St Nicolas Cof E Academy

Whole School Overview - Science

EYFS	It's Good to Be Me	Let' Celebrate	Once Upon a Time	All Creatures Great & Small	How Does Your Garden Grow	Wish You Were Here
	Talk about the lives of the people around them and their roles in society including dentist, doctor and nurse. Know the names of body parts. Know how others are similar and different to themselves and be able to talk about this. Explore using their senses to begin to understand their purpose. Know the importance of teeth cleaning and learn how to do this To understand the importance of eating a healthy diet and getting enough sleep	Know the season is Autumn, observe & comment on changes. Know trees lose their leaves & change colour. Know that natural materials are found or grow in the environment and not made.	Experiment with a variety of materials and joining techniques to make a chair. Explore materials and their properties – which would make a strong chair? Know the season is Winter and know the weather will be cold, maybe rain or snow. Know the types of clothes we would wear in winter. To explore changing states for example to know that ice is water which is frozen and can thaw back to water, to explore what happens when we mix dry oats with milk to make porridge for the bears. Observe this outside and make own ice inside – experiment with different places to put the water to freeze To know that bears are real animals that do not talk, live in houses or eat porridge, but do eat meat—they are **carnivores.**	Be able to say which animals we would not have inside as pets and why. To know what happens on a farm and where our food comes from – chickens lay eggs for us to eat, and cows give us milk To know that vets help us to care for animals Discuss how features of the area have changed with the seasons. Know that the season is spring and talk about the features of Spring. Know the names of some animals and their young To understand the words rainbow and flood. To be able to explain that water and sunlight make a rainbow and that a flood is when too much water covers ground that is usually dry.	Plant flowers for the butterflies and beans and care for them. Observe the changes, record them and explain them to others. Know the life cycle of a caterpillar: butterfly lays an egg, caterpillar hatches, forms a chrysalis and hatches as a butterfly which lays more eggs. Have the vocabulary to name and describe each stage of the life cycle of a caterpillar. Observe and talk about caterpillars moulting their skin as they grow. Know that butterflies drink (nectar) through their (proboscis) curly tongue and can't fly if they are cold or newly hatched. To know that plants provide food for us and other animals Know that plants need water, light and soil to grow Know and name some garden plants grown in our school garden. Know and name the flower, leaves and root of a plant.	Know the season is Summer and the related weather observe and talk about signs of summer – trees having leaves, flowers in bloom, plants growing. Know the dangers of the sun and water and how to stay safe in each. Experiment with and talk about different forces. Push and pull, floating and sinking. Know the names of the animals in the story and that these are wild animals. Name the fruits in Handa's basket. Know that fruit is healthy, and we should eat 5 portions of fruit & veg each day.

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Whole School Overview - Science

Year 1	My School	Guy Fawkes	Hot & Cold Places	Animals	Castles	Plants
	Animals, including humans Know the name of parts of the human body that can be seen Say which part of the body is associated with each sense.	Everyday Materials Know the name of the materials an object is made from including wood, plastic, glass, metal, water and rock Know about the properties of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties Seasonal changes Autumn observations	Living things and their habitats Know how to classify a range of animals by amphibian, reptile, mammal, fish and birds Know and classify animals by what they eat (carnivore, herbivore and omnivore) Know how to sort by living and non-living things Seasonal changes Spring observations	Animals Know how to classify a range of animals by amphibian, reptile, mammal, fish and birds Know and classify animals by what they eat (carnivore, herbivore and omnivore) Know how to sort by living and non-living things	Seasonal changes Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.	Plants Know and name a variety of common wild and garden plants Know and name the petals, stem, leaves and root of a plant Know and name the roots, trunk, branches and leaves of a tree
	Working Scientifically Statutory Requirements Year 1 During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions.					

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Whole School Overview - Science

Year 2	Nuneaton my Town	UK Countries & Capitals	Great Fire of London	Transport	India	Habitats
	Animals Know the basic stages in a life cycle for animals, (including humans) Know the basic needs of animals (including humans) for survival Know why exercise, a balanced diet and good hygiene are important for humans	Plants Know and explain how seeds and bulbs grow into plants Know what plants need in order to grow and stay healthy (water, light and suitable temperature)	Materials Know how materials can be changed by squashing, bending, twisting and stretching Know why a material might or might not be used for a specific job	Scientists and Inventors Can I describe how greenhouses help plants to grow healthily? Who was Jane Colden? Who was Elizabeth Garret Anderson and why is she important? What did Louis Pasteur discover?	Living Things Classify things by living, dead or never lived Name some different sources of food for animals Know about and explain a simple food chain	Habitats (and local habitats across the year). Know how a specific habitat (including microhabitats) provides for the basic needs of things living there (plants and animals) Match living things to their habitat

Working Scientifically Statutory Requirements Year 2

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

St Nicolas Cof E Academy

Whole School Overview - Science

Year 3	Stone Age to Iron Age	The UK	Ancient Greece	Animals including Humans	Farming in the UK	Spain
	Rocks and soils Compare and group rocks based on their appearance and physical properties, giving reasons Know how soil is made and how fossils are formed Know about and explain the difference between sedimentary, metamorphic and igneous rock	Light Know that dark is the absence of light Know that light is needed in order to see and is reflected from a surface Know and demonstrate how a shadow is formed and explain how a shadow changes shape Know about the danger of direct sunlight and describe how to keep protected	Scientists and Inventors How did Marie Curie change scientific thinking? Can I explain how Marie Curie's work on x-rays help us to identify bones? Can I explain how sedimentary rocks form? Can I explain the principle of fossil succession? Can I identify inventions and discoveries from all over the world linked to scientific thinking? Can I research an invention or discovery linked to scientific ideas?	Animals including humans Know about the importance of a nutritious, balanced diet Know how nutrients, water and oxygen are transported within animals and humans Know about the skeletal and muscular system of a human	Plants Know the function of different parts of flowing plants and trees Know how water is transported within plants Know the plant life cycle, especially the importance of flowers	Magnets and forces Know about and describe how objects move on different surfaces Know how a simple pulley works and use to on to lift an object Know how some forces require contact and some do not, giving examples Know about and explain how magnets attract and repel Predict whether magnets will attract or repel and give a reason

Working Scientifically Statutory Requirements Year 3

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

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Whole School Overview - Science

Year 4	Volcanoes & Earthquakes	The Roman Empire	Teeth & Digestion	Anglo Saxons & Scots	Vikings	Rivers & Water Cycle
	Sound Know how sound is made, associating some of them with vibrating Know how sound travels from a source to our ears Know the correlation between pitch and the object producing a sound Know the correlation between the volume of a sound and the strength of the vibrations that produced it Know what happens to a sound as it travels away from its source	Electricity Identify and name appliances that require electricity to function Construct a series circuit Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers) Predict and test whether a lamp will light within a circuit Know the function of a switch Know the difference between a conductor and an insulator; giving examples of each	Animals including humans Identify and name the parts of the human digestive system Know the functions of the organs in the human digestive system Identify and know the different types of human teeth Know the functions of different human teeth Use and construct food chains to identify producers, predators and prey	Living things and their habitats Use classification keys to group, identify and name living things Know how changes to an environment could endanger living things Group materials based on their state of matter (solid, liquid, gas	States of matter Know the temperature at which materials change state Know about and explore how some materials can change state	Know the part played by evaporation and condensation in the water cycle What factors affect evaporation? What are the main stages of the water cycle? How does temperature affect evaporation? How is a river's eco-system affected by pollution? Can I Identify animals which inhabit a river environment? How can we make our water safe?

Working Scientifically Statutory Requirements Year 4

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

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Whole School Overview - Science

Year 5	Mountains	Earth & Space	War of the Roses	The Rainforest	Benin Dynasty	The Victorians
	Forces Know what gravity is and its impact on our lives Identify and know the effect of air and water resistance Identify and know the effect of friction Explain how levers, pulleys and gears allow a smaller force to have a greater effect.	Earth and Space Know about and explain the movement of the Earth and other planets relative to the Sun Know about and explain the movement of the Moon relative to the Earth	Materials and their properties Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets Know and explain how a material dissolves to form a solution Know and show how to recover a substance from a solution Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating) Know and demonstrate that some changes are reversible and some are not Know how some changes result in the formation of a new material and that this is usually irreversible	Living things and their habitats Know the life cycle of different living things e.g. mammal, amphibian, insect and bird Know the differences between different life cycles Know the process of reproduction in plants Know the process of reproduction in animals	Animals including humans Describe the changes as humans develop from birth to old age. Create a timeline to indicate the stages of growth in humans. Links with 'Changing Me' (Jigsaw)	Scientists and Inventors Recap and Consolidate Can I explain how Margaret Hamilton programmed the Apollo spacecrafts? Can I describe Eva Crane's research into the life cycle of bees? Can I investigate what Leonardo da Vinci's Vitruvian Man shows us about the human body? Can I use chromatography to separate mixtures? Was Stonehenge used an astronomical clock?

Working Scientifically Statutory Requirements Year 5

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

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

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Whole School Overview - Science

Year 6	Egyptians	World War II	Fair Trade	Circulatory System	Coastal Studies	Our Changing World
	Electricity Compare and give reasons for why components work and do not work in a circuit Draw circuit diagrams using correct symbols Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer	Light Know how light travels Know and demonstrate how we see objects Know why shadows have the same shape as the object that casts them Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.	All living things and their habitats- Classification Classify living things into broad groups according to observable characteristics and based on similarities and differences Know how living things have been classified Give reasons for classifying plants and animals in a specific way	Animals including humans Identify and name the main parts of the human circulatory system Know the function of the heart, blood vessels and blood Know the impact of diet, exercise, drugs and lifestyle on health Know the ways in which nutrients and water are transported in animals, including humans	Evolution and Inheritance Know how the Earth and living things have changed over time Know how fossils can be used to find out about the past Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) Know how animals and plants are adapted to suit their environment Link adaptation over time to evolution Know about evolution and can explain what it is	Scientists and Inventors Recap and Consolidate Can I describe Alexander Fleming's discovery of penicillin? Can I understand the effects of penicillin? Do I recognise that living things have changed over time? Can I explain why Mary Leakey's fossil finding in the Olduvai Gorge is significant? Can I use recognised symbols when representing a simple circuit in a diagram?

Working Scientifically Statutory Requirements Year 6

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

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