<table>
<tr><td colspan="7">Long term Plan for Science 2021/2022</td></tr>
<tr><td>Phase</td><td>Autumn 1</td><td>Autumn 2</td><td>Spring 1</td><td>Spring 2</td><td>Summer 1</td><td>Summer 2</td></tr>
<tr><td rowspan="3">EYFS</td><td colspan="6">Our Early Years curriculum has been designed using the statutory educational programmes of study and the development matters to ensure that all children are equipped with knowledge and skills to achieve expected in the Early Learning Goals that link to Science. The following Early Learning Goals link to Science:
Communication and Language (Listening, Attention and Understanding)
• Make comments about what they have heard and ask questions to clarify their understanding.
Personal, Social and Emotional Development (Managing Self)
• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
Understand the World (The Natural World)
• Explore the natural world around them, making observations and drawing pictures of animals and plants.
• Know some similarities and difference between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
• Understand some importance processes and changes in the natural world around them, including the seasons and changing states of matter.</td></tr>
<tr><td>All about Me
• To know basic parts of the body.
• To know we have 5 senses.
• To know how to stay healthy.</td><td>Our Amazing World
• To know that dinosaurs are extinct.
• Dinosaur bones are known as fossils.
• To identify if dinosaurs were plant or meat eaters.
• To know there are 8 planets and some of their names.
Key Scientist
Neil Armstrong</td><td>Our Amazing World
• To recognise that polar regions are cold, icy and not many plants grow there.
• To recognise that deserts are dry and sandy and very hot in the day and cold at night.
• To recognise rainforests are wet, hot and humid. Lot of trees and flowers grow there.</td><td>Once Upon a Time
• To know the lifecycle of a hen.
• To know which materials are best to build houses.
• To know the difference between baby and adult animals and their names.</td><td>Alive and Growing
• To know plants grow from seeds or bulbs.
• To know the basic parts of a plant.
• To know what a plant needs to grow.
• To know about spiders and insects and name their body parts.
• To know characteristics of minibeasts.
• To know the lifecycle of a butterfly and a frog.</td><td>Pirates and Seaside
• To know about different things that live under the sea.
• To talk about similarities and different of sea creatures.
• To sort objects that can and cannot sink or float.</td></tr>
<tr><td colspan="6">Throughout the year, the children will observe and talk about the changes that they can see in their local environment including the weather, trees, plants and animals.</td></tr>
<tr><td>KS1</td><td colspan="6">Seasonal Changes to be taught throughout the year through observations:
• Observe changes.</td></tr>
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Describe weather associated with seasons.
Understand that the length of day changes throughout the year.

Guidance

Make tables and charts about the weather after observing and talking about changes.
Make displays of what happens in the world around them including day length as the seasons change.

Key Scientists

George James Symons (Meteorologist)
Anders Celsius (Astronomer, Physicist and Mathematician)

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Everyday Materials:

Distinguish between an object and the material from which it is made
Identify and name materials such as wood, plastic, glass, metal, water and rock
Describe simple properties such as hard, soft, bumpy etc.
Compare and group materials based on their properties.
Identify and compare suitability of materials e.g. wood, metal, plastic, glass, brick, rock, paper and cardboard
Find out how the shape of objects can be changed by squashing, bending, twisting and stretching.

Guidance:

Perform simple tests such as ‘What is the best material for an umbrella?’
Raise and answer questions about a range of everyday materials to become familiar
Look at how one material can be used for more than one thing e.g. metal for coins, can, cars, table legs.
Observe everyday material around school, identify and classify materials and record observations.

Key Scientists

Charles Mackintosh (waterproof coat)
John Dunlop (inflatable rubber tyre)
Ole Kirk Christiansen (creator of Lego)

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Living things and their habitats:

Explore and compare difference between living and dead things.
Identify habitats that living things live in.
Know why some animals are more suited to certain habitats.
Understand that habitats provide a basic need.
Identify and name a variety of plants and animals in their habitats including micro habitats.
Know how animals get food from plants and animals.
Use a simple food chain.

Guidance:

Compare animals living in familiar habitats with less familiar such as seashore, ocean, rainforest.
Identify plants and animals within a habitat and observe how they rely on each other.
Sort and classify things by whether they are living, dead or never alive
Construct a simple food chain e.g. grass, cow, human
Observe conditions in different habitats and if they effect how many animals live there.

Key Scientists

Sylvia Earle (Marine Biologist)

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Plants:

Identify and name common wild and garden plants.
Identify and name deciduous and evergreen trees.
Identify and describe basic structure of common flowering plants and trees.
Observe how seeds and bulbs grow into plants.
Find out why plants need water, light and temperature.

Guidance:

Plant structures include: leaves, flowers, petals, fruit, roots, bulb, seed, trunk, branches, stem.
Experiment growing seeds and bulbs in different environments and compare findings.
Observe growth of plants they have planted by drawing diagrams and using magnifying glasses to look closely.
Look at the local environment and see how plants grow.

Key Scientists

Beatrix Potter (Botanist and Natural Scientist)
John Ray (Naturalist)
Jane Colden (Botanist)
Agnes Arber (Botanist)

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			• Sir Ernest Shackleton (Antarctic Explorer)			
LKS2	Sound: • Identify how sound is made – vibrations. • Know how vibrations travel. • Understand how objects making sounds can affect pitch. • Understand how volume depends on vibrations. • Recognise sounds get fainter as distance increases. Guidance • Use a range of musical instruments to explore vibrations. • Find out how the pitch and volume can be changed • Find patterns in the sounds that are made e.g. saucepan lids of different sizes or elastic bands of different thicknesses. • Make earmuffs from a variety of materials to discover which gives the best insulation. • Make and play their own instruments.	Animals including humans: • Identify the right types of nutrition for animals and humans and that they get nutrition from what they eat. • Identify skeletons and muscles for support, protection and movement. • Know the basic parts of digestive system. • Identify different teeth in humans. • Construct food chains using producers, predator and prey. Guidance • Identify and group animals with and without skeletons and observe their movement. • What would happen if humans didn't have skeletons? • Group animals based on what they eat. • Design healthy meals. Key Scientists • Marie Maynard Daly (Biochemist studied	Light: • Recognise you need light in order to see things and that dark is the absence of light • Notice that light is reflected from surfaces • Light from the sun can be dangerous and it is important to protect eyes • Shadows are formed when the light from a source is blocked by a solid object. • Find patterns in the way that the size of shadows change. Guidance • Play mirror games to explore what happens when light reflects off a mirror. • Look for and measure shadows and find out what might cause them to change. • Look for patterns when the light sources moves or the distance	Living Things and their Habitats: • Group living things in a variety of ways. • Use classification keys to help group, identify and name living things in the local area and wider environment. • Recognise that environments can change through human impact. Guidance • Put vertebrate animals into groups such as fish, amphibians, reptiles, birds and mammals. • Put invertebrates into snails, slugs, worms, spiders and insects. • Explore positive and negative effects e.g. nature reserves, ecologically planned parks, garden ponds against	Plants: • Identify and describe functions of different parts of flowering plants: roots, stem, trunk, leaves, flowers • Explore what a plant needs to grow: air, light, water, nutrients, room and how this varies. • Investigate how water is transported in plants. • Life cycle of flowering plants: pollination, seed formation and dispersal. Guidance • Explore the relationship between structure and function. • Roots and stem for nutrition and support, leaves for nutrition and flowers for reproduction.	Electricity: • Identify appliances that run on electricity • Construct a simple series circuit • Identify and name cells, wires, bulbs, switches and buzzers • Identify whether a lamp will light in a circuit if it is a complete loop with a battery • Recognise that a switch opens and closes a circuit and associate with lamps • Recognise common conductors and insulators • Associate metals with being good conductors. Guidance • Construct simple series circuit using bulbs, buzzers, motors and switches. • Create simple devices and draw as pictorial

	Key Scientists • James West (Inventor and Acoustician) (Microphones) • Alexander Graham Bell (Inventor and Engineer) (Telephones)	cholesterol, super, protein) • Pierre Fauchard (father of modern dentistry)	between the light source and object changes. Key Scientists • Ibn al-Haytham (Alhazen) • Lewis Latimer	population, developments, litter and deforestation. Key Scientists • Rachel Carson (Marine Biologist) • Jacques Cousteau (Ocean Explorer)	• Explore the effect of different factors on plant growth: amount of light or fertiliser. • Discover how seeds are formed • Observe how water is transported by putting white carnations in coloured water. Key Scientists • Stephen Hales (Botanist) • Anna Atkins (Botanist)	representation (it does not have to use the proper symbols) • Observe patterns where the bulbs get brighter when more cells are added. • Metals tend to be conductors. Key Scientists • Hertha Ayrton (Engineer, Physicist and Inventor) • Joseph Swan (Physicist, Chemist and Inventor)
UKS2	Evolution and Inheritance: • Living things have changed over time and fossils give us information about living things from millions of years ago. • Adults produce offspring that normally differ to their parents. • Identify how animals have adapted to their environment and how this leads to evolution.	Light: • Recognise that light travels in straight lines. • Explain how light reflects in the eye. • Explain that we see objects because of light sources. • Understand why shadows have the same shapes as objects that cast them. Guidance • Build on Y3	Electricity: • 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.	Living Things and their Habitats: Y5 objectives • Describe the differences in life cycles of mammals, amphibians, insects and birds. • Describe reproduction in plants and animals. Y6 objectives • Describe how living things are classified according to common characteristic including micro-	Animals including humans: Y5 objectives • Describe the changes as humans develop to old age. Y6 objectives • Identify human circulatory system and describe functions of the heart, blood vessels and blood. • Recognise impact of diet, exercise, drugs and lifestyle.	**Catch Up Unit from LKS2** - Sound: • Identify how sound in made – vibrations. • Know how vibration travel. • Understand how objects making sounds can affect pitch. • Understand how volume depends on vibrations. • Recognise sounds get fainter as distance increases. Guidance

	Guidance • Builds on Rocks from Y3. • Characteristics are passed on from parents. What happens when a Labrador breeds with a poodle? • Explore how giraffe's necks get longer • Explore development of insulating fur on the arctic fox. • Compare how some living things have adapted to survive: cacti, penguins, camels. • Analyse advantages and disadvantages of adaptions e.g. 2 or 4 feet, long or short beak, gills or lungs. Key Scientists • Mary Anning (Palaeontologists) • Charles Darwin (Naturalist) • Gregor Mendel (Botanist and Biologist) • Alfred Wallace	• Explore how light behaves with light sources, reflection and shadows • Decide where to place rear-view mirrors • Design and make a periscope • Use shadow puppets • Investigate rainbows, soap bubbles, objects in water and coloured filters. Key Scientists • Thomas Edison (inventor) • Edith Clarke (electrical engineer)	• Use recognised symbols when representing a simple circuit. Guidance • Build on Y4 • Construct simple series circuits to answer questions about what happens when they try different components • Series circuits only. • Design and make a set of traffic lights or burglar alarm Key Scientists • Michael Faraday (Physicist) • William Kamkwamba (inventor)	organisms, plants and animals. • Give reasons for classifying plants and animals based upon characteristic. Guidance • Observe life cycle in vegetable garden, animals. • Find out about the work of the key scientists listed. • Sexual and asexual reproduction in plants and sexual reproduction in animals. • Compare life cycles in local area to animals in rainforests, oceans, deserts etc. • Grow new plants from parent plant using seeds, stems, root cuttings, bulbs and observe. • Compare how different animals reproduce and grow. • Broad groupings can be subdivided. • Decide where unfamiliar animals	• Describe how nutrients and water are transported in animals and humans. Guidance • Draw a timeline to indicate growth and development of humans • Changes in puberty • Compare gestation periods of animals with humans • Find out and record length and mass or a baby as it grows. • Use learning in Y3/4 on skeletal, muscular and digestive systems to answer questions that help to understand circulatory system. • How to keep bodies healthy	• Use a range of musical instruments to explore vibrations. • Find out how the pitch and volume can be changed • Find patterns in the sounds that are made e.g. saucepan lids of different sizes or elastic bands of different thicknesses. • Make earmuffs from a variety of materials to discover which gives the best insulation. • Make and play their own instruments. Key Scientists • James West (Inventor and Acoustician) (Microphones) • Alexander Graham Bell (Inventor and Engineer) (Telephones)

				would belong on a classification system. Key Scientists • May Agnes Chase • David Attenborough • Carl Linnaeus • Jane Goodall	and what can be harmful to humans Key Scientists • Elizabeth Blackwell (Doctor) • Marie Curie (Physicist and Chemist) • Alexander Fleming (Physicist and Microbiologist)	