

Curriculum Intent – Knowledge Builder

Biology

Subject Intent Statement:

Science has changed our lives and is vital to the world's future prosperity. Our aim is to encourage pupils to recognise the power of scientific explanation and develop a sense of excitement and curiosity about natural phenomena. We seek to inspire in pupils' a curiosity and fascination about the world around them to ensure that all pupils: develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics; develop understanding of the nature, processes and methods of science through science enquiries that help them to answer scientific questions about the world around them; are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. We aim to develop knowledge and skills that are transferable to other curriculum areas and which can and are used to promote their spiritual, moral, social and cultural development.

Year 3	Year 4	Year 5	Year 6
Key Knowledge:	Key Knowledge:	Key Knowledge:	Key Knowledge:
Animals including humans Pupils learn the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles and how different parts of the body have special functions. Pupils know that animals need nutrition and it needs to be the right amount and type; they know animals gain the correct nutrition and how animals do this. They know that all animals and humans have bones and there are some similarities between different skeletons; they know that the purpose of the skeleton is for support, protection and movement; they know that muscles allow movement and how to care for them. Plants Pupils will be able to Identify and describe the functions of different parts of flowering plants; roots, stem, leaves and flowers. They will know the requirements of plants for life They will know the stages of the life cycle of flowering plants. They will understand how water is transported in a plant.	Living things in their habitat Pupils will know that living things can be grouped in a variety of ways (plants: trees, grasses, flowers, ferns and mosses, vertebrates: fish, amphibians, reptiles, birds, and mammals. Invertebrates: snails and slugs, worms, spiders, and insects Pupils will learn how to use classification keys to help group, identify and name a variety of living things in their local and wider environment Pupils will know that environments can change and that this can sometimes pose dangers to living things. Animals including humans Pupils will learn about the skeleton and teeth They will know the different types of teeth in humans and their simple functions Pupils will learn the functions of the basic parts of the digestive system in humans	Animals including humans (Term 1) -describe the differences in the life cycle of a mammal (humans) -describe the changes as humans develop to old age. -identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood - recognise the impact of exercise on the way some parts of their bodies function Living things in their habitat (Term 3) -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.	Evolution and Inheritance (Term 1) Know some examples of fossils and the fossil record. Have a basic understanding of how genetic information is passed from one generation to the next. Know some examples of how animals are adapted to their environment. Describe an example of how an organism's adaptation has changed over time. Animals including humans – lifestyles Know some examples of healthy and unhealthy lifestyles and how they affect the body.

Pupils know how to use big questions as the basis for investigation. Such as: How do we know whether something is alive? Is a flame alive? How does a fish breathe? I planted a tree in my garden 4 years ago. It now weighs 250kg more. Where did this 250kg come from?	Pupils will learn about food chains, producers, predators and prey. Pupils will learn differences in human and animal ears. Pupils know how to use big questions as the basis for investigation. Such as: How do dentists fix broken teeth? What are the names for all the organs involved in the digestive system? Does the amount of light affect how woodlice move around? Can we use the classification keys to identify all the animals we found on a bug hunt? Why are the people cutting down the rainforests and what effect does that have?		
Key Skills: Working Scientifically - asking relevant questions start to use different types of scientific enquiries to answer them - with help set up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, begin to take accurate measurements using standard units, using a range of equipment, - gathering, recording, classifying and presenting data to help in answering questions - recording findings using developing scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations begin to form simple conclusions	Key Skills: working Scientifically - asking relevant questions and using different types of scientific enquiries to answer them - independently and within small groups set up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - recording findings using confident command of scientific language,	Key Skills: Working Scientifically - Planning different types of scientific enquiries to answer questions. - Taking measurements, using a range of scientific equipment. - Recording data and results. - Using test results to make predictions. - Reporting and presenting findings from enquiries, including conclusions, in oral and written form. - Identifying scientific evidence that has been used to support ideas.	Key Skills: Working Scientifically - 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 - 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

▪ using results to draw simple conclusions ▪ identifying differences, similarities or changes related to simple scientific ideas and processes ▪ using straightforward scientific evidence to answer questions Animals including humans Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out. Plants Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.	drawings, labelled diagrams, keys, bar charts, and tables ▪ reporting on findings from enquiries, including oral and written explanations and conclusions ▪ using results to draw simple conclusions, ▪ identifying differences, similarities or changes related to simple scientific ideas and processes ▪ using straightforward scientific evidence to answer questions or to support their findings. Living things in their habitat Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched Animals including humans Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.	Biology Animals including humans (Term 1) Pupils might work scientifically by: collecting and presenting data on the gestation times of different animals; selecting the appropriate equipment to carry out a fair test on exercise and pulse rate. Living things in their habitat (Term 3) Pupils might work scientifically by: observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans and in desert areas), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from seeds and observe the different parts of various flowers. They might observe changes in an animal over a period of time, comparing how different animals reproduce and grow.	▪ 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 scientific evidence that has been used to support or refute ideas or arguments. Evolution and Inheritance (Term 1) 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 of the same kind, but normally offspring vary and are not identical to their parents Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Animals including humans – lifestyles (Term 2) 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.
Key Vocabulary:	Key Vocabulary:	Key Vocabulary:	Key Vocabulary:
Animals including humans Muscles	Living things in their habitat Organisms	Animals including humans	Evolution and Inheritance (Term 1)

Skeleton Shape Protection Nutrition Plants Parts of plants roots, stem, pollen, seeds, leaves and flowers. Life cycle	Minibeasts Habitats Ferns, mosses, Vertebrates: fish, amphibians, reptiles, birds, mammals. Invertebrates: insects classification environment Animals including humans food chains, producers, predators, prey carnivore herbivore omnivore teeth names parts of the digestive system	Adolescence, Artery, Blood, Egg, Fertilisation, Gestation, Life cycle, Organs, Heart, Muscles, Puberty, Pulse rate, Reproduction, Sperm, Vein. Living things in their habitat (Term 3) Adaptation, Carpel, Chlorophyll, Egg, Pupa, Larvae, Fertilisation, Fruit, Germination, Life cycle, Nutrients, Ovary, Ovule, Petal, Photosynthesis, Pollen, Pollination, Seeds, Sepal, Stamen, Stigma, Style.	Adaptation, Characteristics, Environment, Evolution, Fossil, Habitat, Inference, Inherit, Inheritance, Observation, Offspring, Survive, Temperature, Variation, Animals including humans – lifestyles (Term 2) Addiction, Alcohol, Artery, Bacteria, Brain, Capillaries, Carbohydrate, Circulatory system, Diet, Digestive system, Drug, Energy, Fibre, Fungi, Heart, Organ, Micro-organism, Muscles, Nerves, Protein, Pulse, Scurvy, Skeleton, Vein, Virus, Vitamin.
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