

## Fritwell Primary School Science LTP Year B

Threshold concepts: 1. Working Scientifically (continuous throughout each milestone); 2. Biology 3. Chemistry 4. Physics

Biology coverage of plants, animals and humans, living things and evolution/inheritance

Chemistry coverage of materials

Physics coverage of motion, Earth in space, sound, light and electrical circuits

Science Week in March. Lower and Upper school units on Hamilton Trust whilst EYFS are on Twinkl

	Autumn term	Spring term	Summer term
<b>EYFS</b>	<p style="text-align: center;">All Around Me/ Robots</p> <p style="text-align: center;"><b>Life Processes</b> <b>Awe and Wonder</b></p>	<p style="text-align: center;">Wonderful World/ Transport</p> <p style="text-align: center;"><b>Physical Processes</b> <b>General Science Investigations</b></p>	<p style="text-align: center;">Minibeasts/ Heroes</p> <p style="text-align: center;"><b>Living Things</b> <b>Science Investigations</b></p>
<b>Y1 Sticklebacks</b>	<p style="text-align: center;">Fire and Ice</p> <p style="text-align: center;"><b>Weather Art</b> <b>Exploring Changes</b></p> <p>i. observe changes across the four seasons ii. observe and describe weather associated with the seasons and how day length varies</p> <p>i. distinguish between an object and the material from which it is made (1EM) ii. identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock (1EM) iii. describe the simple physical properties of a variety of everyday materials (1EM).</p>	<p style="text-align: center;">No Place like Home</p> <p style="text-align: center;"><b>People and their Pets</b> <b>Brilliant Builders</b></p> <p>i. identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals ii. identify and name a variety of common animals that are carnivores, herbivores and omnivores iii. describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) iv. identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p style="text-align: center;">Growing and Learning</p> <p style="text-align: center;"><b>Art and Nature</b> <b>Habitats and Homes</b></p> <p>i. identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (1P) ii. identify and describe the basic structure of a variety of common flowering plants, including trees (1P) iii. observe and describe how seeds and bulbs grow into mature plants (2P) iv. find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (2P)</p>

	<p>iv. compare and group together a variety of everyday materials on the basis of their simple physical properties (1EM)</p> <p>v. identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (2EM)</p> <p>vi. find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (2EM)</p> <p style="text-align: center;">Rachel Carson Charles Macintosh</p>	<p>i. distinguish between an object and the material from which it is made (1EM)</p> <p>ii. identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock (1EM)</p> <p>iii. describe the simple physical properties of a variety of everyday materials (1EM)</p> <p>iv. compare and group together a variety of everyday materials on the basis of their simple physical properties (1EM)</p> <p>v. identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (2EM)</p> <p>vi. find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (2EM)</p> <p style="text-align: center;">Jane Colden Ole Christiansen</p>	<p>i. explore and compare the differences between things that are living, dead and things that have never been alive (2LvH)</p> <p>ii. 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 (2LvH)</p> <p style="text-align: center;">Louis Pasteur Mae Jennison</p>
<p><b>Y2/3</b> <b>Seahorses</b></p>	<p style="text-align: center;">Rock and Roll</p> <p style="text-align: center;">This Planet Rocks Magnetic Fun and Games (Y3/4)</p> <p>i. compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>ii. describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>iii. recognise that soils are made from rocks and organic matter</p> <p>i. compare how things move on different surfaces</p>	<p style="text-align: center;">Australian Adventure</p> <p style="text-align: center;">Greatly Green Growers Habitat Helpers</p> <p>i. identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>ii. 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</p> <p>iii. investigate the way in which water is transported within plants</p>	<p style="text-align: center;">Fab Fitness</p> <p style="text-align: center;">Circle Of Life Fit for Success</p> <p>i. describe the simple functions of the basic parts of the digestive system in humans</p> <p>ii. identify the different types of teeth in humans and their simple functions</p> <p>iii. construct and interpret a variety of food chains, identifying producers, predators and prey</p> <p>i. identify that animals, including humans, need the right types and amount of nutrition, and</p>

	<p>ii. notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>iii. observe how magnets attract or repel each other and attract some materials and not others</p> <p>iv. 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</p> <p>v. describe magnets as having two poles</p> <p>vi. predict whether two magnets will attract or repel each other, depending on which poles are facing</p>	<p>iii. recognise that environments can change and that this can sometimes pose dangers to living things</p> <p>George Washington Carver Sir Joseph Banks</p>	<p>that they cannot make their own food; they get nutrition from what they eat</p> <p>ii. identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Gerald Durrell Washington Sheffield</p>
<p><b>Y4/5 Stingrays</b></p>	<p>Water Water Everywhere</p> <p>Scientists and Inventors States of Matter Scientists</p> <p>i) compare and group materials together, according to whether they are solids, liquids or gases</p> <p>ii) 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)</p> <p>iii) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p> <ul style="list-style-type: none"> <li>research aspects of Alexander Graham Bell's life and work;</li> <li>present their research into Alexander Graham Bell to an audience;</li> <li>explain the difficulties that Maria Telkes and Garrett Morgan may have faced in being recognised for their work;</li> <li>give their own facts to describe the scientists</li> </ul>	<p>Roman Adventure</p> <p>Sound It's Electric</p> <p>i. identify how sounds are made, associating some of them with something vibrating</p> <p>ii. recognise that vibrations from sounds travel through a medium to the ear</p> <p>iii. find patterns between the pitch of a sound and features of the object that produced it</p> <p>iv. find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>v. recognise that sounds get fainter as the distance from the sound source increases</p>	<p>Disasters</p> <p>Help Our Habitats Name this Living Thing</p> <p>i. Recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>ii. recognise that living things can be grouped in a variety of ways</p> <p>ii. explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>David Attenborough Eva Crane</p>

		<p>i) identify common appliances that run on electricity</p> <p>ii) construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>iii) 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</p> <p>iv) recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>v) recognise some common conductors and insulators, and associate metals with being good conductors</p> <p>Thomas Edison John Ambrose Fleming Lewis Howard Latimer</p>	
<p><b>Y5/6 Sharks</b></p>	<p>Evolve</p> <p>The Human Species Survival of the Fittest</p> <p>i. describe the changes as humans develop to old age</p> <p>ii. identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>iii. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>iv. describe the ways in which nutrients and water are transported within animals, including humans</p>	<p>Alpha to Omega</p> <p>Special Effects Materials (covers all aspects) Sensational Science</p> <p>i. compare and group together everyday materials on the basis of their properties, including their solubility and response to magnets</p> <p>ii. know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>iii. use knowledge of solids, liquids and gases to decide how mixtures might be</p>	<p>Mountains to Climb</p> <p>The Science of Sport Materials Consultants</p> <p><b>Living Things and their Habitats</b></p> <p>i. 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</p> <p><b>Properties of Materials</b></p> <p>i. compare and group together everyday materials on the basis of their properties</p> <p>ii. give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>

	<p>i. recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>ii. recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>iii. identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p> <p style="text-align: center;">Charles Darwin Mary Leakey</p>	<p>separated, including through filtering, sieving and evaporating</p> <p>iv. demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>v. 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</p> <p>i. know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>ii. use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>iii. demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>iv. 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</p> <p>v. describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>vi. describe the movement of the Moon relative to the Earth</p> <p>vii. describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>viii. use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>	<p style="text-align: center;"><b>Forces</b></p> <p>i. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>ii. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>iii. recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p> <p style="text-align: center;"><b>Animals including Humans</b></p> <p>i. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>ii. recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p style="text-align: center;"><b>Electricity</b></p> <p>i. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>ii. 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</p> <p>iii. use recognised symbols when representing a simple circuit in a diagram</p> <p>i. compare and group together everyday materials on the basis of their properties, including their hardness, transparency, and conductivity (electrical and thermal)</p> <p>ii. give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p style="text-align: center;">Sir Ludwig Guttman Van Phillips</p>
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'Working Scientifically' is the continuous area of study in the National Curriculum for Science in England. This aims to ensure that children have greater exposure to a range of enquiry types and that they recognize when the various forms of enquiry are taking place. This is to enable them to decide for themselves which type to use in order to tackle the question they are investigating. The following types of enquiry are included in Hamilton Science planning.

**Exploring:**

Discovering what happens through play and exploration, e.g. what happens when you add water to fabric?

**Observing over time:**

Often linked to exploring but with a time variable included, e.g. using a thermometer to observe temperature changes of water.

**Sorting, classifying and identifying:**

Putting things into groups based on their characteristics, e.g. in how many ways can you sort these materials?

**Fair test:**

Used when we can control all the variables except the one we are changing, e.g. which 'towel' material will absorb the most water?

**Pattern seeking:**

Used when there are too many variables to control and so a true fair test is not possible, e.g. do some people have stronger muscles because they use them more?

**Problem solving:**

Using the science we know to solve a problem, e.g. Using what you have learned about how sounds are made and the loudness of sounds made by different materials, design an effective bird scarer that uses wind chimes or similar.

**Researching and analysing secondary sources**

Using secondary sources to help answer scientific questions that cannot be answered through practical investigations, e.g. which materials are biodegradable?