

BWJPS
Science Whole School Long Term Plan 2021-22



This plan follows the National Curriculum so it already builds in progression e.g. Y5 Animals including Humans builds on Y4

		AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
EYFS Understanding the World Odd Years	The Natural World	New Beginnings All About Me Autumn What do we look like? What is inside our bodies? Observe the changes of Autumn – how do animals prepare for the colder weather?	Night and Day Chanukah Winter Why does it go dark? How do torches work? Observing the changes of Winter: Predicting changes – melting experiment.	Around the World Healthy Eating Where is UK, Africa and China on a map? How is it different in Africa to UK?	Spring People Who Help Us Observe the changes of Spring – what happens to animals as the weather gets warmer? Materials – what is the best material for the little pigs to build a house out of?	Planting and Growing Look at different plants which are growing in our environment. Know the names of different parts of a plant. Plant seeds and watch how they grow. Can a seed grow in the dark? Observe what happens to caterpillars over time.	Our Environment Animals Transition Find where we live/go to school on a map. Which animals live in the sea? Floating and sinking experiment

BWJPS
Science Whole School Long Term Plan 2021-22

Year 1 & 2 Odd	Plants Can they describe what plants need to survive? •Can they observe and describe how seeds and bulbs grow into mature plants? •Can they find out & describe how plants need water, light and a suitable temperature to grow and stay healthy? Builds on work on Planting and Growing covered in EYFS	Animals, including humans (Non- chronological report – How humans develop) Can they describe what animals need to survive? •Can they explain that animals grow and reproduce? •Can they explain why animals have offspring which grow into adults? •Can they describe the life cycle of some living things? (e.g. egg, chick, chicken) •Can they explain the basic needs of animals, including humans for survival? (water, food, air) •Can they describe why exercise, balanced diet and hygiene are important for humans? All year groups	Living things and their habitats •Can they match certain living things to the habitats they are found in? •Can they explain the differences between living and non-living things? •Can they describe some of the life processes common to plants and animals, including humans? •Can they decide whether something is living, dead or non-living? •Can they describe how a habitat provides for the basic needs of things living there? •Can they describe a range of different habitats? •Can they describe how plants and animals are suited to their habitat? Also Y4	Uses of everyday materials YR- They know the properties of some materials and can suggest some of the purposes they are used for. Can they describe the simple physical properties of a variety of everyday materials? •Can they compare and group together a variety of materials based on their simple physical properties? Can they explore how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching) •Can they find out about people who developed useful new materials? (John Dunlop, Charles Macintosh, John McAdam) •Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses? •Can they explain how things move on different surfaces? Also Year 5
	Observing closely •Can they use see, touch, smell, hear or taste to help them answer questions? •Can they use some scientific words to describe what they have seen and measured? •Can they compare several things?	Performing Tests •Can they carry out simple fair test? •Can they explain why it might not be fair to compare two things? •Can they say whether things happened as they expected? •Can they suggest how to find things out? •Can they use prompts to find things out?	Identifying and Classifying •Can they organise things into groups? •Can they find simple patterns (or associations)? •Can they identify animals and plants by a specific criteria, eg, lay eggs or not; have feathers or not?	Recording findings •Can they use text, diagrams, pictures, charts, tables to record their observations? •Can they measure using simple equipment?

BWJPS Science Whole School Long Term Plan 2021-22

Year 1 & 2 Even	Seasons Poem about seasons.	Animals including humans Fact-file about an animal.	Plants Instructions about growing a plant.	Everyday materials Biography
	<ul style="list-style-type: none"> • Can they observe changes across the four seasons? • Can they name the four seasons in order? • Can they observe and describe weather associated with the seasons? • Can they observe and describe how day length varies? 	<ul style="list-style-type: none"> •Can they point out some of the differences between different animals? •Can they sort photographs of living things and non-living things? •Can they identify and name a variety of common animals? (birds, fish, amphibians, reptiles, mammals, invertebrates) •Can they describe how an animal is suited to its environment? •Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores? 	<ul style="list-style-type: none"> •Can they name the parts of the human body that they can see? •Can they draw & label basic parts of the human body? •Can they identify the main parts of the human body and link them to their senses? •Can they name the parts of an animal's body? •Can they name a range of domestic animals? •Can they classify animals by what they eat? (carnivore, herbivore, omnivore) •Can they compare the bodies of different animals? 	<ul style="list-style-type: none"> • Can they name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant? •Can they identify and name a range of common plants and trees? •Can they recognise deciduous and evergreen trees? •Can they name the trunk, branches and root of a tree? •Can they describe the parts of a plant (roots, stem, leaves, flowers)?
Working Scientifically				
Observing closely	Performing Tests	Identifying and Classifying	Recording findings	
<ul style="list-style-type: none"> •Can they talk about what they <see, touch, smell, hear or taste>? •Can they use simple equipment to help them make observations? 	<ul style="list-style-type: none"> •Can they perform a simple test? •Can they tell other people about what they have done? 	<ul style="list-style-type: none"> •Can they identify and classify things they observe? •Can they think of some questions to ask? •Can they answer some scientific questions? •Can they give a simple reason for their answers? •Can they explain what they have found out? 	<ul style="list-style-type: none"> •Can they show their work using pictures, labels and captions? •Can they record their findings using standard units? •Can they put some information in a chart or table? 	

BWJPS Science Whole School Long Term Plan 2021-22

<p>Year 3</p>	<p>Plants</p> <ul style="list-style-type: none"> •Can they identify and describe the functions of different parts of flowering plants? (Roots, stem/trunk, leaves and flowers)? •Can they explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow)? •Can they explain how they vary from plant to plant? •Can they investigate the way in which water is transported within plants? •Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal? 	<p>Animals, inc. humans</p> <ul style="list-style-type: none"> •Can they explain the importance of a nutritionally balanced diet? •Can they describe how nutrients, water and oxygen are transported within animals and humans? •Can they identify those animals, including humans, cannot make their own food: they get nutrition from what they eat? •Can they describe and explain the skeletal system of a human? •Can they describe and explain the muscular system of a human? <p>All year groups</p>	<p>Light</p> <ul style="list-style-type: none"> •Can they recognise that they need light in order to see things? •Can they recognise that dark is the absence of light? •Can they notice that light is reflected from surfaces? •Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes? •Can they recognise that shadows are formed when the light from a light source is blocked by a solid object? •Can they find patterns in the way that the size of shadows change? <p>Also Y6 and EYFS Night and Day topic</p>	<p>Rocks</p> <ul style="list-style-type: none"> •Can they compare and group together different rocks on the basis of their appearance and simple physical properties? •Can they describe and explain how different rocks can be useful to us? •Can they describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed? •Can they describe in simple terms how fossils are formed when things that have lived are trapped within rock? •Can they recognise that soils are made from rocks and organic matter? <p>Also Y1 & Y2 Y4 & Y5 Living things & Habitats</p>	<p>Forces and Magnets</p> <ul style="list-style-type: none"> •Can they compare how things move on different surfaces? •Can they observe that magnetic forces can be transmitted without direct contact? •Can they observe how some magnets attract or repel each other? •Can they classify which materials are attracted to magnets and which are not? •Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance? •Can they compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet? •Can they identify some magnetic materials? •Can they describe magnets have having two poles (N & S)? •Can they predict whether two magnets will attract or repel each other depending on which poles are facing? 	<p>Scientists and Inventors</p> <p>Can they explore the work of well know scientists and inventors?</p>
<p><u>Planning</u></p> <ul style="list-style-type: none"> •Can they use different ideas and suggest how to find something out? •Can they make and record a prediction before testing? •Can they plan a fair test and explain why it was fair? •Can they set up a simple fair test to make comparisons? •Can they explain why they need to collect information to answer a question? <p><u>Obtaining and presenting evidence</u></p> <ul style="list-style-type: none"> •Can they measure using different equipment and units of measure? •Can they record their observations in different ways? Labelled diagrams, charts etc •Can they describe what they have found using scientific language? •Can they make accurate measurements using standard units? <p><u>Considering evidence and evaluating</u></p> <ul style="list-style-type: none"> •Can they explain what they have found out and use their measurements to say whether it helps to answer their question? •Can they use a range of equipment (including a data-logger) in a simple test? 						

BWJPS Science Whole School Long Term Plan 2021-22

Year 4	Animals, inc. humans	States of Matter	Sound	Living Things and their habitats	Electricity	Scientists & Inventors
	<p>Can they identify and name the basic parts of the digestive system in humans? Can they describe the simple functions of the basic parts of the digestive system in humans? Can they identify the simple function of different types of teeth in humans? Can they compare the teeth of herbivores and carnivores? Can they explain what a simple food chain shows? Can they construct and interpret a variety of food chains, identifying producers, predators and prey?</p> <p style="text-align: center; color: red;">All year groups</p>	<p>Can they compare and group materials together, according to whether they are solids, liquids or gases? Can they explain what happens to materials when they are heated or cooled? Can they measure or research the temperature at which different materials change state in degrees Celsius? Can they use measurements to explain changes to the state of water? Can they identify the part that evaporation and condensation has in the watercycle? Can they associate the rate of evaporation with temperature?</p> <p style="text-align: center; color: red;">Links to Materials Y1 & Y2</p>	<p>Can they describe a range of sounds and explain how they are made? Can they associate some sounds with something vibrating? Can they compare sources of sound and explain how the sounds differ? Can they explain how to change a sound (louder/softer)? Can they recognise how vibrations from sound travel through a medium to a ear? Can they find patterns between the pitch of a sound and features of the object that produce it? Can they find patterns between the volume of the sound and the strength of the vibrations that produced it? Can they recognise that sounds get fainter as the distance from the sound source increases? Can they explain how you could change the pitch of a sound? Can they investigate how different materials can affect the pitch and volume of sounds?</p>	<p>Can they recognise that living things can be grouped in a variety of ways? Can they explore and use a classification key to group, identify and name a variety of living things? (plants, vertebrates, invertebrates) Can they compare the classification of common plants and animals to living things found in other places? (under the sea, prehistoric) Do they recognise that environments can change and this can sometimes pose a danger to living things?</p> <p style="text-align: center; color: red;">All year groups</p>	<ul style="list-style-type: none"> •Can they identify common appliances that run on electricity? •Can they construct a simple series electric circuit? •Can they identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers? •Can they 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? •Can they recognise that a switch opens and closes a circuit? •Can they associate a switch opening with whether or not a lamp lights in a simple series circuit? •Can they recognise some common conductors and insulators? •Can they associate metals with being good conductors? <p style="text-align: center; color: red;">Also Year 6</p>	<p>Can they explore the work of well know scientists and inventors?</p> <p style="text-align: center; color: red;">Also Y5 & Y6</p>
	<p><u>Planning</u> Can they set up a simple fair test to make comparisons? •Can they plan a fair test and isolate variables explaining why it was fair and which variables have been isolated? •Can they suggest improvements and predictions? •Can they decide which information needs to be collected and decide which is the best way for collecting it? •Can they use their findings to draw a simple conclusion</p>		<p><u>Obtaining and presenting evidence</u> •Can they take measurements using different equipment and units of measure and record what they have found in a range of ways? •Can they make accurate measurements using standard units? •Can they explain their findings in different ways (display, presentation, writing)?</p>		<ul style="list-style-type: none"> •Can they find any patterns in their evidence or measurements? •Can they make a prediction based on something they have found out? •Can they evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? •Can they use straightforward scientific evidence to answer questions or to support their findings? •Can they identify differences, similarities or changes related to simple scientific ideas or processes? 	

BWJPS
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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Year 5/6 Science (1)</p> <p><i>In 2021/22 Year 6 in the Autumn term, completed Living things from (2) and scientists and inventors from (2). They then did the Spring and Summer from (1)</i></p> <p><i>In 2021/22 Year 5 completed the whole of (1).</i></p> <p><i>In 2022/2023 they need to complete the whole of (2) and it will move forward from there</i></p>	<p>Properties and Changes of Materials</p> <ul style="list-style-type: none"> Can they compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets? Can they explain how some materials dissolve in liquid to form a solution? Can they describe how to recover a substance from a solution? Can they use their knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving, evaporating? Can they give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals 	<p>Living Things and their Habitats</p> <ul style="list-style-type: none"> Do they recognise that environments can change, and this can sometimes pose a danger to living things? Can they describe the differences in the life cycles of a mammal, an amphibians, an insects and a bird? Can they describe the life cycles of common plants? 	<p>Light</p> <ul style="list-style-type: none"> Can they recognise that light appears to travel in straight lines? Can they 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? Can they explain that we see things because light travels from light sources to our eyes or from light sources to object s and then to our eyes? Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them? 	<p>Electricity</p> <ul style="list-style-type: none"> Can they identify and name the basic parts of a simple electric series circuit? (cells, wires, bulbs, switches, buzzers) Can they compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches? Can they use recognised symbols when representing a simple circuit in a diagram? 	<p>Animals, including Humans</p> <ul style="list-style-type: none"> Can they identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood? Can they recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function? Can they describe the ways in which nutrients and water and transported within animals, including humans? 	<p>Evolution & Inheritance</p> <ul style="list-style-type: none"> Can they recognise that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago? Can they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents? Can they give reasons why offspring are not identical to each other or to their parents? Can they explain the process of evolution and describe the evidence for this? Can they identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution?

BWJPS
Science Whole School Long Term Plan 2021-22

	<p>wood and plastic?</p> <ul style="list-style-type: none"> • Can they describe changes using scientific words? (evaporation, condensation) • Can they demonstrate that dissolving, mixing and changes of state are reversible changes? • Can they 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? • Can they use the terms 'reversible' and 'irreversible'? 					
<p>Planning</p> <ul style="list-style-type: none"> • Can they plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary? • Can they make a prediction with reasons? • Can they use test results to make predictions to set up comparative and fair tests? • Can they present a report of their findings through writing, display and presentation? <p>Obtaining and Presenting Evidence</p> <ul style="list-style-type: none"> • Can they take measurements using a range of scientific equipment with increasing accuracy and precision? • Can they take repeat readings when appropriate? • Can they record more complex data and results using scientific diagrams, labels, classification keys, tables, scatter graphs, bar and line graphs? <p>Considering Evidence and Evaluating</p> <ul style="list-style-type: none"> • Can they report and present findings from enquiries through written explanations and conclusions? • Can they use a graph to answer scientific questions? 						

BWJPS
Science Whole School Long Term Plan 2021-22

Year 5/6 Science (2)	Earth and Space	Scientists and Inventors	Living Things	Forces	Animals, including Humans	Scientists and Inventors
	<ul style="list-style-type: none"> Can they identify and explain the movement of the Earth and other planets relative to the sun in the solar system? Can they explain how seasons and the associated weather is created? Can they describe and explain the movement of the Moon relative to the Earth? Can they describe the sun, earth and moon as approximately spherical bodies? Can they use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky? 	<ul style="list-style-type: none"> Can they talk about the work of Stephen Hawking, Libbie Hyman, Charles Darwin, Mary Anning or Alfred Wallace? Can they explore the work of medical pioneers for example, Alexander Fleming, William Harvey and Galen and recognise how much we have learnt about our bodies? 	<ul style="list-style-type: none"> Can they 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? Can they give reasons for classifying plants and animals based on specific characteristics? 	<ul style="list-style-type: none"> Can they explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object? Can they identify the effects of air resistance, water resistance and friction that act between moving surfaces? Can they recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect? 	<ul style="list-style-type: none"> Can they describe the changes as humans develop to old age? 	<ul style="list-style-type: none"> Can they explore the work of well know naturalists and animal behaviourists? (David Attenborough and Jane Goodall)
	<p><u>Additional practical objectives for MAB pupils and Y6 pupils:</u></p> <p><u>Planning</u></p> <ul style="list-style-type: none"> Can they explore different ways to test an idea, choose the best way, and give reasons? Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? Can they plan and carry out an investigation by controlling variables fairly and accurately? Can they make a prediction with reasons? Can they use information to help make a prediction? Can they use test results to make further predictions and set up further comparative tests? Can they explain in simple terms, a scientific idea and what evidence supports it? Can they present a report of their findings through writing, display and presentation? <p><u>Obtaining and presenting evidence</u></p> <ul style="list-style-type: none"> Can they explain why they have chosen specific equipment? (incl ICT based equipment) Can they decide which units of measurement they need to use? Can they explain why a measurement needs to be repeated? Can they record their measurements in different ways? (incl bar charts, tables and line graphs) 					

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Science Whole School Long Term Plan 2021-22

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| | <ul style="list-style-type: none">• Can they take measurements using a range of scientific equipment with increasing accuracy and precision?• <u>Considering evidence and evaluating</u>• Can they find a pattern from their data and explain what it shows?• Can they use a graph to answer scientific questions?• Can they link what they have found out to other science?• Can they suggest how to improve their work and say why they think this?• Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?• Can they report findings from investigations through written explanations and conclusions?• Can they identify scientific evidence that has been used to support to refute ideas or arguments?• Can they report and present 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? |
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