

Aldwyn Primary School – Year 6 Science Overview



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit	Living things and their habitats	Evolution and inheritance		Animals, including humans	Light	Electricity
Coverage	Classifying different types of plants and animals	Understand adaptation and evolution		Investigate effects of lifestyle choices on the functioning of the human body	How light works	Understand effects of voltage and current
Content	<ul style="list-style-type: none"> •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 specific characteristics •Build on their learning about grouping living things (Y4) by looking at the classification 	<ul style="list-style-type: none"> •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 and normally offspring vary and are not identical to their parents •identify how animals and plants are adapted to suit their environment and that adaptation may lead to evolution 		<ul style="list-style-type: none"> •Revise the skeletal, muscular and digestive system •To understand the circulatory system, name the main parts and explain functions. Know about blood vessels and the function of the heart •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 	<ul style="list-style-type: none"> •Recognise that light appears to travel in straight lines and use that idea 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 	<ul style="list-style-type: none"> •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 •Use recognised symbols when representing a simple circuit in a diagram



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Activities	<ul style="list-style-type: none">•Be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided•Through direct observations where possible, classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals)•Discuss reasons why living things are placed in one group and not another•Understand that microorganisms can be both helpful and harmful•Understand how a vaccine works•Find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.	<ul style="list-style-type: none">•Build on learning about fossils (rocks, Y3), find out more about how living things on earth have changed over time•Be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, labradors are crossed with poodles•Appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox		<ul style="list-style-type: none">•Learn how to keep their bodies healthy and how their bodies might be damaged –including how some drugs and other substances can be harmful to the human body•Use 3d models and online resources to support learning about the human body, it's functions and workings•Research the human body, it's functions and workings, how to stay healthy then present the research using information technology and art	<ul style="list-style-type: none">•Build on learning (Y3), exploring the way that light behaves, including light sources•Reflection and shadows. talk about what happens and make predictions•Understand how we see things. Label and annotate parts of the human eye•Understand the differences between concave and convex lenses and mirrors	<ul style="list-style-type: none">•Build on learning (Y4), construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors•Learn how to represent a simple circuit in a diagram using recognised symbols <p>Note: Pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary precautions for working safely with electricity</p>
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Activities		<ul style="list-style-type: none"> Find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution <p>Note: At this stage, pupils are not expected to understand how genes and chromosomes work</p>				
Vocabulary	micro-organism, vertebrates, invertebrates, species, fungi, monera, bacteria, protista, algae, Carl Linnaeus	off-spring, adaptation, evolution, inheritance, palaeontologist, Charles Darwin, genes, chromosomes, syndrome, genotype		skeletal, muscular, digestive, systems, circulatory, plasma, respiratory	light wave, light source, concave, convex, filters, lens, retina, cornea, iris, pupil	conductor, insulator, socket, series circuits, cells, volts, generator, turbine, fuses, Thomas Edison
Working Scientifically	<ul style="list-style-type: none"> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 	<ul style="list-style-type: none"> 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 		<ul style="list-style-type: none"> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate 	<ul style="list-style-type: none"> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate 	<ul style="list-style-type: none"> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate



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Working Scientifically	<ul style="list-style-type: none">•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•Identifying and classifying - Which is the most common invertebrate on our school playing field?•Scientific ideas changed over time - How did Carl Linneaus' ideas help us to group plants?•Identifying and classifying - How would you make a classification key for vertebrates or invertebrates?	<ul style="list-style-type: none">•Identifying scientific evidence that has been used to support or refute ideas or arguments•Research - What happened when Charles Darwin visited the Galapagos islands?•Pattern seeking - Is there a pattern between the size and shape of a bird's beak and the food it will eat?•Compare the skeletons of apes, humans, and Neanderthals – how are they similar, and how are they different?		<ul style="list-style-type: none">•Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs•Using test results to make predictions to set up further comparative and fair tests•Comparative test - Which type of exercise has the greatest effect on our heart rate?•Pattern seeking - Is there a pattern between what we eat for breakfast and how fast we can run?	<ul style="list-style-type: none">•Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs•Using test results to make predictions to set up further comparative and fair tests•Observing over time - How does my shadow change over the day?•Fair test - How does the angle that a light ray hits a plane mirror affect the angle at which it reflects off the surface?	<ul style="list-style-type: none">•Using test results to make predictions to set up further comparative and fair tests•Comparative test – Which type of fruit makes the best fruity battery?•Fair test - How does the voltage of the batteries in a circuit affect the brightness of the lamp?



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Assessment	TAPS Assessment - report and present information about an invertebrate classification group?	TAPS Assessment - Can children evaluate evidence (from fossils or research) to decide if it supports or refutes scientific ideas?		TAPS Assessment - Predictions and explanations: Plan and carry out a fair test based on exercise.	TAPS Assessment - Can you predict the direction of light after it hits a mirror?	TAPS Assessment - What factors could affect the bulb brightness?
Enrichment	Longdendale Environmental Centre Trip	Fossil hunting at Manchester Museum Trip		Health, fitness and wellbeing day	Periscope making, testing and review	Static electricity investigation using electrostatic generator
Prior Learning	<p>EYFS</p> <ul style="list-style-type: none"> •Comments and questions about the place they live or the natural world •Shows care and concern for living things and the environment •Can talk about things they have observed such as plants and animals •Notices features of objects in their environment 	<p>Year 2</p> <ul style="list-style-type: none"> •Notice that animals, including humans, have offspring which grow into adults <p>Year 3</p> <ul style="list-style-type: none"> •Describe in simple terms how fossils are formed when things that have lived are trapped within rock <p>Year 4</p> <ul style="list-style-type: none"> •Recognise that environments can change and that this can sometimes pose dangers to living things 		<p>EYFS</p> <ul style="list-style-type: none"> •Be able to identify different parts of their body •Have some understanding of healthy food and the need for variety in their diets •Be able to show care and concern for living things •Know the effects exercise has on their bodies 	<p>EYFS-Year 2</p> <ul style="list-style-type: none"> •May have some knowledge of where light comes from •Will most likely have seen their shadows and may know they appear when it is sunny •Some understanding of a reflection •May understand they need light to be able to see things 	<p>EYFS</p> <ul style="list-style-type: none"> •May have some understanding that objects need electricity to work •May understand that a switch will turn something on or off



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<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Prior Learning</p>	<ul style="list-style-type: none"> •Comments and asks questions about their familiar world <p>Year 2</p> <ul style="list-style-type: none"> •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 microhabitats •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>Year 5</p> <ul style="list-style-type: none"> •Describe changes as humans develop to old age •Describe the life process of reproduction in some plants and animals 		<ul style="list-style-type: none"> •Have some understanding of growth and change •Can talk about things they have observed including animals <p>Year 1</p> <ul style="list-style-type: none"> •Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals •Identify and name a variety of common animals that are carnivores, herbivores and omnivores <p>Year 2</p> <ul style="list-style-type: none"> •Know that animals, including humans, have offspring which grow into adults •Know the basic stages in a life cycle for animals, including humans •Find out and describe the basic needs of animals, including humans 	<p>Year 3</p> <ul style="list-style-type: none"> •Recognise that they need light in order to see things and that dark is the absence of light •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 shadows are formed when the light from a light source is blocked by an opaque object •Find patterns in the way that the size of shadows change 	<p>Year 4</p> <ul style="list-style-type: none"> •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 some common conductors and insulators, and associate metals with being good conductors. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit



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	<p>Year 4</p> <ul style="list-style-type: none">•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 <p>Year 5</p> <ul style="list-style-type: none">•To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird•Describe the life process of reproduction in some plants and animals.			<ul style="list-style-type: none">•Find out and describe the basic needs of animals, including humans, for survival (water, food and air)•Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene <p>Year 3</p> <ul style="list-style-type: none">•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•Identify that humans and some other animals have skeletons and muscles for support, protection and movement <p>Year 4</p> <ul style="list-style-type: none">•Describe the simple functions of the basic parts of the digestive system in humans		
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				<ul style="list-style-type: none">•Identify the different types of teeth in humans and their simple functions•Construct and interpret a variety of food chains, identifying producers, predators and prey <p>Year 5</p> <ul style="list-style-type: none">•Describe the changes as humans develop to old age		
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Future Learning	<p>KS3</p> <ul style="list-style-type: none"> •Genetics and evolution •Chromosomes, genes and DNA in hereditary •Differences between species. Variations within a species •Changes in the environment which may lead to a species less well adapted to compete and reproduce •The importance of maintaining biodiversity 	<p>KS3</p> <ul style="list-style-type: none"> •Inheritance, chromosomes and DNA •Hereditary as the process by which genetic information is transmitted from generation to generation •Simple models of chromosomes, DNA and genes including the part played by Watson, Crick, Wilkins, and Franklin •Differences between species. Variation between species •Changes in the environment may leave some species less well adapted to compete successfully and reproduce, leading to extinction •Importance of maintaining biodiversity and the use of gene banks to preserve hereditary material 		<p>KS3</p> <ul style="list-style-type: none"> •Cells and organisation •The skeletal and muscular system •Nutrition and digestion •Gas exchanges •Reproduction and health 	<p>KS3</p> <ul style="list-style-type: none"> •Light waves. Including the speed of light, light waves and the transmission of light through materials •Light refraction and light transferring energy from source to absorber leading the chemical and electrical effects •Colours and different frequencies of light 	<p>KS3</p> <ul style="list-style-type: none"> •Electrical currents, measured in amperes, in circuits, series and parallel circuits •Currents add where branches meet and current as a flow of charge •Measuring in volts •Battery and bulb rating, resistance, measured in ohms •Differences in resistance •Static electricity- the separation of positive or negative charges when objects are rubbed together •Force between charged objects •Electrical field and forces acting across the space between objects not in contact