



Our teaching aims in Science include the following:

- *Teaching science in ways that are imaginative, enjoyable, purposeful and well managed.*
- *Giving clear and accurate teacher explanations and offering skilful, higher order questioning.*
- *Firmly embedding Science in a creative curriculum by making strong and purposeful links between science and other subjects, especially the core subjects of English and Mathematics.*

- *Allow children to develop and pose questions that need answering.*
- *Enable children to develop their ideas, knowledge and understanding by planning, carrying out and evaluating their own investigations.*
- *Give children the opportunity to repeat investigations in order to compare evidence and its reliability.*
- *Encourage children to work both independently and with others.*
- *Motivate children to reason, problem solve and process information.*
- *Focus reasoning and thinking through open ended questioning.*
- *Provide a range of stimulating experiences to engage and inspire*





Science KS2 National Curriculum

Working Scientifically

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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
- 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.

Year 6 Programme of Study

Living things and their habitats

Pupils should be taught 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
- give reasons for classifying plants and animals based on specific characteristics.

Animals, including humans

Pupils should be taught to:

- 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 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.

Evolution and inheritance

- Pupils should be taught 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
- 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.



Light

Pupils should be taught to:

- recognise that light appears to travel in straight lines
- 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
- 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.

Electricity

Pupils should be taught to:

- 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.



Science Implementation

Science is taught as an area of learning in its own right, as well as integrated with other curriculum areas where appropriate. There is also flexibility to seize opportunities to celebrate and acknowledge significant events.

In Year 6 Science is taught in the following sequence:				
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer
Working Scientifically		Working Scientifically		Working Scientifically
Evolution and inheritance	Living things and their habitats	Animals including humans	Light	Electricity

Year 6 Science Implementation – Topic Specific Vocabulary				
Evolution and Inheritance	Living things and their habitats	Animals including humans	Light	Electricity
Evolution, adaptation, natural selection Charles Darwin, parent, offspring, fossil, environment, habitat	Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects, Species	Organs, Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Exercise, Respiration, Diet, Exercise, Drugs, Alcohol, Lifestyle, Nutrients.	Luminous, non-luminous, reflect, shadow, source, spectrum	Cell, wires, bulb, switches, buzzers, battery, circuit, motor, series, amps, volts/ voltage, conductors, insulators.



Whinstone Primary School Year 6 Science



Science Impact

Throughout each topic teachers will evaluate what knowledge and skills pupils have gained against expectations.

YEAR 6				
WHINSTONE SCIENCE ASSESSMENT YEAR 6			Evidence	
Working Scientifically Y5 & Y6			Date	Grade 1,2,3
 Grade 1=WTS 2=EXS 3=GDS			Date	Grade 1,2,3
• 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				
• 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.				
<i>Working Scientifically Exceeding & Excelling 100%</i> <i>N.B. Exceeding and Excelling are given as guidance examples only. TA should be used and judgments made based on achievements over and above the statutory requirements for each year group.</i>				
3. Animals Including Humans (BIOLOGY) (Spring)		TEST %	TEST GRADE	
• 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 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.				
<i>Exceeding - Understand and explain content and importance of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed.</i>				
<i>Excelling - Explain the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases.</i>				
2. Living Things and Their Habitats (BIOLOGY) (Autumn)		TEST %	TEST GRADE	
• 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				
• give reasons for classifying plants and animals based on specific characteristics.				
<i>Exceeding - Understand and explain the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules.</i>				
<i>Excelling - Enquire and asking pertinent questions and suggesting reasons for similarities and differences across species.</i>				
1. Evolution and Inheritance (BIOLOGY) (Autumn)		TEST %	TEST GRADE	
• 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.				
<i>Exceeding - Understand and explain heredity as the process by which genetic information is transmitted from one generation to the next.</i>				
<i>Excelling - Explain that changes in the environment may leave species less well adapted to compete successfully and reproduce, which may lead to extinction.</i>				
4. Light (PHYSICS) (Spring)		TEST %	TEST GRADE	
• recognise that light appears to travel in straight lines				
• 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				
• 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.				



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Exceeding - use of ray model to explain imaging in mirrors, pinhole camera and action of convex lens in focusing; the human eye.				
Excelling - Study colours and the different frequencies of light, white light and prisms.				
5 Electricity (PHYSICS) (Summer)	TEST %	TEST GRADE		
• 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.				
Exceeding - Understand and design a circuit to achieve a desired purpose. E.g alarm.				
Excelling - Identify and explain the effect of changing one component at a time in parallel and series circuits.				