

# Science

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## Parent Workshop

Thursday 19<sup>th</sup> January 2023

# Science Network Team

Who's who?

**Ms Oyesanya – Science Subject Leader**

**Jessop Primary School**

**Ms Cramer – Strategic Leader for Science**

**Bonneville Primary School**

**Ms Aina – Science Subject Leader**

**Stockwell Primary School**



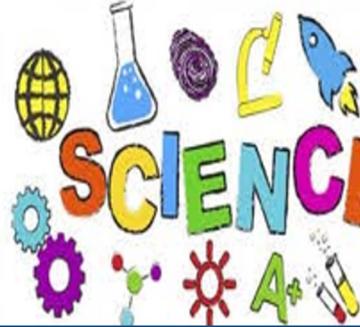


Department  
for Education

## Science programmes of study: key stages 1 and 2

National curriculum in England

What do you know  
about the National  
Curriculum and  
Science already?

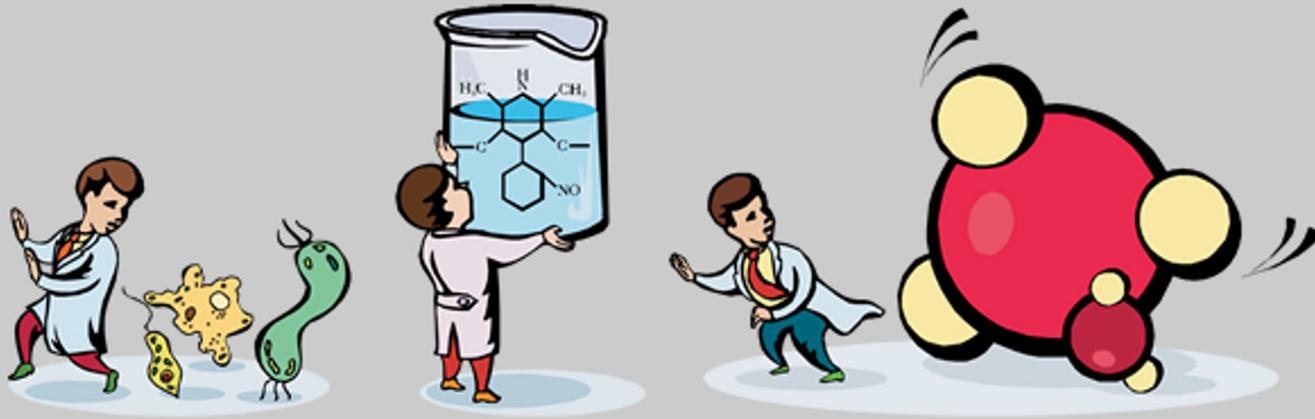


**Aims:** The national curriculum for Science aims to ensure that all pupils:

- develop **Scientific knowledge and conceptual understanding** (knowing more than just the facts or the method), through the specific disciplines of biology, chemistry and physics.
- develop understanding of the **nature, processes and methods of science** through different types of Science enquiries that help them to answer Scientific questions about the world around them.
- are equipped with the Scientific knowledge required to understand the **uses and implications** of science, today and for the future.



# Science Humour



**If it's green or wriggles, it's biology.**

**If it stinks, it's chemistry.**

**If it doesn't work, it's physics!**

- Chemistry

is the branch of science that studies the properties of matter and how matter interacts with energy. This branch of science is very closely linked to Physics. It is the “What is that stuff?” of the Science world.

- Physics

is the study of matter and its interaction with energy. It is the “What can that stuff do?” of the Science world.

- Biology

is the study of living things. These things include plants, animals, fungi, protozoa, algae, bacteria, and viruses. This is the “Who/What is that thing?” of the Science world.

# National Curriculum For Science – 3 Ways



- KS1 – First Hand experience: experimentation, questioning , observing, grouping, classifying, comparing, and using secondary information.



- Lower KS2 – Challenging original thoughts and experience to develop further understanding: drawing conclusions, talking about them and then recording their finding.



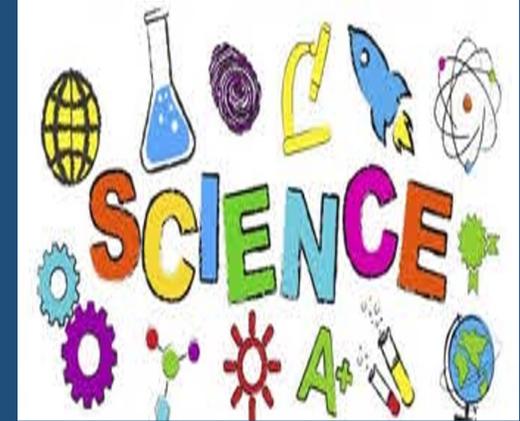
- Upper KS2 – Finding evidence, collecting data, justifying the findings.



# This workshop:

- What is primary science?
- Our curriculum
- Assessment
- Engaging children and how we learn
- Children's work
- Links to support home learning
- Can you help us?

## Workshop aims



# Science at primary school

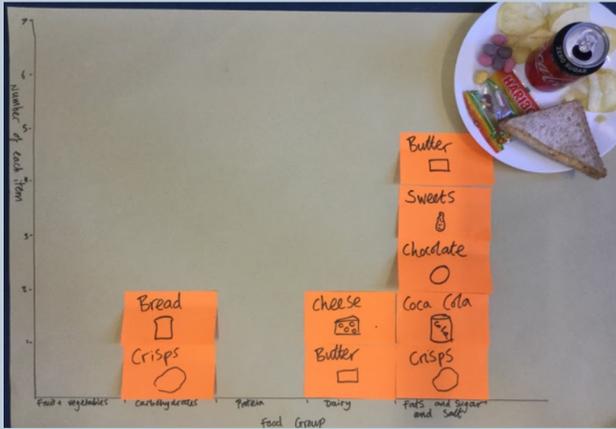
Children are naturally curious. Science at primary school nurtures this curiosity and allows children to ask questions and develop the skills they need to answer those questions.

Primary science helps pupils to:

- Investigate problems.
- Learn how science works.
- Discover why science matters in the world.

What is  
primary  
Science?





# Diverse Curriculum

A diverse curriculum values children's unique histories including their social, moral, religious and cultural backgrounds.

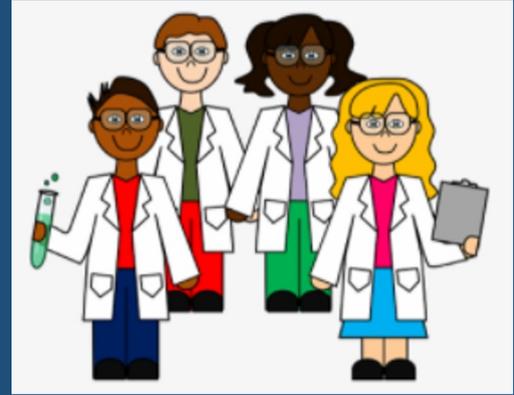
The links made between the children's diversity, cultural capital and the curriculum are meaningful and build on the existing requirements of the National Curriculum.

Our science topics allow children to see how Science is integrated through everyday life and their diversities. As individual schools, with different cultures and backgrounds, we aim to prioritise and cater to the needs of the children in our schools.

This links to our possibilities driver, with the aim to provide children with a feeling that a career in Science is possible for anyone with an interest and one that they can achieve, whatever their background.

The intent is that children gain real life examples and context to their Science learning.

## Diversity



# EYFS Curriculum overview

	Autumn 1	Autumn 2	Spring 1	Spring 2 Science Week	Summer 1	Summer 2
Nursery	Understanding the World	Understanding the World	Understanding the World	Understanding the World: Plants	Understanding the World: Minibeasts	Understanding the World: Healthy Living
Reception	Understanding the World	Understanding the World	Understanding the World	Understanding the World: Plants	Understanding the World: Minibeasts	Understanding the World: Healthy Living



# KS1 (Y1-2) Curriculum overview

Year 1	Autumn 1	Autumn 2	Spring 1	Spring 2 Science Week	Summer 1	Summer 2
<b>Topics (Seasonal changes each term)</b>	Animals including humans (Senses)	Everyday materials	Light and dark	Animals including humans (Groupings of animals)	Animals including humans (Grouping of animals)	Plants
<b>Scientist</b>	Louis Braille	John Dunlop	Annie Easley	Margaret S. Collins	Ernest Everett Just	Beatrix Potter
<b>Investigation</b>	Observation (identifying, classifying & grouping)	Measuring (comparative & fair testing)	Measuring (pattern seeking)	Observation (identifying, classifying & grouping)	Observation (identifying, classifying & grouping)	Measuring (observing over time)

Year 2	Autumn 1	Autumn 2	Spring 1	Spring 2 Science Week	Summer 1	Summer 2
<b>Topics</b>	Animals including humans (Nutrition)	Animals including humans (Life cycles)	Uses of everyday materials (Properties)	Uses of everyday materials (Changing materials)	Plants	Living things and their habitats
<b>Scientist</b>	Charlotte Armah	David Attenborough	Lonnie G Johnson	Noah McVicker	James Wong	Jane Goodall
<b>Investigation</b>	Observation (identifying, classifying & grouping)	Observation (identifying, classifying & grouping)	Measuring (comparative & fair testing)	Measuring (pattern seeking)	Measuring (observing over time)	Observation (identifying, classifying & grouping)



# LKS2 (Y3-4) Curriculum overview

Year 3	Autumn 1	Autumn 2	Spring 1	Spring 2 Science Week	Summer 1	Summer 2
<b>Topics</b>	Rocks	Forces Moving on different surfaces	Forces Magnets	Light	Plants	Animals including Humans
<b>Scientist</b>	Friedrich Mohs	Bertha Benz	William Gilbert	Percy Shaw	George Washington Carver	Elsie Widowson
<b>Investigation</b>	Observation (identifying, classifying & grouping)	Measuring (pattern seeking)	Measuring (pattern seeking)	Observation (fair testing)	Observation (observing over time)	Measuring (pattern seeking)

Year 4	Autumn 1	Autumn 2	Spring 1	Spring 2 Science Week	Summer 1	Summer 2
<b>Topics</b>	Animals including Humans	Sound	Electricity	Electricity Investigations	Living things and their habitat	State of Matter
<b>Scientist</b>	Lilian Lindsay	Benjamin Franklin	Thomas Edison	Marc Isambard Brunel	Dian Fossey	Kate Marvel (climate change)
<b>Investigation</b>	Observation (observing over time)	Observation (identifying, classifying & grouping)	Measuring (pattern seeking)	Observation (identifying, classifying & grouping)	Observation (identifying, classifying & grouping)	Measuring (pattern seeking)



# UKS2 (Y5-6) Curriculum overview

Year 5	Autumn 1	Autumn 2	Spring 1	Spring 2 Science Week	Summer 1	Summer 2
<b>Topics</b>	Living things and their habitats/ Animals including humans	Earth and Space	Forces	Forces Mechanisms	Properties and changes of materials	Properties and changes of materials
<b>Scientist</b>	Professor Jacqueline Dunkley-Bent	Dr Maggie Aderin-Pocock	Isaac Newton	Willard Sawyer/ Kirkpatrick Macmillan	Stephanie Kwolek	Marie Curie
<b>Investigation</b>	Observation (identifying, classifying & grouping)	Measuring (observation over time)	Observation (identifying, classifying & grouping)	Observation (identifying, classifying & grouping)	Measuring (comparative & fair testing)	Measuring (comparative & fair testing)

Year 6	Autumn 1	Autumn 2	Spring 1	Spring 2 Science Week	Summer 1	Summer 2
<b>Topics</b>	Evolution and Inheritance	Electricity	Light	Investigation skills	Living things and their habitats	Animals including humans
<b>Scientist</b>	Charles Darwin	Alessandro Volta	Garrett Morgan		Carl Linnaeus	Dame Elizabeth Anionwu
<b>Investigation</b>	Observation (Research using secondary sources)	Measuring (comparative and fair testing)	Measuring (pattern seeking)	Measuring (observation over time)	Observation (identifying, classifying & grouping)	Observation (identifying, classifying & grouping)



# Science Key Words for each half term unit.

## Science Vocabulary



	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1	Exercise Routine Fruit Vegetables Different Heat	Visual Experience Resources Label Medical Sense/s	Research Nutrition Biology Hygiene Balanced Provide	Identified exposure erosion boulder texture slate	successive commenced digestion carnivore herbivore omnivore	Gender Transformation According Metamorphosis Asexual Naturalist	Evolution Dominant Generation Eliminate Consequence Inherent
Autumn 2	Portion Body Skeleton Connect Similar Move/Movement	Equipment Investigation Instructions Conclusion Material Property/ies	Understand Adults Cycle Offspring Evidence Development	pole attract repel physics surface friction	preliminary pluck insulation vibration pitch volume	Layer Demonstrate Celestial Spherical Revolve Approximated	Source Conduct Output Predominant retail Expansion
Spring 1	Camouflage Predator Prey Pollution Melt Planet	Task Observe Season Weather Change Describe	Constant Variables Appropriate Chemistry Fair test Waterproof	Affect force magnetic force magnet contact force non-contact force	Automatically nuclear appliance device circuit component	Phenomenon Reliance Validity Resistance Buoyant Upthrust	Periscope Detected Corresponding Undertaken Retained Intensity
Spring 2	Plant Grow/Growth Seed Leaf Flower Petal	Categories Features Criteria Classify Gather Record	Examine Discuss Compare Purpose Solid Organise	reflect transparent translucent opaque matt shadow	assessment interpretation procedure evaluation method monitoring	Dynamic Mechanism Modified Tension Vehicle Inclination	Empirical Participation Project Response Perceived Hypothesis
Summer 1	Insect Shelter Minibeast Animal Antenna Shell	Definition Habitat Pattern Diet Discover Recognise	Characteristic Temperature Germinate Vegetation Botanist Healthy	inferred photosynthesis pollen pollination seed dispersal seed formation	sustainable disposal classification hibernate environment consequences	Analysis Contact Generated Soluble Thermal Properties	Analogous Intrinsic Vertebrates Invertebrates Micro-organisms Bacteria

# Assessment (learning gaps)

- This was an opportunity to address any learning gaps that the children may have.
- We are making sure children understand how prior learning in previous years in Science feeds in to current learning, clearly showing that all learning builds on what we already know.

## Assessment (learning gaps)



# Engaging our learners

- **Hook lesson.**
- **Scientists.**
- **Practical investigations.**

## Lesson structure



# What does a Science lesson look like?

- A starter with a word of the week activity.
- Learning Objective Steps to Success (how will they achieve the learning).
- Prior learning links.
- Skills and knowledge input.
- Activity/Task/Investigation.
- Plenary.

## Lesson structure





# Science displays



## SCIENCE

**Investigation Question**  
What type of scientific enquiry will visitors to your investigation?

**Understanding and planning**

**Carrying out**

**Comparing and evaluating**

**Presenting scientific evidence**

**Physics: Forces**

surface friction

Why do we need seat belts?

Why do we need air brakes?

**Topic:**  
Forces

**Vocabulary:**  
Gravity Newton push pull magnet friction

**Question:**  
Why is gravity important in terms of Earth and Space?

**Answer:**  
The Earth would float away

## Living Things and Their Habitats

Can you draw the life-cycle for a human?

What is the difference between an insect and an amphibian?

### The Life Cycle of a butterfly

1. Fertilised eggs are laid by the female.
2. The eggs hatch into larvae (caterpillars).
3. The caterpillar forms a hard case around itself called a chrysalis.
4. Inside the chrysalis the caterpillar transforms into a butterfly.
5. The adult butterfly breaks out of the chrysalis and reproduces.

### The Life Cycle of a frog

1. Female frog releases eggs as Frogspawn. The male fertilises them.
2. 2-25 days later the tadpoles hatch.
3. The tadpole swims and eats plants; it breathes through gills.
4. The tadpole grows; front legs and its tail gets shorter. The froglet jumps out of the water and lives on land.
5. The frog loses its tail; it starts to eat insects.

**Key Vocabulary:** Amphibian, Insect, Fertilise, Larvae, Metamorphosis

**Example:** [Small diagram of a butterfly life cycle]

By Ha Vy

## Sound

**What is Pitch?**  
The pitch of a sound is how high or low it is.

**How can we change pitch?**  
Pitch depends on the frequency of the sound waves. Higher frequency means higher pitch.

**Can sound travel through things?**  
Sound can travel through solids, liquids, and gases, but not through a vacuum.

**How do we hear sounds?**  
Sound waves enter the ear and vibrate the eardrum, which sends signals to the brain.

**How are sounds made?**  
Sounds are created when an object vibrates. These vibrations travel through the air to our ears.

low

quiet

particles

instruments

loud

high

volume

wave

pitch

amplitude

**Science Challenges**

Who was Benjamin Franklin and what did he invent?

## Science

**Evolution and Inheritance**

Charles Darwin

Alfred Wallace

**What is a fossil?**

**What is Charles Darwin's legacy?**

evolution

inheritance

fossilisation

DNA

evolution

plants

natural selection

genes

fossil

# Useful links

Some websites to support Science at home...

<https://www.stem.org.uk/home-learning/primary>

Free activities and materials put together by subject experts.

<https://explorify.wellcome.ac.uk/blog/explorify-during-school-closures>

A set of collections of activities based on the primary Science curriculum to do at home.

<http://www.show.me.uk/section/science>

Science and technology games, collection objects, homework help and more from museums and galleries.

<https://pstt.org.uk/resources/curriculum-materials/Science-Fun-at-Home>

Simple and engaging practical science activities.

<https://www.bbc.co.uk/bitesize/primary>

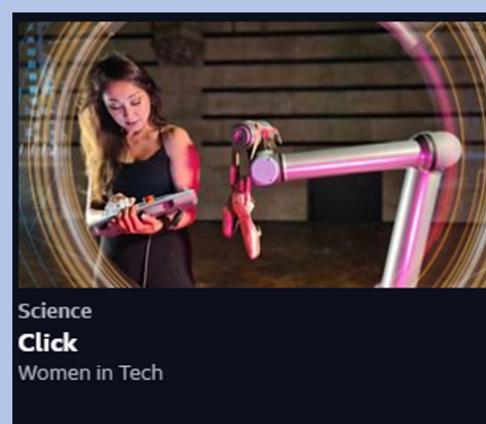
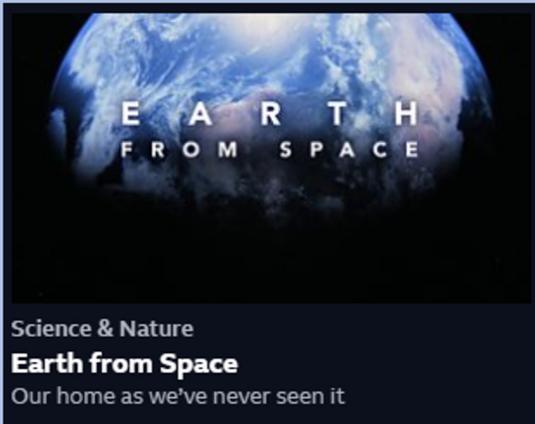
Videos, quizzes and practical activities to do at home.

## Resources



# Useful links

Why don't you have a look at some of these iplayer links to further your science learning at home...



There's more here...

<https://www.bbc.co.uk/iplayer/categories/science-and-nature/a-z>

## Resources



# Can you help us?

Do you have a science background?

Do you work in a field of science?

Do you know someone who does?

We would love to build some links with parents to further our possibilities driver and give children context for their learning.

If you have a background in any field of Science and would be willing to talk to one of our year groups about what a job in Science entails please email the school office.

We will be looking for anyone who can talk about a career in Science to talk at various points through the year, including during Science Week in March 2023.

Parent  
helpers

