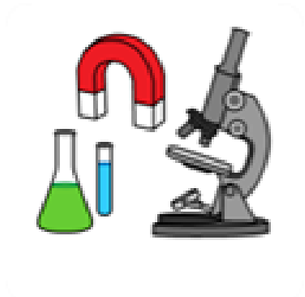
Bricknell Primary School

Science Long Term Plan



Key concepts: (not exhaustive)
Through the science curriculum, pupils will develop an understanding of the following key concepts. These concepts are revisited through different units as pupils move through the school. By the end of primary school, children will know and understand these key concepts.

Biology

Organisms require a supply of energy and materials: Living things are special collections of matter that reproduce, use energy and grow. Food provides materials and energy for life and growth. Plants and bacteria use energy from the sun to generate food. Animals break down food and are ultimately dependant on green plants for energy. In any ecosystem there is competition for the energy and materials needed to live and reproduce.

Genetic information: Genetic information is passed down from one generation of organisms to another. Genes determine the development and structure of organisms

Evolution: The diversity of organisms is the result of evolution. Different kinds of life, animals, plans and microorganisms, have evolved into different forms best suited to the environments in which they live. Organisms not able to respond sufficiently to changes in their environment become extinct

Chemistry

All matter (stuff) in the universe is made of tiny building blocks.

Materials (properties and changes): The arrangement, movement and types of building blocks of matter, and the forces that hold them together/push them apart, explain all the properties of matter (eg: hot/cold, soft/hard, light/heavy etc…)

States of matter: Matter can change if the arrangement of these building blocks change (eg: chemical reactions)

Physics

The universe follows unbreakable rules that are all about forces, matter and energy

Forces are different kinds of pushes and pulls that act on all the matter in the universe. Changing the movement of an object requires a force to be acting on it. Gravity is a universal force of attraction between all objects, however large or small

Energy: There are many different forms of energy eg: light, sound, electricity, heat and wind. Energy can be transferred from one object to another and can cause changes. The total amount of energy in the universe is always the same but energy can be transformed when things change or are made to happen

Earth Science

The earth in relation to the universe: The Earth is one of 8 planets orbiting the sun. Our solar system is a very small part of one of millions of galaxies in the universe.

The earth spins on its axis: The Earth is tilted and spins on its axis leading to day and night, the seasons and climate

Enquiry strategies

As part of **working scientifically** which is embedded throughout all units, pupils will also learn to use a variety of **enquiry strategies** to answer scientific questions. Different questions lead to different types of enquiry and are not limited to fair testing. By the end of primary school, children will be able to use these enquiry strategies confidently and know that different strategies may be needed at different times.

Observing over time: (observing or measuring how one variable changes over time)

Identifying and classifying: (identifying and naming materials/living things and making observations or carrying out tests to organise them into groups.)

Looking for patterns: (making observations or carrying out surveys of variables that cannot be easily controlled and looking for relationships between two sets of data)

Comparative and fair testing: (observing or measuring the effect of changing one variable when controlling others)

Answering questions using secondary sources of evidence: (answering questions using data or information that they have not collected first hand)

As well as this, pupils will learn about:

Using models: (Developing or evaluating a model or analogy that represents a scientific idea, phenomenon or process)

Second order concepts

Through each unit of science, the following second order concepts are explored:

Responsibility: (working safely, how science can solve problems, climate change and sustainability)

Similarity and difference: (making comparisons, finding patterns, noting differences and drawing conclusions)

Cause and consequence: (models and laws, reactions between materials, observing processes)

Continuity and change: (observing what changes and what stays the same)

Significance: (significant scientists, discoveries, laws, models and theories)

Written and oral expression: (Using scientific terminology, evaluation, drawing conclusions, objectivity, explaining processes, describing and explaining patterns, presenting and interpreting data)

Science Long Term Overview

Year Group	Autumn	Spring	Summer
EYFS	The World	The World	The World
1	Looking at Animals Our Changing World	Everyday Materials Our Changing World	Plant Detectives Using our Senses Our Changing World
2	What is in your habitat? Our Changing World Materials: Good Choices	Materials: Shaping up The apprentice gardener What is in your habitat?	Growing Up What is in your Habitat? Take Care
3	Our Changing World Amazing Bodies Can you see me?	Our Changing World Rock detectives How does your garden grow?	How does your garden grow? The power of forces Our Changing World
4	Our Changing World Where does all that food go? Switched on	Our Changing World In a State Good vibrations	Where does all that food go? Who am I? Human impact Our Changing World
5	Feel the force Get sorted Everyday materials	Marvellous mixtures Materials: All change! The Earth and beyond	Reproduction in plants and animals Circle of life
6	Light up your world Body Pump Our Changing World	Everything changes	Nature library Body health Our Changing World Danger! Low voltage