny |
| | leather | squashy |
| notepad | wood | hard |
| | paper | bendy |
| Duplo | plastic | soft |
| | stone | hard |

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| Object | Material | Properties |
|---------|----------|------------|
| belt | leather | bendy |
| | metal | |
| box | plastic | hard |
| | wood | |
| spoon | metal | flexible |
| | leather | smooth |
| notepad | wood | shiny |
| | paper | |
| Duplo | plastic | flexible |
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| spoon | metal | shiny |
| | leather | |
| notepad | wood | hard |
| | paper | |
| Duplo | plastic | flexible |
| | stone | |

SCIENCE IMPACT



By the time pupils leave Portswood Primary School they are able to **ask questions** in order to help them understand the phenomena they meet on a daily basis and start to question their own preconceptions or misconceptions.

Also **make predictions** based on their existing scientific knowledge and supported by every day examples, such as ice melting on a hot day or birds having different shaped beaks and therefore accessing different sources of food.

Learning Objective: I am learning to make predictions.
Context: Spinners
Success criteria:
1. I can explain what air resistance is.
2. I can discuss real-life examples of air resistance having an effect.
3. I can suggest what I think is going to happen.
4. I can give a reason for my prediction.
5. I can reflect on whether my prediction was correct.

Miriam
Ryan Yousuf
Nicole
Aaron

| Pre Test: | Time Taken to Drop | Observations |
|-----------------------------|--------------------|---|
| Scrunched up Piece of Paper | 3.12 | That it was faster because of the surface area is smaller there is less air resistance. |
| Flat Piece of Paper | 3.12 | That it was slower because of the surface area is larger there is more air resistance. |

What does this tell us?
That the larger the surface area is the more air resistance there is. Because of this the object will fall slower.

Our prediction: Will a spinner with a larger surface area fall slower than a spinner with a smaller surface area?
We think that spinner 3 because it has a bigger surface area more air resistance.

Group work
LO: I am learning to carry out a fair test. 8.2.21
Context: Katie Morag puddle
Success Criteria:
1. I know what absorbent means.
2. I know what a fair test is.
3. I can carry out a fair test.
4. I can identify absorbent materials.

Katie Morag wrote to us and asked us to help her! She knows we have been learning all about materials and she has asked us to find the most absorbent material to help her clear up the puddles from her walls.

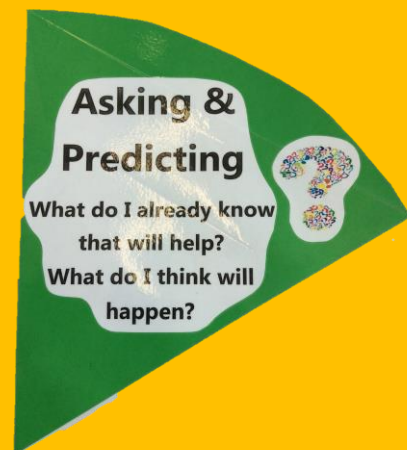
The materials we will be testing are:

paper, J-cloth, fabric, kitchen towel, cling film

Prediction
I predict that the most absorbent material will be the socks.

I think this because socks are made of fabric and fabric is absorbent and that makes socks

Why is John's wrong? it has holes and it is not made of fabric
"It has holes where the water can go"



Question:
Which materials are the best insulators of sound?

Prediction: I think bubble wrap will be the best insulator because none of the pictures of things that block sound was a room with bubbly walls. Good use of previous knowledge.

Method:

LO: I am learning to work scientifically.
Context: Our local environment-microhabitats
Success Criteria:
1. I know what a habitat is.
2. I can make a prediction.
3. I can observe a habitat.
4. I can record my findings.

Investigation: Which minibeasts will we find in the environmental area?

Prediction:
I predict I will find an ant in a pile of grass because it has a long dust like the sun shining.

SCIENCE IMPACT



By the time pupils leave Portswood Primary School they are able to **plan a scientific enquiry** that will answer a question or prove a hypothesis.

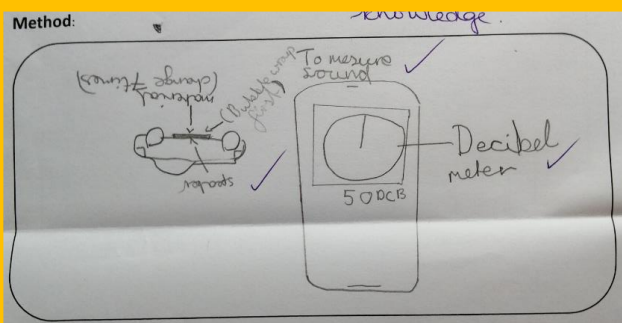
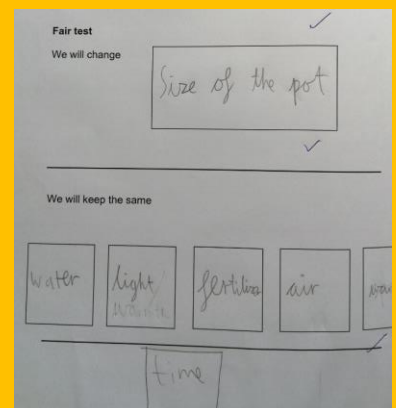
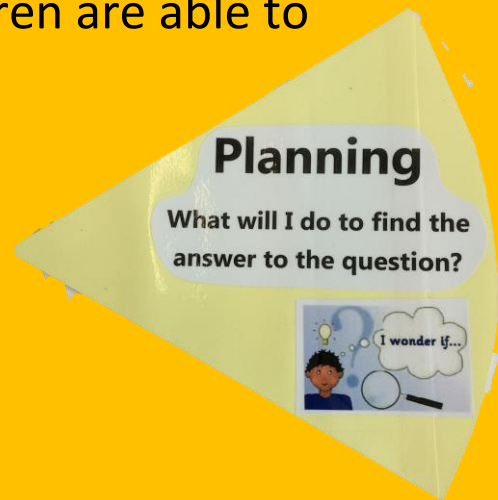
As part of the planning process they are able to **identify the variables** and determine which variables should remain **constant** and which should be **changed**.

The pupils can also identify what to measure and with the appropriate units or what to observe.

By controlling these variables the children are able to **conduct a fair test**.



| PLAN | | | |
|---|---|--|--|
| We are investigating the effect of soil as a barrier between two surfaces | | | |
| The variables we could change | | The variables we could measure/observe | |
| the amount of soil | the sticks | The size of the jelly cubes | How long it takes us to move |
| the amount of jelly moved | the barrier | The time we wait with | How much jelly we can move in a certain time |
| We will change | We will add soil as a barrier between the soil and the bowl | We will measure/observe | How long it will take us to move the jelly out of the bowl |
| Our question is... | | The time taken for them to move is set | |
| If we change | | what will happen to | ? |
| To make it a fair test we will keep these factors the same | | Our predictions are..... | |
| the amount of soil | The level of friction between two objects | When there is no soil it will be easy to pick up | The soil will make it slippery and it will be harder |
| The amount of jelly moved | The size of the jelly cubes | | |
| The size of the bowl | Distance between the bowl and plate | The soil will form a barrier causing less friction | |
| | The time we wait with | | |



SCIENCE IMPACT



By the time pupils leave Portswood Primary School they are able to **make careful observations** of the outcomes to their lines of enquiry.

Also **take measurements** with increasingly accuracy and use a range of scientific equipment, with the understanding that the measurements may need to be repeated to increase the reliability of their findings.

LO: I am learning about how the shapes of some materials can be changed. 3.2.21

Success Criteria

1. I can observe the object closely.
2. I can identify materials that can be squashed, bent, twisted and stretched.
3. I can sort objects by their properties.

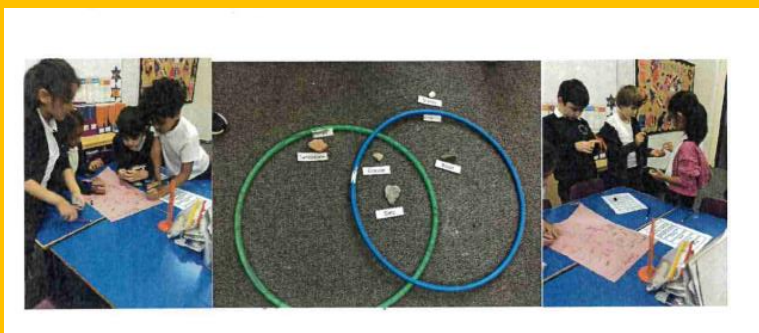
Today we observed different materials carefully to find out if they could be squashed, bent, stretched or twisted. We discussed how some objects can be described by one or more of these properties. We then used sorting circles to sort objects by their properties for example, bendy and not bendy, stretchy and not stretchy. We also discussed that some objects can sometimes be described by a property, such as fabric and stretching.

LO: I can ask questions about living things.

| Names | Radius and Ulna length (forearm) (cm) | Foot length (cm) |
|----------|---------------------------------------|------------------|
| Vedant | 18cm | 19cm |
| Emily | 15cm | 18cm |
| Emilia | 20cm | 16cm |
| Esther | 20cm | 17cm |
| Sourhaya | 17cm | 16cm |
| Yoonha | 20cm | 14cm |

Observing

What can I see?
What can I measure?



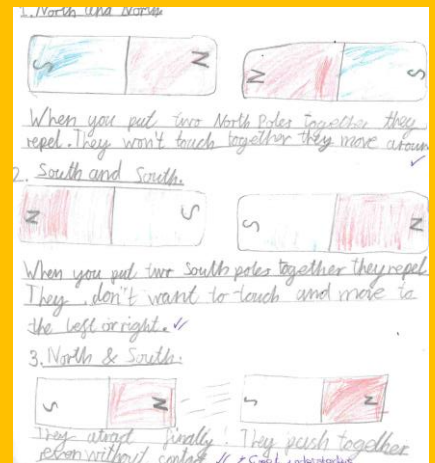
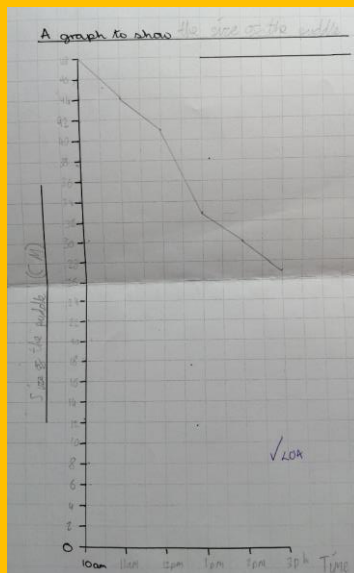
SCIENCE IMPACT



By the time pupils leave Portswood Primary School they are able to **record and present** their results or data appropriately in a variety of forms. This supports pupils in being able to interpret their results and look for patterns in the data and transfer skills learnt in other areas of the curriculum, such as statistics in maths.

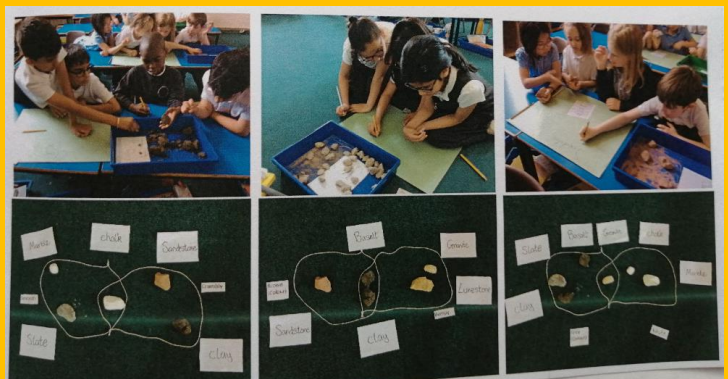
D: I am learning to investigate
Context: waterproof

| Material | Was the material waterproof? |
|---------------------|---|
| 1. Tissue | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 2. Plastic bag | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 3. Kitchen roll | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 4. Cardboard | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| 5. Fabric | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |



Recording

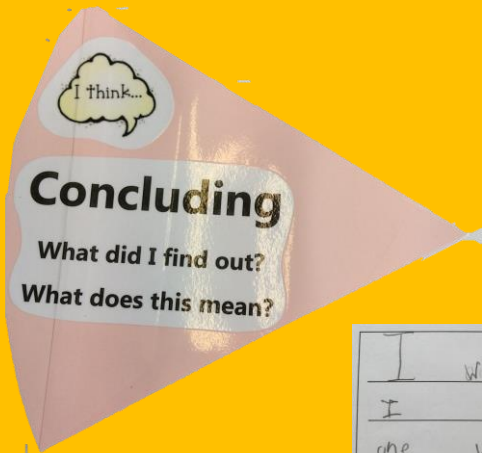
How can I record what I have found out?



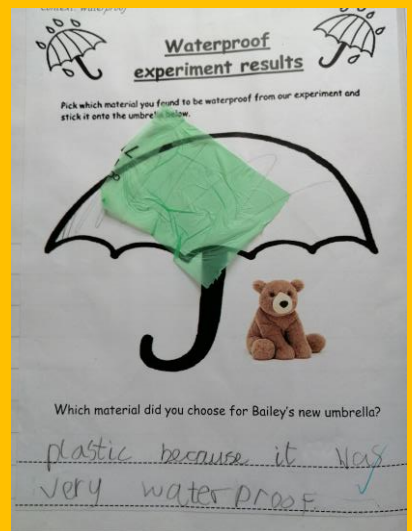
SCIENCE IMPACT



By the time pupils leave Portswood Primary School they are able to **identify** patterns in their results or **identify causal relationships**. This in turn allows the pupils to **derive conclusions** and answer their original question and share this information using scientific or comparative language.



Conclusion:
I was correct because I found 2 ants one was on a stick in some trees the other one was on the ground in the leaves.



Conclusion:
The thinner ✓ the elastic band the higher ✓ the pitch.
The thicker ✓ the elastic band the lower ✓ the pitch.
longer shorter thicker thinner higher lower



The one with medium water 3/4 is growing well because it doesn't have too much water and it doesn't have less water.
The one with no light isn't growing well because it can't make food. It has light green leaves and it doesn't have a white stem so it isn't healthy.

What I found out The oldest person is the tallest.
I think... ✓

SCIENCE IMPACT



By the time pupils leave Portswood Primary School they have **gained a wide scientific knowledge** through the use of models, practical enquiry, real life experiences and high quality and creative teaching. They have **retained the knowledge** through memorable experiences and revisiting prior learning. Pupils are eager to learn more and for their science knowledge and skills to be extended at Key Stage 3.

Portswood Primary School

Science attainment by pupil group

This is revised data for 2018/19.

| Breakdown | Key stage 2 science by pupil group | | |
|-----------------------------|------------------------------------|---|------------|
| | Cohort | At least the expected standard in science | |
| | | School % | National % |
| All pupils | 60 | 85 | 83 |
| Male | 20 | 80 | 80 |
| Female | 40 | 88 | 86 |
| Disadvantaged | 11 | 73 | 87 |
| Ever 6 FSM | 11 | 73 | 87 |
| Children looked after | 0 | N/A | 83 |
| Other | 49 | 88 | 87 |
| SEN EHCP | 1 | 0 | 83 |
| SEN support | 6 | 67 | 83 |
| No SEN | 53 | 89 | 91 |
| Non-mobile | 57 | 86 | 84 |
| English first language | 37 | 84 | 83 |
| English additional language | 23 | 87 | 83 |

SCIENCE

IMPACT – Pupil Voice



I enjoy science because it is fun and you can see what happens over time to things, like which plant grew the most. You can also see what happens through trial and error.

Year 2 student

What makes a person a scientist?

You need to be intelligent and curious. You don't give up and you concentrate. You need to know what to study and answer questions.

Year 2 student

Science is important because you learn so much and there are links to different subjects – for example geography and our planet. It will also help with work and your future.

Year 4 student

I enjoy science because you do lots of interesting and new things. I hope to become a scientist.

Year 5 student

Without science we wouldn't know how space works, how trees grow, how to make medicine and how to fix things.

Year 5 student

Scientists put their heart into it. When you are curious, you are most wanting to do investigations and you need to be prepared. You need to know how science works. It is not just one subject, there are different types of science such as physics and chemistry. You need to be good at English to record findings without mistakes, and you need maths to take accurate measurements and make calculations.

Year 5 student