

Science Overview

2 year cycle



Owl Class

Cycle B



Autumn 1/Living Things

Science Concepts	Knowledge and Vocabulary	Learning Objectives
Identifying and classifying Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions. Observing closely, using simple equipment	Explore and compare the differences between things that are living, dead, and things that have never been alive Notice that animals, including humans, have offspring which grow into adults	Children will have sorted living from non-living things. Children will have identified things that were once alive. Children will have created a list of properties of living things. Children will have compared the stages of human growth, from birth to adulthood. Children will know how animals are similar to and different from their parents when they are babies. Children will understand the life stages of an animal or plant.

Autumn 2/Habitats

Working Scientifically	Knowledge	Learning Objectives
<p>Identifying and classifying</p> <p>Gathering and recording data to help in answering questions.</p> <p>Observing closely, using simple equipment.</p> <p>Asking simple questions and recognising that they can be answered in different ways</p>	<p>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</p> <p>Identify and name a variety of plants and animals in their habitats, including micro-habitats</p>	<p>Children will have recognised and described different habitats.</p> <p>Children will have investigated contrasting world habitats.</p> <p>Children will have investigated minibeads and other animals in the local environment.</p> <p>Children will have investigated a pond habitat.</p> <p>Children will have investigated where worms live.</p> <p>Children will have planned a habitat for wildlife.</p>

Spring 1/Use of Materials

Working Scientifically	Knowledge	Learning Objectives
<p>Identifying and classifying</p> <p>Asking simple questions and recognising that they can be answered in different ways</p> <p>Observing closely, using simple equipment Performing simple tests</p> <p>Using their observations and ideas to suggest answers to questions</p> <p>Gathering and recording data to help in answering questions.</p>	<p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p>	<p>Children will have recognised that it is important for objects to be made from suitable materials.</p> <p>Children will have recognised that the same type of object can be made from different materials.</p> <p>Children will have discovered which material is best for the waterproof outer layer of a nappy.</p> <p>Children will have carried out simple tests on materials, decided which results to take and decided how to record and interpret these results.</p> <p>Children will have discovered which material is the strongest.</p> <p>Children will have applied their knowledge of material properties to a 'design and make' challenge.</p>

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Spring 2/Changing Shapes

Working Scientifically	Knowledge	Learning Objectives
<p>Identifying and classifying</p> <p>Asking simple questions and recognising that they can be answered in different ways</p> <p>Observing closely, using simple equipment</p> <p>Performing simple tests</p> <p>Gathering and recording data to help in answering questions.</p>	<p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Children will have ordered materials according to their stretchiness.</p> <p>Children will have investigated some bendy materials.</p> <p>Children will have identified how twisted materials are used to make everyday objects.</p> <p>Children will have identified that some materials can be squashed and some cannot.</p> <p>Children will have recognised how to change the shape of some materials to create an artwork.</p>

Summer 1/Growing Plants

Working Scientifically	Knowledge	Learning Objectives
<p>Observing closely, using simple equipment</p> <p>Asking simple questions and recognising that they can be answered in different ways</p> <p>Performing simple tests</p> <p>Using their observations and ideas to suggest answers to questions</p>	<p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Observe and describe how seeds and bulbs grow into mature plants</p>	<p>Children will have investigated what plants need to grow.</p> <p>Children will have measured plant growth over time.</p> <p>Children will have planted some seeds.</p> <p>Children will have discovered where seeds come from.</p> <p>Children will have dissected a bean seed.</p>

Summer 2/Feeding and Exercise

Working Scientifically	Knowledge	Learning Objectives
<p>Identifying and classifying</p> <p>Performing simple tests</p> <p>Gathering and recording data to help in answering questions.</p>	<p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>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.</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>Children will have named and classified a variety of food that humans eat by plant or animal origins.</p> <p>Children will have identified a simple food chain.</p> <p>Children will have completed an enquiry into what garden birds prefer to eat.</p> <p>Children will have made a diet and exercise plan.</p> <p>Children will have identified food safety and hygiene guidelines.</p>

Otter Class
Cycle B



Autumn 1/Movement and Feeding

Working Scientifically	Knowledge	Learning Objectives
<p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p>	<p>Identify that animals, 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</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Children will have learned that humans need the right types of nutrition, which they get by eating a balanced diet, and will be able to sort foods into different groups.</p> <p>Children will have learned that animals need the right types and amounts of nutrition.</p> <p>Children will have learned that humans need the right types and amounts of food and nutrition.</p> <p>Children will have identified what happens if we over- / under-eat and/or eat too much of the wrong things.</p> <p>Children will have learned that animals, including humans, have skeletons and muscles for support and movement, and will be able to name some common bones (including the skull, the spine etc.).</p> <p>Children will have identified when to use scatter graphs and be able to spot mistakes when the results are provided.</p> <p>Children will have identified relationships between different body part differences and raise relevant questions.</p>

Autumn 2/Light and Shadow

Working Scientifically	Knowledge	Learning Objectives
<p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p>	<p>Recognise that they need light in order to see things and that dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>Find patterns in the way that the size of shadows change.</p>	<p>Children will have discovered that some materials block light to form shadows.</p> <p>Children will have noticed that shadows are similar in shape to the objects that make them.</p> <p>Children will have discovered that some materials block light.</p> <p>Children will have sorted materials as transparent, translucent or opaque.</p> <p>Children will have learned that shadows are formed when opaque objects block light from the Sun.</p> <p>Children will have learned that shadows are similar in shape to the objects forming them.</p> <p>Children will have made a shadow puppet.</p> <p>Children will have made and recorded observations about and measurements of shadows.</p>

Spring 1/Magnets and Forces

Working Scientifically	Knowledge	Learning Objectives
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<p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them</p>	<p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>Describe magnets as having two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>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>Children will have recognised that balls travel differently on different surfaces.</p> <p>Children will have shared what they know about magnets.</p> <p>Children will have consolidated their understanding of how magnets behave.</p> <p>Children will have recognised that a magnetic force can act at a distance and also act through different materials.</p> <p>Children will have recognised how magnets can be used in everyday life</p>
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Spring 2/What Plants Need

Working Scientifically	Knowledge	Learning Objectives
<p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Using straightforward scientific evidence to answer questions or to support their findings</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p>	<p>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>Children will have recognised that plants need water to stay healthy.</p> <p>Children will have recognised plants that have outgrown their growing space.</p> <p>Children will recognise that soil provides nutrients that help plants to grow better.</p> <p>Children will have planned an investigation to test the effect of fertiliser on plant growth.</p> <p>Children will have drawn conclusions about the effect of fertiliser on plant growth.</p>

Summer 1/Rocks and Soils

Working Scientifically	Knowledge	Learning Objectives
<p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Setting up simple practical enquiries, comparative and fair tests</p>	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Recognise that soils are made from rocks and organic matter.</p>	<p>Children will have described different rocks.</p> <p>Children will have investigated some properties of rocks.</p> <p>Children will have found out where rocks come from.</p> <p>Children will have made a fossil.</p> <p>Children will have described soil in their local environment.</p> <p>Children will have considered the impact of worms in making soil.</p> <p>Children will have written a recipe for soil.</p>

Summer 2/Parts of Plants

Working Scientifically	Knowledge	Learning Objectives
<p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p>	<p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>Investigate the way in which water is transported within plants</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>Children will have investigated the functions of roots.</p> <p>Children will have investigated the functions of leaves</p> <p>Children will have investigated the life cycle of flowering plants.</p> <p>Children will have investigated seed dispersal.</p> <p>Children will have named and described the functions of some parts of a flowering plant.</p>

Kestrel Class

Cycle B



Autumn 1/Forces

Working Scientifically	Knowledge	Learning Objectives
<p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>Children will have described what makes things move.</p> <p>Children will have described how friction acts on moving objects to slow them down.</p> <p>Children will have identified the effect of air resistance on falling objects.</p> <p>Children will have identified how air can push things.</p> <p>Children will have described the effects of water resistance on moving objects.</p> <p>Children will have identified some simple mechanisms including levers, gears and pulleys.</p>

Autumn 2/Separating Mixtures

Working Scientifically	Knowledge	Learning Objectives
<p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p>	<p>Children will have understood how solid particles of different sizes can be separated by sieving.</p> <p>Children will have investigated which solids dissolve in water to form solutions, recording and reporting the results and will have understood that although the solid cannot be seen it is still present.</p> <p>Children will have used the results of an investigation on dissolving as evidence to support or refute predictions made</p> <p>Children will have identified that solids which have dissolved can be recovered by evaporating the liquid from the solution and will have explained how they know this.</p> <p>Children will have predicted and tested whether this is always the case for solutions.</p> <p>Children will have understood that when solids do not dissolve or react with water (liquid), they can be separated by filtering and will have applied this knowledge to solving a filtration problem.</p>

Spring 1/Our Bodies

Working Scientifically	Knowledge	Learning Objectives
<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p>	<p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p>	<p>Children will have made a map of their body systems.</p> <p>Children will have identified and named the main parts of the human circulatory system.</p> <p>Children will have made a documentary film about the heart.</p> <p>Children will have investigated pulse rates.</p> <p>Children will have conducted and filmed interviews about healthy lifestyles.</p> <p>Children will have created health information posters.</p>

Spring 2/Types of Change

Working Scientifically	Knowledge	Learning Objectives
<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Using test results to make predictions to set up further comparative and fair tests</p>	<p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>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>Children will have found out that some materials dissolve and that solubility rates vary.</p> <p>Children will have predicted whether the solute can be recovered from the solution due to evaporation.</p> <p>Children will have learned that mixing and dissolving are reversible changes and will have used this knowledge to separate materials.</p> <p>Children will have understood that melting is a reversible change and will have investigated this process.</p> <p>Children will have understood that burning is an irreversible change and that new materials are formed.</p> <p>Children will have learned that heating some materials can cause them to change and that this can be irreversible.</p> <p>Children will have discovered that putting acid on bicarbonate of soda will cause a chemical change that is irreversible. They will also have discovered that the type, strength and amount of acid and the amount of bicarbonate of soda will affect the reaction.</p> <p>Children will have used their knowledge of changing and separating materials to complete a meal-making challenge.</p>

Summer 1/Materials

Working Scientifically	Knowledge	Learning Objectives
<p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>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</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>	<p>Children will have demonstrated their knowledge of different properties of materials. They will have classified materials according to these properties and identified objects made from them.</p> <p>Children will have found out why an object is made from a certain material and will have suggested other materials that would also be suitable.</p> <p>Children will have planned and carried out investigations to discover which materials are good thermal insulators.</p> <p>Children will have used reference materials to research the advantages and disadvantages of different materials.</p> <p>Children will have raised questions suitable for investigation which relate to properties of materials.</p> <p>Children will have planned, carried out and interpreted an investigation in trying to answer a question about the most suitable material for a given function.</p> <p>Children apply what they have learnt about properties of materials to answer quiz questions and design a guinea pig cage.</p>

Summer 2/Lifecycles

Working Scientifically	Knowledge	Learning Objectives
<p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the changes as humans develop to old age.</p> <p>Describe the life process of reproduction in some plants and animals.</p>	<p>Children will have recognised that all living things have life cycles.</p> <p>Each child will have researched and drawn the life cycle of an animal.</p> <p>Children will have recorded the growth of a living thing.</p> <p>Children will have learned about metamorphosis.</p> <p>Children will be able to describe the life cycle of humans.</p> <p>Children will be able to describe the changes that occur as humans develop into old age.</p> <p>Children will have described and sequenced parts of plant and animal life cycles in the local environment.</p> <p>Children will have planned an outdoor investigation.</p>