



Science at Amington Heath

How is this subject taught?

Children learn science throughout mini adventure approach to the curriculum. Children become scientists for three week mini adventures where they learn the scientific knowledge and skills set out in the national curriculum in a purposeful and inspiring way. Throughout their time at Amington Heath, children will go on at least 20 adventures where they are scientists.

In addition to the specific science lessons, children also learn about science within other subject areas such as RE, DT and Forest school along with assemblies. Children share their scientific knowledge and skills with the whole school community through fantastic finishes and sharing assemblies with parents and peers.

Plan for progression

The curriculum has been mapped to ensure that knowledge and skills build upon prior learning from knowledge and understanding of the world in Nursery to Year 6 programmes of study.

Enrichment

Science lessons are enhanced with enrichment activities such as trips to the Think Tank and the National Space Centre to further develop their learning and life skills. People from the wider community are also invited into school to share their knowledge and experiences.

As part of a rolling programme of after school clubs, children have the opportunity to join science clubs.

Mini Adventure outcomes - Whole School progression in Science

EYFS

What the children will be learning to do:	How we support/ teach this:
<p>(UTW) 0-3 years The Natural world- Explore and respond to different natural phenomena in their setting and on trips-</p>	<p>Encourage children to enjoy and explore the natural world-</p> <ul style="list-style-type: none"> *Standing in the rain with wellies and umbrellas *Walking through tall grass *Splashing in puddles *Seeing the spring daffodils and cherry blossom *Looking for worms and minibeasts *Visit the beach and exploring the sand, pebbles and paddling in the sea. <p>Encourage children’s exploration, curiosity, appreciation and respect for living things-</p> <ul style="list-style-type: none"> *Sharing the fascination of a child who finds woodlice teeming under an old log *Modelling the careful handling of a worm and helping children return it to the dug-up soil *Carefully planting, watering and looking after plants they have grown from seeds. <p>Encourage the children to bring children to bring natural materials into the setting, such as leaves and conkers picked up from the pavement or park in autumn.</p>
<p>(UTW) 3-4 years The natural world/ past and present - Use all of their senses in hands-on exploration of natural materials. Explore collections of materials with similar/ different properties. Talk about what they see using a wide vocabulary.</p> <p>Explore how things work</p> <p>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.</p>	<p>Provide interesting natural environments to explore freely outdoors. Make collections of natural materials to investigate and talk about-</p> <ul style="list-style-type: none"> *Contrasting pieces of bark *Different types of leaves and seeds *Different types of rock *Different shells and pebbles from the beach <p>Provide mechanical equipment for children to play with and investigate-</p> <ul style="list-style-type: none"> *Wind-up toys, pulleys, sets of cogs with pegs and boards <p>Show and explain the concept of growth, change and decay with natural materials-</p> <ul style="list-style-type: none"> *Plant seeds and bulbs so children observe growth and decay over time *Observe an apple core going mouldy over time *Help children to care for animals and take part in first hand scientific explorations of animal life cycles, such as caterpillars or chick eggs.

<p>Explore and talk about different forces that they can feel.</p> <p>Talk about the differences between materials and changes they notice.</p>	<p>Plan and introduce new vocabulary related to the exploration. Encourage children to use it in their discussions, as they care for living things.</p> <p>Draw children’s attention to forces -</p> <ul style="list-style-type: none"> *How water pushes when they try to put a plastic boat under it *How they can stretch elastic, bend a twig but can’t bend a metal rod *Magnetic attraction and repulsion. <p>Provide children with opportunities to change materials from one state to another-</p> <ul style="list-style-type: none"> *Cooking- combining different ingredients, and then cooling or heating them *Melting- leaving ice cubes out in the sun, see what happens when you shake salt onto them. *Explore how different materials sink and float *Explore how you can shine light through some materials- investigate shadows
<p>UTW- Reception age</p> <p>The natural world-</p> <p>Explore the natural world around them -</p>	<ul style="list-style-type: none"> *Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them- through a hands-on experience *Sing songs, rhymes and poems about the natural world *Draw pictures of the natural world, including animals and plants. <p>Describe what they see, hear and feel outside-</p> <ul style="list-style-type: none"> *Listen to children describing and commenting on things they seen whilst outside, including plants and animals *Encourage children to take supported risks *Name and describe some animals and plants they are likely to see. <p>Understand the effects of the changing seasons-</p> <ul style="list-style-type: none"> *Guide children’s understanding by drawing their attention to weather and seasonal features *Observe how animals behave differently as the seasons change

Year 1

Mini adventure	Outcomes
Paws, Claws and Jaws	<p>Summary Through close observation using simple equipment, children will describe and compare the structure of common animals and group and classify them.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Identify and name common animals—fish, amphibians, reptiles, birds and mammals 2. Identify and name—carnivores, herbivores and omnivores 3. Describe and compare the structure of common animals (skeletons)
Seasons	<p>Summary Gather and record data to help in answering questions about the four seasons. Using observations and previous life experiences answer questions about changes across the seasons. Using observation skills children will identify and classify a variety of common wild and garden plants.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Observe changes across the four seasons 2. Observe and describe weather associated with the seasons and how day length varies. 3. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
Land Ahoy!	<p>Summary Identify and classify a variety of everyday materials using observations to suggest how materials group together based on their simple physical properties.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Distinguish between an object and the material from which it is made 2. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock 3. Compare and group together a variety of everyday materials on the basis of their simple physical properties
Superheros	<p>Summary Identify the different parts of the human body and classify which parts relate to the five senses. Record findings using drawings and labelled diagrams.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Year 2

Mini adventure	Outcomes
Wriggle and Crawl	<p>Summary Identify plants and animals in their habitats and classify if they are living, dead or never been alive. Identify differences and similarities through going on a bug hunt to collect and record data.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Explore and compare differences between living, dead and things that have never been alive 2. Identify and describe habitats for different living things and plants 3. Identify and name a variety of plants and animals in their habitats 4. Describe how animals obtain their food
Splendid Skies	<p>Summary Gather and record information by performing simple tests and present data about the daily and seasonal weather patterns in the UK using bar charts and tables. Draw simple conclusions and share these by creating a weather report.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Identify seasonal and daily weather patterns in the UK 2. Use simple fieldwork and observational skills to study the geography of their school and its grounds and the key human and physical features of its surrounding area.
Splendid skies	<p>Summary Set up a simple, comparative and fair test to describe what plants need to grow. Record findings using simple scientific language and in a variety of ways. Use observation skills to observe the life cycle of a plant.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Observe and describe how seeds and bulbs grow into mature plants 2. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy
Potions, Lotions and Nibbles	<p>Summary Identify the suitability of a variety of everyday materials and perform simple tests and use results to draw simple conclusions on how materials can be changed through processes.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Identify and compare the suitability of a variety of everyday materials 2. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Year 3

Mini adventure	Outcomes
Antarctica	<p>Summary Classify and compare different types of rocks and record findings using scientific language and labelled diagrams. Identify changes related to scientific ideas and processes to describe how fossils are formed.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties 2. Describe in simple terms how fossils are formed when things that have lived are trapped within rock 3. Recognise that soils are made from rocks and organic matter
Stone Age	<p>Summary Use observation skills to observe the functions of different parts of flowering plants, focusing on the requirements and conditions needed for growth. Record findings using simple scientific language and in a variety of ways.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves, flowers 2. Explore the requirements of plants for life and growth 3. Explore the part that flowers play in the life cycle of flowering plants including pollination, seed formation and seed dispersal
The World of Science	<p>Summary Set up simple, practical enquiries and comparative and fair tests to understand which materials are magnetic in order to create a magnetic game. Children will record findings using tables.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Observe and predict how magnets attract and repel each other and attract some materials and not others 2. Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify magnetic materials 3. Describe magnets as having two poles
The world of Science	<p>Summary Set up simple, practical enquires to discover which surfaces light is reflected from and how shadows are formed in order to create a puppet show.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Recognise that they need light in order to see things and that dark is the absence of light 2. Notice that light is reflected from surfaces 3. Recognise that shadows are formed when the light from a light source

Year 4

Mini adventure	Outcomes
Peasant and Princes	<p>Summary Set up simple, practical enquires and comparative and fair tests to understand the role of different parts of the digestive system and how different food affects teeth. They will record and report on findings using labelled diagrams and written explanations.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Describe the simple functions of the basic parts of the digestive system in humans 2. Identify the different types of teeth in humans and their simple functions
Blue Abyss	<p>Summary Take accurate measurements and read standard measurements using thermometers to identify different parts of the water cycle. Plan enquires, including recognising and controlling variables where necessary to observe that some materials change state.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Compare and group materials according to whether they are solid, liquids or gases 2. 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 3. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature
Beast Seekers	<p>Summary Create a beast and identify its needs using classification and food chains.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Explore and use classification keys to help group, identify and name a variety of living things in the local and wider environment 2. Recognise that environments can change and that this can pose danger to living things 3. Construct and interpret a variety of food chains, identifying producer, predators and prey. 4. Construct a simple series electrical circuit, identifying and naming the basic parts 5. Recognise that a switch opens and closes a circuit 6. Recognise some common conductors and insulators

Year 5

Mini adventure	Outcomes
Cosmic	<p>Summary Present findings in written form, displays and other presentations to share their learning about the Solar System to share with a younger audience.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Describe the movement of the Earth , and other planets, relative to the Sun in the Solar System 2. Describe the movement of the Moon relative to the Earth 3. Describe the Sun, Earth and Moon as approximately spherical 4. Use the Idea of the Earth’s rotation to explain day and night and the apparent movement of the sun in the sky
The Plague	<p>Summary Report findings from enquiries and research through a scientific report and use research to support or refute ideas or arguments.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. 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 2. Give reasons for classifying plants and animals based on specific characteristics
Herbology	<p>Summary Present findings in written forms through a non-chronological report to show and identify, similarities or changes related to simple, scientific ideas and processes.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird. 2. Describe the life process of reproduction in some plants and animals 3. Describe the changes as humans develop to old age
Egyptians	<p>Summary Plan enquires, including recognising and controlling variables where necessary to test how sound travels through different materials. Record data and results using line graphs.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Identify how sounds are made , associating some of them with something vibrating 2. Recognise that vibrations from sounds travel through a medium to the ear 3. Recognise that sounds get fainter as the distance from the sounds source increases 4. Find patterns to explain pitch and volume

Survival	<p>Summary Plan enquiries, including recognising and controlling variables where necessary. Use appropriate techniques, apparatus, and materials during fieldwork to get fresh water to drink. Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Compare and group together everyday materials on the basis of their properties 2. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution 3. Use knowledge of solids, liquids and gases to decide how mixtures might be separated 4. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials 5. Demonstrate that dissolving, mixing and changes of state are reversible changes 6. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda
Survival	<p>Summary Plan enquiries, including recognising and controlling variables where necessary to test how light travels and how this information can be used to make light travel to any place. Report findings from enquiries by writing a written explanation of their results. Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Recognise that light appears to travel in straight lines 2. 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 3. 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 4. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Year 6

Mini adventure	Outcomes
Darwin's Delight	<p>Summary Understand evolution by using simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments through a diary entry.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago 2. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents 3. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
Darwin's Delight	<p>Summary Plan enquiries, including recognising and controlling variables where necessary and take measurements, using a range of scientific equipment, with increasing accuracy and precision to investigate a range of forces.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object 2. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces
Pig Heart Boy	<p>Summary Use appropriate techniques and apparatus to dissect a real-life heart to investigate human circulatory system. Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions in an information text.</p> <p>Key adventure outcomes;</p> <ol style="list-style-type: none"> 1. Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood 2. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function 3. Describe the ways in which nutrients and water are transported within animals, including humans.