Science

The Inspire Multi Academy Trust (South West)

SUBJECT ON A PAGE science

AT THE INSPIRE MULTI ACADEMY TRUST SCIENCE BUILDS CHILDREN'S CURIOSITY AND SENSE OF AWE ABOUT THE NATURAL WORLD SO THAT THEY CAN UNDERSTAND THE IMPORTANCE OF SCIENCE IN THEIR OWN LIVES.

Intent

Deliver a curriculum that inspires a sense of excitement and curiosity about natural **phenomena**.

Provide opportunities for children to **work scientifically** which are embedded within the content of **biology**, **chemistry** and **physics**.

Explicitly teach **substantive** and **disciplinary** knowledge and allow pupils to revisit and build on these year on year.

Build Science Capital through trips and visitors and by making links to our local area motivating and engaging children in the study of science.

Enable pupils to use technical and specialist vocabulary accurately and precisely.

For pupils to understand how science has changed our lives and is vital to the world's future **prosperity**.

Implementation

SEQUENCING

Areas of Study are sequenced into bitesize chunks to allow for multiple exposure of substantive and disciplinary knowledge. Each unit builds on the children's prior knowledge enabling them to focus on an appropriate component of knowledge, preparing the children for conceptual development. There is a positive relationship between reading achievement and science achievement and all Areas of Study are therefore planned around a high-quality text.

WORKING SCIENTIFICALLY

In EYFS children are given frequent opportunity to explore, observe and ask questions about the natural world. In Key Stage 1 children build on this and begin to identify, classify and perform simple tests. In Key Stage 2 children become more proficient and independent. They perform tests using equipment and present their findings in a variety of ways such as diagrams, graphs and oral and written presentations. There is a body of knowledge detailing the what, when, where, how, who and why of working scientifically that is important. This is referred to as **disciplinary knowledge** and should be taught in tandem with **substantive knowledge**: the core facts and concepts of the curriculum.

EYFS & BEYOND

In the Early Years children are constantly exploring the world around them. They are immersed in a rich environment which invites plenty of opportunity for them to follow their interests. Children can explore and answer questions about **space**, **plants**, **themselves** and **animals** throughout each of their areas of study. They are **deliberately** exposed to **knowledge** which will prepare them for the National Curriculum in Year 1 and beyond. For example, the children learn that different animals choose different environments to live in based on their needs. They begin to understand the need to respect and care for the natural environment and all living things. Knowledge like this allows them to be successful when studying animals, including humans in subsequent years.

Explorify

Developing Experts

BEING CURIOUS

Teacher-directed instruction leads to higher quality learning but practical work is also used purposefully to draw attention to substantive or disciplinary science and only when children's understanding has been developed. We build Science Capital for all individuals by visiting places of scientific interest in our local area and allowing children to meet experts within their fields throughout their science journey. This embeds their knowledge and understanding in real life contexts.

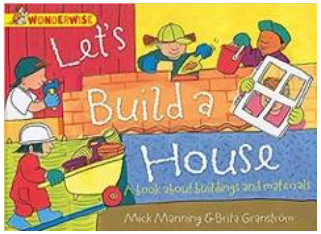
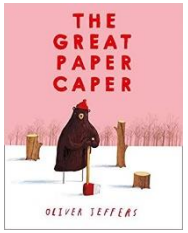
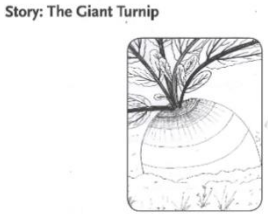
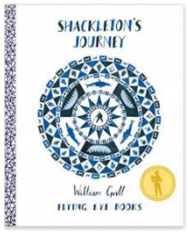
VOCABULARY

Children at TIMAT are immersed in scientific vocabulary from the beginning of their journey with us. It is woven through the curriculum and built upon each year. We ensure they can read, spell and pronounce scientific vocabulary accurately. This leads to them talking confidently about their learning and using scientific ideas in context. We want them to see science all around them and value its importance in the future.

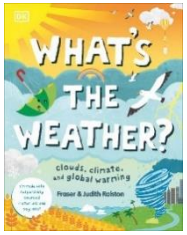
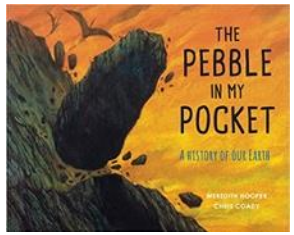
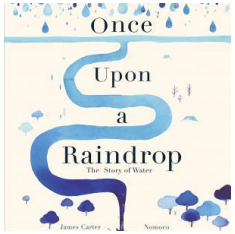
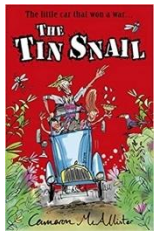
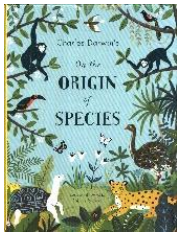
The Inspire Multi Academy Trust
Science Progression

Term 1

Nursery	Pre- School	Reception
I am Me Begin to make sense of their own life-story and family history. Sort, watch, same, different	**Marvellous Me** Begin to make sense of their own life-story and family history. Continue developing positive attitudes about the differences between people. Sort, watch, same, different	**It Starts with Me** Talk about members of their immediate family and community. Name and describe people who are familiar to them. Sort, observe, sense, same, different, ask questions

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Everyday Materials (EP/AO)  To be able to ask questions and recognise they can be answered in different ways. To be able to perform simple tests. To be able to identify and classify. Distinguish between an object and the material from which it is made.	**Everyday Materials (EP/AO)**  To be able to identify and classify materials by uses and properties. To be able to observe closely and record observations. To be able to perform simple tests. To be able to ask questions and recognise they can be answered in different ways.	**Forces and Magnets**  To be able to make systematic and careful observations. To be able to ask relevant questions and use different scientific enquiry to answer them. To be able to identify differences and similarities. Compare how things move on different surfaces.	**States of Matter (EP/AO)**  To be able to identify similarities, differences or changes related to simple scientific ideas and processes. To be able to make systematic and careful observations, taking measurements using a range of equipment. To be able to ask relevant questions and use different scientific enquiry to answer them.	**Earth and Space**  To be able to identify scientific evidence that has been used to support or refute ideas or arguments. To be able to record data using scientific diagrams and labels. To be able to plan different types of scientific enquiry to answer questions. Describe the movement of the Earth, and other	**Living Things and Their Habitats (EP/AO)**  To be able to record data using scientific diagrams and labels and classification keys. To be able to plan different types of scientific enquiry to answer questions. To be able to identify scientific evidence that has been used to support or refute ideas or arguments. Describe how living things are classified into broad groups according to

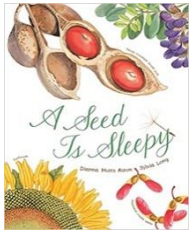
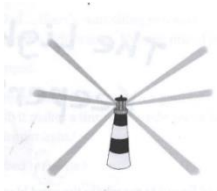
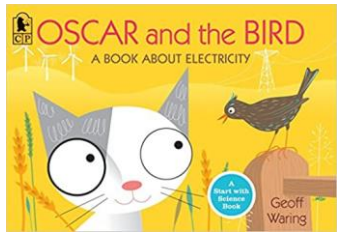
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, and cardboard for particular uses. Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh, or John McAdam.	Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attracts and repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to magnets and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel depending on the way their poles are facing.	To be able to gather, record, classify and present data in a variety of ways to answer questions. Compare and group materials together, according to whether they are solids, liquids, or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius temperature.	planets, relative to the sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the sun, Earth, and Moon as approximately spherical bodies. Use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky.	common observable characteristic and based on similarities and differences, including micro-organisms, plants, and animals. Give reasons for classifying plants and animals based on specific characteristic. **Pupils should build on their learning about grouping living things in year 4 by looking at the classification system in more detail. They should be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided.**

Term 2					
Nursery		Pre- School		Reception	
Day and night Talk about what they see, using a wide range of vocabulary. Explore how things work. Watch, compare, same, different		**Let's Celebrate** Begin to understand the need to respect and care for the natural environment and all living things. Understand the key features of the life cycle of a plant or animal. Look closely, sort		**Into The Woods** Explore the natural world around them. Describe what they see, hear and feel when outside. Understand the effects of the changing seasons on the world around them. observe, touch, feel, smell, listen, compare, ask questions, record, sort, group	
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Seasonal Changes  To be able to gather and record data to answer questions. To be able to observe closely. To be able to ask questions and recognise they can be answered in different ways. Observe changes across the 4 seasons. Observe and describe weather associated with	**Everyday Materials**  To be able to ask questions and recognise they can be answered in different ways. To be able to identify and classify materials by uses and properties. To be able to observe closely and record observations. To be able to perform simple tests. Find out how the shape of solid objects made from some materials can be	**Rocks (EP/AO)**  To be able to ask relevant questions and use different types of scientific enquiries to answer them. To be able to make systematic and careful observations using a range of equipment. To be able to identify differences, similarities or changes related to simple scientific ideas and processes. Compare and group together different type of	**States of Matter**  To be able to ask relevant questions and use different scientific enquiry to answer them. To be able to set up practical enquires, comparative and fair tests. To be able to use results to draw simple conclusions and make predictions. To be able to record findings using simple scientific language and diagrams.	**Forces (EP/AO)**  To be able to plan different scientific enquiries to answer questions. To be able to take measurements using scientific equipment with increasing accuracy and precision. To be able to identify scientific evidence that has been used to support or refute ideas or arguments.	**Evolution and Inheritance**  To be able to record data using scientific diagrams and labels and classification keys. To be able to plan different types of scientific enquiry to answer questions. To be able to identify scientific evidence that has been used to support or refute ideas or arguments. Recognise that living things have changed over time and that fossils provide information about living

the seasons and how day length varies.	changed by squashing, bending, twisting, and stretching.	rocks on the basis of their appearance and similar physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rocks. Recognise soils are made of rocks and organic matter.	(Water Cycle) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Explain that unsupported objects fall towards the Earth because of the force of gravity. Identify the effects of air resistance, water resistance and friction, that act between a moving surface. Recognise that some mechanisms, including levers, pulleys, and gears, allow a smaller force to have a greater effect.	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 adapt to suit their environment in different ways and that adaptation may lead to evolution. **Research or comprehension about Charles Darwin and Alfred Wallace** **Building on what they learned about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time.**

Term 3

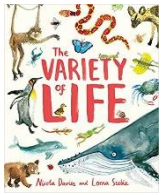
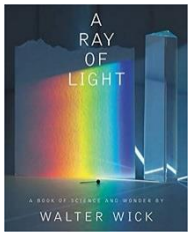
Nursery	Pre- School	Reception
On the Farm Begin to understand the need to respect and care for the natural environment and all living things. Understand the key features of the life cycle of a plant or animal. Plant seeds and care for growing plants. same, different, compare, ask questions, record, sort, group	**When I Grow Up** Understand the key features of the life cycle of a plant or animal. Use all their senses in hands-on exploration of natural materials. watch, touch, feel, smell, listen, compare, ask questions, record, sort, group	**Land Down Under** Recognise some environments that are different to the one in which they live. Explore the natural world around them. Observe, same, different, compare, ask questions, record, sort, group

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants (EP/AO)  To be able to ask questions and recognise they can be answered in different ways. To be able to observe closely using simple equipment. To be able to identify and classify. Gathering and recording data to help answer questions Identify and name a variety of common wild and garden plants,	**Plants (EP/AO)**  To be able to ask questions and recognise they can be answered in different ways. To be able to observe closely using simple equipment. To be able to gather and record data to help answer questions. Observe and describe how seeds and bulbs grow into mature plants. Know and describe how plants need water, light, and a suitable	**Plants**  To be able to ask relevant questions and use different types of scientific enquiries to answer them. To be able to make systematic and careful observations using a range of equipment. To be able to set up practical enquires, comparative and fair tests. To be able to gather, record and present data to answer questions.	**Electricity (EP/AO)** The Lighthouse Keeper's Son  To be able to ask relevant questions and use different types of scientific enquiries to answer them. To be able to Set up practical enquiries and record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. To be able to Report on findings from enquiries including oral and written explanations, displays or	**Changes of Materials (EP/AO)**  To be able to plan different types of scientific enquires to answer questions. To be able to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs. To be able report and present findings from enquiries, including conclusions, casual	**Electricity (EP/AO)**  To be able to plan different scientific enquiry to answer questions. To be able to record data using scientific diagrams. To be able to report and present findings from enquiries, including conclusions, casual relationships, and explanations of and degree of trust in results, in oral and written forms. To recognise and use symbols in a circuit diagram.

including deciduous and evergreen trees. Identify and describe the basic structure of common flowering plants, including trees (leaf, flower, petal, blossom, fruit, trunk, branch, stem, roots, bulb, seed)	temperature to grow and stay healthy. **Pupils should use the local environment throughout the year to observe how plants grow. Pupils should be introduced to the requirements of plants for germination, growth, and survival, as well as the processes of reproduction and growth in plants.**	To be able to use results to draw conclusions and make predictions. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) how they vary from plant to plant. Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	presentations of results and conclusions. Identify common appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, bulbs, switches, and buzzers. Identify whether or not a lamp will light in a simple series circuit, whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.	relationships, and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Demonstrate that dissolving, mixing and changes of state are reversible changes. Know that some materials will dissolve in a liquid to form a solution and describe how to recover a substance from a solution. Know how to separate liquids, solids and gases using methods such as filtering, sieving, and evaporating. Know that some changes result in new materials and are usually irreversible including changes associated with burning and acid on bicarbonate of soda.	To compare and give reasons for variations in how components function, including the brightness of bulbs, volume of buzzers and switches. To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit.

Term 4

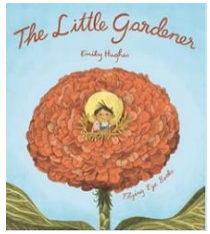
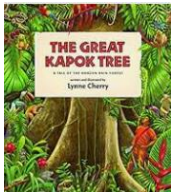
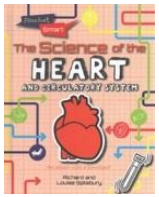
Nursery	Pre- School	Reception
Build Me a Home Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice. Look closely, touch, feel, smell, listen, same, different, compare	**Yum, Yum, in my Tum!** Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice. Understand the key features of the life cycle of a plant or animal. watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group	**Earth and Space** Explore the natural world around them. Describe what they see, hear and feel when outside. look closely, observe, touch, feel, smell, listen, same, different, compare, ask questions, record

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including Humans (EP/AO)  To be able to ask questions and recognise they can be answered in different ways. To be able to observe closely using simple equipment. To be able to identify and classify. Identify and name a variety of common animals including fish,	**Living things and Their Habitats**  To be able to ask questions and recognise they can be answered in different ways. To be able to identify and classify. Identify that most living things live in habitats to which they are suited. To describe how different habitats provide for the basic needs of different kinds of animals and	**Light**  To be able to ask relevant questions and use different types of scientific enquiries to answer them. To be able to record findings using scientific language, drawings, and diagrams. To be able to make systematic and careful observations using a range of equipment.	**Sound (EP/AO)**  To be able to use straightforward scientific evidence to answer questions or to support their findings. To be able to set up practical enquiries, comparative, and fair tests. To be able to record findings using simple scientific language, drawings, labelled	**Properties of Materials**  To be able to report and presenting findings from enquiries, including conclusions, casual relationships, and explanations of and degree of trust in results, in oral and written forms. To be able to use test results to make predictions to set up further comparative tests.	**Light**  To be able to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. To be able to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.

amphibians, reptiles, birds, and mammals. Identify and name a variety of common animals that are carnivores, herbivores, and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds, and mammals, including pets)	plants, and how they depend on each other. identify and name a variety of plants and animals in their habitats, including microhabitats.	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.	diagrams, keys, bar charts and tables. To be able to report on findings from enquiries including oral and written explanations, displays or presentations of results and conclusions. Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the objects that produce it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sound gets fainter as the distance from the sound source increases.	To be able to Identify scientific evidence that has been used to support or refute ideas or arguments. Compare and group together materials based on, hardness, solubility, transparency, thermal and electrical conductivity, and magnetism. Give reasons, based on evidence/fair tests for particular uses of materials. **Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4**.	To be able to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs. Recognise that light appears to travel in straight lines. Know that light travels in straight lines to explain that objects are seen because they give out reflect light into our eyes. Explain that we see things because 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.

Term 5

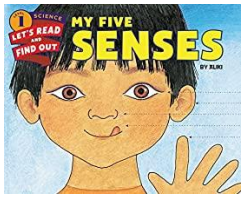
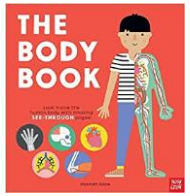
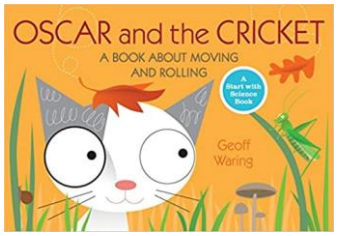
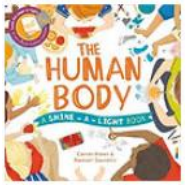
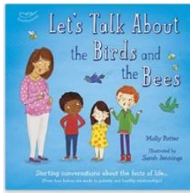
Nursery	Pre- School	Reception
Under the Sea Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Use all their senses in hands-on exploration of natural materials. Talk about the differences between materials and changes they notice. look closely, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group	**Home Sweet Home** Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Use all their senses in hands-on exploration of natural materials. Talk about the differences between materials and changes they notice. look closely, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group	**Splendid Safari** Recognise some environments that are different to the one in which they live. Explore the natural world around them. Describe what they see, hear and feel when outside. Understand the effects of the changing seasons on the world around them. observe, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants (EP/AO)  To be able to ask questions and recognise they can be answered in different ways. To be able to observe closely using simple equipment. To be able to gather and record data to help answer questions. Pupils should use the local environment throughout the year to explore and	**Living things and Their Habitats (EP/AO)**  To be able to ask questions and recognise they can be answered in different ways. To be able to gather and record data to help answer questions. To be able to identify and classify. Explore and compare the differences between things that are living,	**Animals, including Humans (EP/AO)**  To be able to ask relevant questions and use different types of scientific enquiries to answer them. To be able to identify differences and similarities relating to scientific ideas. To be able to use scientific evidence to answer questions. To be able to record findings using scientific	**Living things and Their Habitats**  To be able to ask relevant questions and using different types of scientific enquiry to answer them. To be able to make systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment including thermometers and data loggers.	**Living things and Their Habitats (EP/AO)**  To be able to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs. To be able to record and present findings from enquiries, including conclusions, casual relationships, and explanations of and degree of trust in results,	**Animals, including Humans**  Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs. Identifying scientific evidence that has been used to support or refute ideas or arguments. Reporting and presenting findings from enquiries, including conclusions,

answer questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted. **Seasonal Changes** Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.	dead, and things that have never been alive. 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.	language, drawings, and diagrams. Identify 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. Pupils should continue to learn about the importance of nutrition. Identify humans and some other animals have skeletons and muscles for support, protection, and movement. Pupils should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.	To be able to use straightforward scientific evidence to support their findings or answer questions. Know that 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. **Pupils should explore examples of human impact (both positive and negative) on environments. E.g.: littering, deforestation.**	in oral and written forms such as displays and other presentations. Describe the difference in life cycles of a mammal, an amphibian, an insect, and a bird. Describe the life process of reproduction in some plants and animals. Sexual and asexual reproduction in plants. **Pupils should study and raise questions about their local environment throughout the year. They should observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough.**	casual relationships, and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood. **Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular, and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function.**

Term 6

Nursery	Pre- School	Reception
Minibeasts Galore Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. look closely, observe, same, different, compare, ask questions, record, sort, group	**Let's Go!** Explore how things work. Explore and talk about different forces they can feel. Explore collections of materials with similar and/or different properties. look closely, observe, same, different, compare, ask questions, record, sort, group	**Growing and Changing** Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them. look closely, observe, watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including Humans  To be able to ask questions and recognise they can be answered in different ways. To be able to observe closely. identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**Animals, including Humans**  To be able to ask questions and recognise they can be answered in different ways. To be able to observe closely. To be able to perform simple tests. To be able to gather and record data to help answer questions. Know that animals, including humans, have offspring which grown into adults.	**Forces and Magnets**  **(EP/AO)** To be able to make systematic and careful observations. To be able to ask relevant questions and use different scientific enquiry to answer them. To be able to identify differences and similarities. Compare how things move on different surfaces.	**Animals, including Humans**  To be able to ask relevant questions and using different types of scientific enquiry to answer them. To be able to make systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment including thermometers and data loggers. To be able to use straightforward scientific evidence to support their	**Animals, including Humans**  To be able to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs. To be able to report and present findings from enquiries, including conclusions, casual relationships, and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	**Animals, including Humans (EP/AO)**  To be able to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs. To be able to identify scientific evidence that has been used to support or refute ideas or arguments. To be able to report and present findings from enquiries, including conclusions, casual relationships, and explanations of and degree

	Describe the basic needs of animals, including humans, for survival (water, food, and air) Understand the importance for humans of exercise, eating the right amounts of different types of food and hygiene.	Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attracts and repel each other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis of whether they are attracted to magnets and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel depending on the way their poles are facing.	findings or answer questions. Construct and interpret a variety of food chains, identifying producers, predators, and prey. Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth and their functions. **Pupils should be introduced to the main body parts associated with the digestive system, for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine, and explore questions that help them to understand their special functions.**	Describe the changes as humans develop to old age. Draw timelines to indicate stages in the growth and development of humans. Describe changes (puberty) and reproduction in some animals. (SRE lessons)	of trust in results, in oral and written forms such as displays and other presentations. Recognise the impact of diet, exercise, drugs, and lifestyle on the way their body's function. Describe the ways in which nutrients and water are transported within animals, including humans.

Working Scientifically					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ask simple questions and recognise they can be answered in different ways. Observing closely, using simple equipment. Performing simple test. Identifying and classifying. Gathering and recording data to help answer questions.	Ask simple questions and recognise they can be answered in different ways. Observing closely, using simple equipment. Performing simple test. Identifying and classifying. Gathering and recording data to help answer questions.	Asking relevant questions and using different types of scientific enquiries to answer them. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using range of equipment, including thermometers and data loggers. Setting up practical enquiries, comparative, and fair tests. Gathering, recording, classifying, and presenting data in a variety of ways to help answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Using straightforward scientific evidence to answer questions or to support their findings. Identifying differences, similarities or changes	Asking relevant questions and using different types of scientific enquiries to answer them. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using range of equipment, including thermometers and data loggers. Setting up practical enquiries, comparative, and fair tests. Gathering, recording, classifying, and presenting data in a variety of ways to help answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Using straightforward scientific evidence to answer questions or to support their findings. Identifying differences, similarities or changes	Planning different types of scientific enquires to answer questions, including recognising variables 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. Identifying scientific evidence that has been used to support or refute ideas or arguments. Reporting and presenting findings from enquiries, including conclusions, casual relationships, and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Using test results to make predictions to set up further comparative tests and fair tests.	Planning different types of scientific enquires to answer questions, including recognising variables 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. Identifying scientific evidence that has been used to support or refute ideas or arguments. Reporting and presenting findings from enquiries, including conclusions, casual relationships, and explanations of and

		related to simple scientific ideas and processes. Using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. Reporting on findings from enquiries including oral and written explanations, displays or presentations of results and conclusions.	related to simple scientific ideas and processes. Using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. Reporting on findings from enquiries including oral and written explanations, displays or presentations of results and conclusions.		degree of trust in results, in oral and written forms such as displays and other presentations. Using test results to make predictions to set up further comparative tests and fair tests.

Please turn over for an example planning unit for the Inspire Science Curriculum.

YEAR SIX

TERM SIX

Animals including Humans

LIVING THINGS & HABITATS | EVOLUTION & INHERITANCE | ELECTRICITY | LIGHT | ANIMALS INCLUDING HUMANS

Enquiry Question	**Why is it important to maintain a healthy circulatory system?**				
Scientific Enquiry	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar, and line graphs. Identifying scientific evidence that has been used to support or refute ideas or arguments. Reporting and presenting findings from enquiries, including conclusions, casual relationships, and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.				
NC Objectives	Recognise the impact of diet, exercise, drugs, and lifestyle on the way their body's function Describe the ways in which nutrients and water are transported within animals, including humans				
Curriculum Coherence	**Prior Knowledge** Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Y2) Identify 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. (Y3)			**Future Learning:** The consequences of imbalances in the diet, including obesity, starvation, and deficiency diseases. (KS3) The effects of recreational drugs (including substance misuse) on behaviour, health, and life processes. (KS3) The structure and functions of the gas exchange system in humans, including adaptations to function. (KS3) The mechanism of breathing to move air in and out of the lungs. (KS3) The impact of exercise, asthma, and smoking on the human gas exchange system. (KS3)	
	Substantive nutrients circulatory system exercise blood vessels capillary vein artery	**Disciplinary** record table findings diagrams stopwatch accurate precise	**High Quality Text**  	**Misconceptions** We just eat food for energy All fat is bad for you and all dairy is good for you Protein is good for you, so you can eat as much as you want All drugs are bad for you.	**Assessments & Outcomes** Big Fat Quiz of the Term Retrieval Practice Written Task

	addiction drugs	conclusion evidence line graph			

YEAR SIX

TERM SIX

Animals including Humans

LIVING THINGS & HABITATS | EVOLUTION & INHERITANCE | ELECTRICITY | LIGHT | ANIMALS AND HUMANS

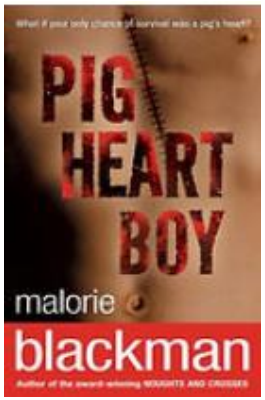
Knowledge Sequence	Lesson 1: What do blood vessels do? In this lesson, the children will start by reflecting on the previous unit 6.5 and recalling what the function of blood is. The children will learn that **blood** travels around our body through the network of **blood vessels**, **arteries**, **veins** and **capillaries**. The children will follow the journey blood takes through the body after it leaves the heart, through the arteries and onto the capillaries (and their function). They will explore the job of capillaries and how they cause us to bleed and bruise. They will learn of the transfer from capillary to vein and how veins transfer blood back to the heart. We have to look after or blood vessels by exercising and eating well otherwise fatty deposits can build in blood vessels making it harder to transport blood, this can lead to heart problems. The children will investigate blood clotting. Science for children 4 to 14 years | Developing Experts The children will record their results in a **table** and explain their **findings**.
	Lesson 2: How does the heart move blood around the body?  Firstly, the children will recall what the function of blood vessels are. The children can feel their own chest and pulse on their wrist, this is the feeling of blood moving through our arteries as your heart pumps. The children will be able to explain what and where the heart is and its function. Blood has to continue to move around our body so that water, **nutrients** and **oxygen** can be transported to cells that need it and waste products like carbon dioxide are removed. The heart is an involuntary muscle and has four chambers, they will see an animation of how these chambers function. Science for children 4 to 14 years | Developing Experts The children will map the basic parts of the **circulatory system** out on the playground – **heart**, **lungs**, **blood vessels** and **muscles**. The children will move around the 'body' as though they were the blood. During a 'freeze frame' the children will explain where they are in the circulatory system and if they are blood cells carrying oxygenated or deoxygenated blood. The children will complete a **diagram** with **labels** in their books of how the heart moves blood around the body.
	Lesson 3: What affects your heart rate? (Assessment opportunity) Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs In this lesson, the children will begin by discussing what they need to do to make their heartbeat faster. The children will explore what 'resting heartrate' means and what we usually are doing when we have a resting heartrate. The children will record their own resting heartrate by counting how many beats they feel in their pulse for a minute using **stop watches**. The children will do this three times and take an average, to give them a more **accurate** result. They will design a selection of exercises that will raise their heartrate to complete for one minute. They will record their heartrate after each exercise and create a **line**

	graph to show their results. They will write **conclusions** about which exercise raised their heartrate the most and based on their **evidence** suggest reasons for this.
	Lesson 4: What does a heart look like? In this lesson, the children will dissect a pig's/lamb's heart. They will work in groups of four and follow videos (68) Heart Dissection Primary Schools -Key Stage GCSE and A-Level Biology NEET Required Practical Skills - YouTube (68) What's inside a heart? Heart Dissection | We The Curious - YouTube to support the children identifying parts of the heart and where to make incisions into each atrium/ventricle. The risk assessment will be followed (located in the 6.6 Animals including Humans folder) and will study each part of the heart, using their prior knowledge and scientific language to discuss what they see.
	Lesson 5: What does a heart look like? In this lesson, the children will **record** and write up their **findings** from the previous lesson about dissecting a heart. The children will draw detailed **diagrams** of what they noticed (from photos taken during dissection) and **label** parts of the heart such as the left atrium, right atrium, left ventricle and right ventricle. The children will watch an accompanying video such as (68) What's inside a heart? Heart Dissection | We The Curious - YouTube to refresh their memories and use it to help label their diagrams with correct **vein**/**artery** names. The children will write a detailed description of the journey blood takes around the body and the structure of the two sides of the heart to demonstrate their understanding.
	L Lesson 6: How can we keep our body healthy? In this lesson the children will start by thinking of how smoking damages your health. They will learn the affects smoking has on your lungs heart, teeth, skin and overall health. They will study in detail how smoking impacts the lungs and how this in turn has an affect on how much oxygen is transported around the body. The children will further study the long term health implications of smoking such as lung cancer. The children will look at how alcohol and drugs have an impact on the body short and long term and the health implications of this. The children will explain the scientific ideas they have learnt and create a poster/information leaflet about how to keep your body healthy, including what they have learnt from this unit to explain **scientific ideas.** Science for children 4 to 14 years | Developing Experts

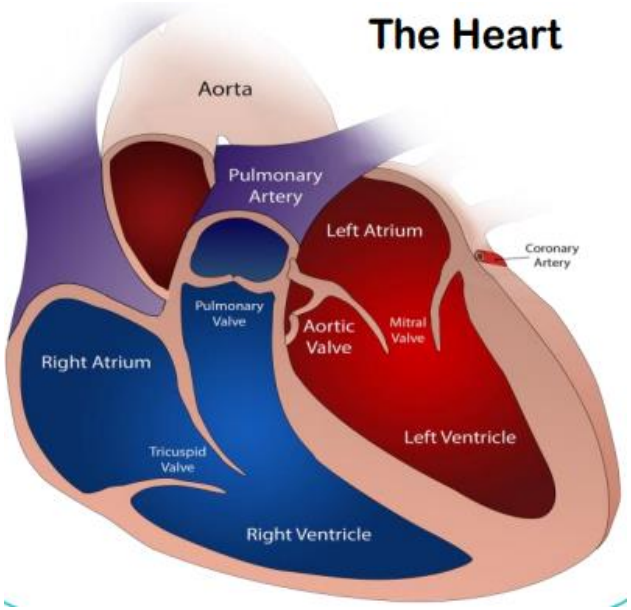
Science 6.6 – Animals including Humans

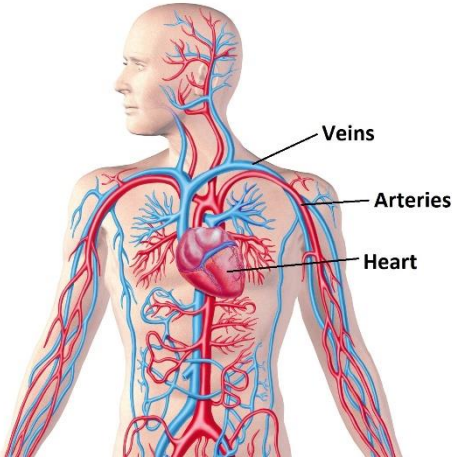
Enquiry Question: Why is it important to maintain a healthy circulatory system?

In this area of study, you will learn about blood vessels, how the heart moves blood around the body and about heart rate. You will learn the impact that diet, exercise, drugs, and lifestyle can have on the body. You will study how these factors influence the way our body functions. You will look at the ways in which water and nutrients are transported around the body in animals and humans.



Key Vocabulary	
addiction	An inability to stop consuming a substance.
drugs	A medicine or substance that when consumed causes a change physiology or psychology.
nutrients	Something from food that helps living organisms live and to grow.
circulatory system	The system which circulates blood through the body
exercise	An activity requiring physical effort which improves your health and fitness
blood vessels	The tubes which blood flow around the body.
capillary	A very thin tube which carries blood around the body.





Did you Know?

Exercise reduces muscle tension, improves resilience, builds brain power, promotes better sleep, and improves your energy. It is great for your physical and mental health!

Science 6.6 – Animals including Humans

End of Term Big Quiz

1. Who was Karl Linnaeus?	2. Name the planets of our solar system in order.	3. What is the composition of blood?
4. How is oxygen transported round the blood?	5. How do fossil provide evidence of evolution?	6. Explain what materials you can separate with sieving.
7. What is asexual reproduction in plants?	8. What are the 4 blood types?	9. Draw a circuit diagram using symbol.
10. How do we see objects using light?	11. What materials conduct electricity?	12. What is the role of the liver in the circulatory system?

This term (Worth 1 Point)	Term 1 – 4 (Worth 2 Points)	Last Year (Worth 3 Points)

Your mission is to score 10 points!