Science Year 6 Curriculum Overview

The Big Picture

In this unit, pupils will build on their learning about grouping living things in year 4 by looking at the classification system in more detail. They will be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations, they will classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). They will discuss reasons why living things are placed in one group and not another. Pupils will find out about the significance of the work of scientists.

What do we already know?

Knowledge Retrieval:

Children will be able to recognise that living things can be grouped in a variety of ways and they will have explored classification keys to group living things in their environment. They will be aware that environments may change and that this can pose dangers to living things. Children will be able to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. They will also be able to describe the life process of reproduction in some plants and animals.

Year 6 Science – All Living Things

NC objectives – Year 6

Knowledge:

- 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

Working scientifically: Upper Key Stage 2

- To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- To use test results to make predictions to set up further comparative and fair tests
- To report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- To identify scientific evidence that has been used to support or refute ideas or arguments

Sticky Knowledge:

- Can they explain the classification of living things into broad groups based on common observable characteristics? (five kingdoms of all living things, vertebrates, mammals, marsupials)
- Can they sub divide their original groupings and explain their divisions?
- Can they group animals into vertebrates and invertebrates?
- **Challenging -** Can they explain why classification is important?
- **Challenging -** Can they readily group animals into reptiles, fish, amphibians, birds and mammals?

Working scientifically:

Planning:

- Can they explore different ways to test an idea and 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?
- **Challenging** – Can they choose the best way to answer a question?
- **Challenging** - Can they use information from different sources to answer a question and plan an investigation?
- **Challenging** – Can they make a prediction which links with other scientific knowledge?
- **Challenging** - Can they identify the key factors when planning a fair test?
- **Challenging** - Can they explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough?

Obtaining and presenting evidence:

- 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)
- Can they take measurements using a range of scientific equipment with increasing accuracy and precision?
- **Challenging** – Can they plan in advance which equipment they will need and use it well?
- **Challenging** – Can they make precise measurements?
- **Challenging** – Can they collect information in different ways?
- **Challenging** – Can they record their measurements and observations systematically?
- **Challenging** – Can they explain qualitative and quantitative data?

Considering evidence and evaluating:

- 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?
- **Challenging** – Can they draw conclusions from their work?
- **Challenging** – Can they link their conclusions to other scientific knowledge?
- **Challenging** – Can they explain how they could improve their way of working?

Key unit objectives

Knowledge

- To understand that we can classify things into groups based on characteristics, similarities and differences.
- To describe how living things are classified including, micro-organisms, plants and animals.
- To be able to classify plants and animals based on specific characteristics and give reasons.

Types of scientific enquiry covered

- Identifying and classifying
- fair testing
- Changes overtime

Key vocabulary and understanding for concept connectors

Variation
Classification
Deforestation
Bacteria
Microorganism
Organism
Vertebrates
invertebrates

Research/scientists/careers:

Carl Linneus = A pioneer of classification.

Science Year 6 Curriculum Overview

The Big Picture

This unit will provide pupils with the opportunity to build on their work in year 4 and construct simple series circuits to help them to answer questions about what happens when they try different components. Pupils will have the opportunity to experiment with switches, bulbs, buzzers and motors. They will learn how to represent a simple circuit in a diagram using the recognised symbols.

What do we already know?

Knowledge Retrieval:

During their work on electricity in year 4, the children are able to identify common appliances that run on electricity and identify common conductors and insulators. They can construct a simple circuit, identifying and naming its basic parts. They can identify whether a circuit is a complete loop and they can recognise that a switch opens and closes a circuit.

Year 6 Science – Electricity

NC objectives – Year 6

Knowledge:

- To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- To 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
- To use recognised symbols when representing a simple circuit in a diagram

Working scientifically: Upper Key Stage 2

- To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- To use test results to make predictions to set up further comparative and fair tests
- To report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- To identify scientific evidence that has been used to support or refute ideas or arguments

Sticky knowledge:

- 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 variation in how components function, including bulb brightness, buzzer volume and on/off position of switches?
- Can they explain how to make changes in a circuit?
- Can they explain the impact of changes in a circuit?
- Can they explain the effect of changing the voltage of a battery?
- **Challenging –** Can they make their own traffic light system or something similar?
- **Challenging –** Can they explain the danger of short circuits?
- **Challenging –** Can they explain what a fuse is?

Working scientifically:

Planning:

- Can they explore different ways to test an idea and 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?
- **Challenging** – Can they choose the best way to answer a question?
- **Challenging** - Can they use information from different sources to answer a question and plan an investigation?
- **Challenging** – Can they make a prediction which links with other scientific knowledge?
- **Challenging** - Can they identify the key factors when planning a fair test?
- **Challenging** - Can they explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough?

Obtaining and presenting evidence:

- 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)
- Can they take measurements using a range of scientific equipment with increasing accuracy and precision?
- **Challenging** – Can they plan in advance which equipment they will need and use it well?
- **Challenging** – Can they make precise measurements?
- **Challenging** – Can they collect information in different ways?
- **Challenging** – Can they record their measurements and observations systematically?
- **Challenging** – Can they explain qualitative and quantitative data?

Considering evidence and evaluating:

- 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?
- **Challenging** – Can they draw conclusions from their work?
- **Challenging** – Can they link their conclusions to other scientific knowledge?
- **Challenging** – Can they explain how they could improve their way of working?

Key unit objectives

- To know how to construct a simple series circuit (building on yr 4).
- To understand that the number and voltage of cells in a circuit can affect the components such as brightness of a lamp or volume of a buzzer.
- To compare and give reasons for variations in how components function, Inc. the brightness of a bulb, the loudness of buzzers and the on/off switches.
- To know and use recognised symbols when representing a simple circuit in a diagram.
- To understand how to stay safe when working with electricity.

Types of scientific enquiry covered

- Research
- Fair tests
- Research

Key vocabulary and understanding for concept connectors

Electricity, electric current, appliances, mains, amps, voltage, circuit diagram, symbol, parallel circuit,

Current is how much electricity is flowing round a circuit.

Adding more **cells** to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound.

Turning a **switch** off (open) breaks a circuit so the circuit is not complete.

Research/scientists/careers:

Alessandro Volta (Physicist who developed the electric battery)

Science Year 6 Curriculum Overview

The Big Picture

In this unit, pupils will explore and pupils should build on the work on light in year 3, exploring the way that light behaves, including light sources, reflection and shadows. They should talk about what happens and make predictions.

What do we already know?

Knowledge Retrieval:

The children will build upon their knowledge of light from Year 3. They are aware that we need light to see things and that dark is the absence of light. They know that light is reflected from surfaces and how shadows are formed. The children are also aware that light from the sun can be dangerous and that there are ways to protect their eyes.

Year 6 Science – Light

NC objectives – Year 6

Knowledge:

- 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

Working scientifically: Upper Key Stage 2

- To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- To use test results to make predictions to set up further comparative and fair tests
- To report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- To identify scientific evidence that has been used to support or refute ideas or arguments

Sticky knowledge:

- Can they explain how light travels?
- Can they explain how the human eye sees objects?
- Can they explain how different colours of light can be created?
- Can they use and explain how simple optical instruments work? (periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope)
- Can they explain changes linked to light (and sound)?
- **Challenging – Can they use the ray model to explain the size of shadows?**

Working scientifically:

Planning:

- Can they explore different ways to test an idea and 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?
- **Challenging** – Can they choose the best way to answer a question?
- **Challenging** - Can they use information from different sources to answer a question and plan an investigation?
- **Challenging** – Can they make a prediction which links with other scientific knowledge?
- **Challenging** - Can they identify the key factors when planning a fair test?
- **Challenging** - Can they explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough?

Obtaining and presenting evidence:

- 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)
- Can they take measurements using a range of scientific equipment with increasing accuracy and precision?
- **Challenging** – Can they plan in advance which equipment they will need and use it well?
- **Challenging** – Can they make precise measurements?
- **Challenging** – Can they collect information in different ways?
- **Challenging** – Can they record their measurements and observations systematically?
- **Challenging** – Can they explain qualitative and quantitative data?

Considering evidence and evaluating:

- 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?
- **Challenging** – Can they draw conclusions from their work?
- **Challenging** – Can they link their conclusions to other scientific knowledge?
- **Challenging** – Can they explain how they could improve their way of working?

Key unit objectives

- To know that light appears to travel in straight lines.
- To know how rainbows are formed.
- To know why shadows are formed.
- To explain why shadows have the same shape as the objects that cast them using the idea light travels in straight lines.
- To know that we see things because light travels from light sources to our eyes.
- To know that light can travel from light sources to objects and then to our eyes.

Types of scientific enquiry covered

- Identifying and classifying
- Fair tests
- Research
- Pattern seeking

Key vocabulary and understanding for concept connectors

translucent, surface, reflect, mirror, sunlight, light rays, pupil, lens, eyelid, reflection, refraction, Rainbow Prism,

Light appears to travel in straight lines.

Light that allows us to see can come directly from a light source or can be reflected from another object and into our eyes.

A rainbow is formed when the sun shines through the water particles and the water particles act like prisms.

A **prism** is transparent and when light passes through it, it gets 'bent' or spread out into a bunch of different colours.

Research/scientists/careers:

Euclid - search document for information (Mathematician who predicted that light travels in straight lines and we only see things that light falls on)

Science Year 6 Curriculum Overview

Year 6 Science – Evolution and Inheritance

The Big Picture

In this unit, pupils will explore how living things on earth have changed over time. They will 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. They will also 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. Pupils will find out about how Charles Darwin and Alfred Wallace developed their ideas on evolution.

What do we already know?

Knowledge Retrieval:

The children will build upon what they learned about fossils in the topic on rocks in year 3. They can describe how fossils are formed and they know that soils are made from rocks and organic matter.

NC objectives – Year 6

Knowledge:

- 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

Working scientifically: Upper Key Stage 2

- To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- To use test results to make predictions to set up further comparative and fair tests
- To report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- To identify scientific evidence that has been used to support or refute ideas or arguments

Sticky knowledge:

- Can they give reasons for why living things produce offspring of the same kind?
- Can they give reasons for why offspring are not identical with each other or with their parents?
- Can they explain the process of evolution and describe the evidence for this?
- Can they begin to appreciate that variation in offspring over time can make animals more or less able to survive in particular environments?
- Can they talk about the life of Charles Darwin?
- **Challenging –** Can they explain how some living things adapt to survive in extreme conditions?
- **Challenging –** Can they analyse the advantages and disadvantages of specific adaptations, such as being on two rather than four feet?
- **Challenging –** Can they begin to understand what is meant by DNA?

Working scientifically:

Planning:

- Can they explore different ways to test an idea and 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?
- **Challenging** – Can they choose the best way to answer a question?
- **Challenging** - Can they use information from different sources to answer a question and plan an investigation?
- **Challenging** – Can they make a prediction which links with other scientific knowledge?
- **Challenging** - Can they identify the key factors when planning a fair test?
- **Challenging** - Can they explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough?

Obtaining and presenting evidence:

- 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)
- Can they take measurements using a range of scientific equipment with increasing accuracy and precision?
- **Challenging** – Can they plan in advance which equipment they will need and use it well?
- **Challenging** – Can they make precise measurements?
- **Challenging** – Can they collect information in different ways?
- **Challenging** – Can they record their measurements and observations systematically?
- **Challenging** – Can they explain qualitative and quantitative data?

Considering evidence and evaluating:

- 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?
- **Challenging** – Can they draw conclusions from their work?
- **Challenging** – Can they link their conclusions to other scientific knowledge?
- **Challenging** – Can they explain how they could improve their way of working?

Key unit objectives

- To know that characteristics are passed from parents.
- To know that fossils provide information about living things that inhabited the Earth millions of years ago.
- To recognise that living things have changed over time.
- To recognise that living things produce offspring of the same kind.
- To know that normally offspring vary and are not identical to their parents.
- To know that animals have adapted to suit their environment.
- To know that adaptation may lead to evolution.
- To know that characteristics may be different to how they were originally and a new species is created.
- To know that variation in offspring can make animals more or less able to survive in particular environments, e.g. giraffes or the arctic fox.
- To know about the work of palaeontologists such as Mary Anning and how Charles Darwin

Types of scientific enquiry covered

- Research
- Changes overtime

Key vocabulary and understanding for concept connectors

Adaptation, Evolution, Characteristics, Genetics, Variation, Inherited

Evolution is when inherited characteristics become more dominant within the population over time.

Research/scientists/careers:

Charles Darwin - links to free resources requiring a login (Natural Historian who developed the theory of evolution by natural selection) Alfred Wallace (Natural Historian who developed the theory of evolution by natural selection)

Science Year 6 Curriculum Overview

The Big Picture

In this unit, pupils will explore and answer questions that help them to understand how the circulatory system enables the body to function. Pupils will 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.

What do we already know?

Knowledge Retrieval:

The children will build upon their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system).

Year 6 Science –
Animals including humans

NC objectives – Year 6

Knowledge:

- 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

Working scientifically: Upper Key Stage 2

- To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- To use test results to make predictions to set up further comparative and fair tests
- To report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- To identify scientific evidence that has been used to support or refute ideas or arguments

Sticky knowledge:

- Can they identify and explain the function of the organs of the human circulatory system? (heart, blood vessels, blood, blood pressure, clotting)
- Can they identify and explain the function of the organs of the human gaseous exchange system? (lungs, nose, throat, bronchi, bronchial tubes, diaphragm, ribs, breathing)
- Can they name the major organs in the human body?
- Can they locate the major human organs?
- Can they make a diagram that outlines the main parts of a body?
- **Challenging –** Can they explore the work of medical pioneers, for example, William Harvey and Galen and recognise how much we have learned about our bodies?
- **Challenging –** Can they compare the organ systems of humans to other animals?
- **Challenging –** Can they make a diagram of the human body and explain how different parts work and depend on one another?

Working scientifically:

Planning:

- Can they explore different ways to test an idea and 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?
- **Challenging** – Can they choose the best way to answer a question?
- **Challenging** - Can they use information from different sources to answer a question and plan an investigation?
- **Challenging** – Can they make a prediction which links with other scientific knowledge?
- **Challenging** - Can they identify the key factors when planning a fair test?
- **Challenging** - Can they explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough?

Obtaining and presenting evidence:

- 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)
- Can they take measurements using a range of scientific equipment with increasing accuracy and precision?
- **Challenging** – Can they plan in advance which equipment they will need and use it well?
- **Challenging** – Can they make precise measurements?
- **Challenging** – Can they collect information in different ways?
- **Challenging** – Can they record their measurements and observations systematically?
- **Challenging** – Can they explain qualitative and quantitative data?

Considering evidence and evaluating:

- 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?
- **Challenging** – Can they draw conclusions from their work?
- **Challenging** – Can they link their conclusions to other scientific knowledge?
- **Challenging** – Can they explain how they could improve their way of working?

Key unit objectives

- To identify and name the main parts of the human circulatory system (the heart, blood vessels and the blood.
- To know the functions of the heart, blood vessels and blood.
- To recognise what makes a healthy lifestyle.
- To understand the impact of diet, exercise, drugs and lifestyle on the way their bodies function. **(PSHE Links)**
- To understand that blood transports nutrients and water around the body through capillaries.

Types of scientific enquiry covered

- Research
- Identifying and classifying
- Pattern seeking

Key vocabulary and understanding for concept connectors

Oxygenated, Deoxygenated, respiration Circulatory system, heart, lungs, blood vessels, artery, vein, capillary,

Research/scientists/careers:

William Harvey (Doctor who discovered the nature of blood circulation and the function of the heart as a pump)
Santorio Santorio (Doctor who invented an instrument to measure pulse accurately using a pendulum and did the first scientific study of the metabolism)
Richard Doll (Doctor who proved the link between lung cancer and smoking)

Science Year 6 Curriculum Overview

The Big Picture

Children will have built up an understanding of science over the year. This time allows the teacher to identify and fill any gaps that may still be present. The 'super scientists' topic allows the children time to use their creative side and come up with their own scientific enquiry-based questions and allows them the time to plan and investigate these ideas. The whole topic is child centred and allows the children to have fun whilst learning the fundamental skills working scientifically.

Year 6 Science – Super Scientists

Working scientifically: Upper Key Stage 2

- To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- To use test results to make predictions to set up further comparative and fair tests
- To report and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- To identify scientific evidence that has been used to support or refute ideas or arguments

Working scientifically:

Planning:

- Can they explore different ways to test an idea and choose the best way, and give reasons?
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- **Challenging** – Can they choose the best way to answer a question?
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- **Challenging** – Can they make a prediction which links with other scientific knowledge?
- **Challenging** - Can they identify the key factors when planning a fair test?
- **Challenging** - Can they explain how a scientist has used their scientific understanding plus good ideas to have a breakthrough?

Obtaining and presenting evidence:

- 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)
- Can they take measurements using a range of scientific equipment with increasing accuracy and precision?
- **Challenging** – Can they plan in advance which equipment they will need and use it well?
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- **Challenging** – Can they collect information in different ways?
- **Challenging** – Can they record their measurements and observations systematically?
- **Challenging** – Can they explain qualitative and quantitative data?

Considering evidence and evaluating:

- 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?
- **Challenging** – Can they draw conclusions from their work?
- **Challenging** – Can they link their conclusions to other scientific knowledge?
- **Challenging** – Can they explain how they could improve their way of working?

Types of scientific enquiry covered

- Research
- Identifying and classifying
- Pattern seeking
- Fair testing
- Observations over time

Key vocabulary and understanding for concept connectors

Prediction – Where you say what you think will happen.
Change, measure
Equipment – What we use.
Conclusion
Research

Research/scientists/careers:

Linked to children's interests and ideas.