



Knowle CE Primary Academy

Medium Term Plan: SCIENCE



YEAR: 6

TERM: Autumn term 1:1

TITLE: Evolution and Inheritance

REVISION / REMIND / REVISIT - builds on	COHERENCE & CREDIBILITY	CREATIVITY - Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
	NC Links - To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents - To identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Key Learning - All living things have offspring of the same kind, as features in the offspring are inherited from the parents. Due to sexual reproduction, the offspring are not identical to their parents and vary from each other. - Plants and animals have characteristics that make them suited (adapted) to their environment. - If the environment changes rapidly some variations of a species may not suit the new environment and will die. - If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young. - Over time these inherited characteristics become more dominant within the population. Over a very long period of time these characteristics may be so different to how they were originally that a new species is created. This is evolution.	- Use models/diagrams to demonstrate evolution e.g. Darwin's finches bird - Sort inherited and environmental characteristics of pupils  - Use simulation and observation to demonstrate inheritance and 'survival of the fittest'  - Use secondary sources to find out about how the population of peppered moths changed during the industrial revolution  - Make observations of fossils to identify living things that lived on Earth millions of years ago	- Charles Darwin - Alfred Wallace	

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	Fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution. More recently scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics. Vocabulary Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils	Compare the ideas of Charles Darwin and Alfred Wallace on evolution - What evidence for evolution did Darwin find on his travels? 		
	ASSESSMENT CRITERIA Knowledge: - Can explain the process of evolution - Can give examples of how plants and animals are suited to an environment - Can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth - Give examples of living things that lived millions of years ago and the fossil evidence we have to support this - Can give examples of fossil evidence that can be used to support the theory of evolution Working Scientifically: - Can identify characteristics that will make a plant or animal suited or not suited to a particular habitat - Can link the patterns seen in the model to the real examples - Can explain why the dominant colour of the peppered moth changed over a very short period of time			



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YEAR: 6

TERM: Autumn term 1:1

TITLE: Living things and their habitats

REVISION / REMIND / REVISIT – Builds on Year 4 Living things and their habitats	COHERENCE & CREDIBILITY	CREATIVITY – Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
	NC Links - to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals - to give reasons for classifying plants and animals based on specific characteristics Key Learning - Living things can be formally grouped according to characteristics. Plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. Plants can make their own food whereas animals cannot. - Animals can be divided into two main groups – those that have backbones (vertebrates) and those that do not (invertebrates). - Vertebrates can be divided into five small groups – fish, amphibians, reptiles, birds and mammals. Each group has common characteristics. - Invertebrates can be divided into a number of groups including insects, spiders, snails and worms. - Plants can be divided broadly into two main groups – flowering plants and non-flowering plants. Vocabulary Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering	- Use secondary sources to research the characteristics of animals that belong to a group  - Classify plants and animals presenting this in a range of ways – Venn diagrams, Carroll diagrams and keys  - Create an imaginary animal which has features from one or more groups		
ASSESSMENT CRITERIA Knowledge:				

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| | <ul style="list-style-type: none">• Can give examples of animals in the five vertebrate groups and some of the invertebrate groups• Can give the key characteristics of the five vertebrate groups and some invertebrate groups• Can compare the characteristics of animals in different groups• Can give examples of flowering and non-flowering plants |
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Working Scientifically:

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| | <ul style="list-style-type: none">• Can use classification materials to identify unknown plants and animals• Can create classification keys for plants and animals• Can give a number of characteristics that explain why an animal belongs to a particular group |
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YEAR: 6

TERM: Spring Term 1:2

TITLE: Light

REVISION / REMIND / REVISIT - Builds on Year 3 Light	COHERENCE & CREDIBILITY	CREATIVITY - Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
	NC Links - To recognise that light appears to travel in straight lines - To 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 - To 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 - To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them Key Learning - Light appears to travel in straight lines and we see objects when light from them goes into our eyes. The light may come directly from light sources but for other objects some light must be reflected from the object into our eyes for the object to be seen. - Objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object. Vocabulary As for year 3 plus straight lines, light rays.	- Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe, shining a torch through different shaped holes in card  - Explore the uses of the behaviour of light, reflection and shadows such as in periscope design, rear view mirrors and shadow puppets. - Can you identify all the colours of light that make white light when mixed together? What colours do you get if you mix different colours of light together? 		

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ASSESSMENT CRITERIA Knowledge: • Can describe with diagrams or models as appropriate how light travels in straight lines either from sources or reflected from other objects into our eyes. • Can describe with diagrams or models as appropriate how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape. Working Scientifically: • Can explain how evidence from enquiries shows that light travels in straight lines • Can predict and explain with diagrams or models as appropriate how the path of light rays can be directed by reflection to be seen, for example reflection in car rear view mirrors or in a periscope. • Can predict and explain with diagrams or models as appropriate how the shape of shadows can be varied.		



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YEAR: 6

TERM: Summer term 3:1

TITLE: Animals, including humans

REVISION / REMIND / REVISIT - Builds on Years 1, 2, 3, 4 and 5 Animals, including humans	COHERENCE & CREDIBILITY	CREATIVITY - Working Scientifically	COMPASSION & Appreciation of Significant Scientists	COMMUNITY
	NC Links - To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood - To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function - To describe the ways in which nutrients and water are transported within animals, including humans. Key Learning - The heart pumps blood in the blood vessels around to the lungs. - Oxygen goes into the blood and carbon dioxide is removed. - The blood goes back to the heart and is then pumped around the body. - Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used they produce carbon dioxide and other waste products. - Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system. - Diet, exercise, drugs and lifestyle have an impact on the way our bodies function. They can affect how well our heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel. Some conditions are caused by deficiencies in our diet e.g. lack of vitamins. Vocabulary Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle	- Carry out a range of pulse rate investigations  - Fair test/pattern seeking - effect of different activities on my pulse rate  (use results to  make further predictions) - which type of exercise has the greatest effect on our heart rate? - Learn about the impact of exercise, diet, drugs and lifestyle on the body. N.B this is likely to be taught through direct instruction due to its sensitive nature		Heart dissection (various external workshops available/links with parents who are doctors)

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	ASSESSMENT CRITERIA
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	Knowledge:
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| | <ul style="list-style-type: none">• Can draw a diagram of the circulatory system and label the parts and annotate it to show what the parts do• Produces a piece of writing that demonstrates the key knowledge e.g. explanation text, job description of the heart |
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	Working Scientifically:
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| | <ul style="list-style-type: none">• Can use subject knowledge about the heart whilst writing conclusions for investigations• Can explain both the positive and negative effects of diet, exercise, drugs and lifestyle on the body• Present information e.g. in a health leaflet describing impact of drugs and lifestyle on the body |
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