Newton Hill Community School Science Overview

Biology - Plants

EYFS	KS1	LKS2	UKS2
• Observe changes to plants over time and talk about their observations.	• 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 • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. • Observe and describe how seeds and bulbs grow into mature plants	• 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.	• Describe the life process of reproduction in some plants (and Animals, including humans)

Biology - Living things and their habitats

EYFS	KS1	LKS2	UKS2
• Children will observe and talk about the lifecycle of a caterpillar • Through continuous provision, children will begin to name and sort some minibeasts	• Explore and compare the differences between things that are living, dead, and things that have never been alive. • 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 micro-habitats. • 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.	• 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. • Construct and interpret a variety of food chains, identifying producers, predators and prey.	• 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 • Give reasons for classifying plants and animals based on special characteristics • Describe the life process of reproduction in some plants and animals.

Biology – Animals, including humans			
EYFS	**KS1**	**LKS2**	**UKS2**
• Begin to name parts of the body through discussion and music. • Begin to identify and discuss the names of some common farm animals and their babies through small world continuous provision	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • 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. • Find out about and describe the basic needs of Animals, including humans, for survival (water, food and air) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Notice that animals, including humans, including humans, have offspring which grow into adults • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores	• Identify that humans and some other animals have skeletons and muscles for support, protection and movement • Describe the simple functions of the basic parts of the digestive system in humans • Identify that Animals, including humans, 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 • 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	• 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, • Identify and name the main parts of the circulatory system, and explain the functions of the heart, blood vessels and blood. • Describe the life processes of reproduction in some Animals, including humans • Describe the changes as humans develop from birth to old age • Describe the differences in the life cycles of mammals, amphibians, insects & birds

Biology – Evolution and Inheritance

EYFS	KS1	LKS2	UKS2
		• From The Earth (Rocks, Atmosphere): Describe in simple terms how fossils are formed when things that have lived are trapped within rock	• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how Animals, including humans and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution • 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

Chemistry - Materials

EYFS	KS1	LKS2	UKS2
• Observe melting ice and know that ice is frozen water.	• Distinguish between an object and the material from which it is made • Describe the simple physical properties of a variety of everyday materials • Identify and name a variety of everyday materials, including wood, metal, plastic, glass, metal, water and rock • Compare and group together a variety of everyday materials on the basis of their simple physical properties • 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 ne changed by squashing, bending, twisting and stretching	• 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 (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	• 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 • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Demonstrate that dissolving, mixing and changes of state are reversible changes • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • 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

Chemistry – Earth/Rocks			
EYFS	**KS1**	**LKS2**	**UKS2**
		• Recognise that that soils are made from rocks and organic matter • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Compare and group together different kinds of rocks on the basis of their simple physical properties	

Physics – Forces and Motion

EYFS	KS1	LKS2	UKS2
• To explore floating and sinking	• Materials: Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	• Notice that some forces need contact between two objects, but magnetic forces can act at a distance • Compare how things move on different surfaces	• 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 gears, pulleys, levers and springs, allow a smaller force to have a greater effect • Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs

Physics – Light

EYFS	KS1	LKS2	UKS2
		• 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 they need light in order to see things and that dark is the absence of light • Recognise that shadows are formed when the light from a light source is blocked by a solid object • Find patterns that determine the size of shadows	• 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

Physics – Sound			
EYFS	**KS1**	**LKS2**	**UKS2**
		• 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	

Physics – Magnetism			
EYFS	**KS1**	**LKS2**	**UKS2**
		• Notice that some forces need contact between two objects and some forces act at a distance • 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. • Observe how magnets attract or repel each other and attract some materials and not others • Describe magnets as having two poles • Predict whether two magnets will attract or repel each other, depending on which poles are facing	

Physics – Electricity

EYFS	KS1	LKS2	UKS2
		• 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	• Use recognised symbols when representing a simple circuit in a diagram • 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

Physics – Earth and Space

EYFS	KS1	LKS2	UKS2
• Discuss and observe what happens to the weather when a season changes (Autumn/Winter, spring, summer) • Begin to identify the weather in the seasons and talk about the changes through the seasons.	Seasonal changes: • Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies.		• 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