Annesley Primary & Nursery School Progression Map

Science

Intent

At Annesley we have a clear vision for science. Our vision is to make all of our pupils into little scientists combined with 'Achieving Together'. We aim to ensure a balanced mix of approaches to so that all of our pupils can achieve the skills required, a positive attitude, confidence as well as interest and a lifelong curiosity for the world around them

We aim to provide a high-quality science education that provides children with the foundations they need to recognise its importance in every aspect of daily life. We give the teaching and learning of the subject high prominence with regular weekly learning.

Teachers will ensure that all children are exposed to high quality teaching and learning experiences delivered through questions to inculcate a love of learning. These will hook the children's interest, enabling them to develop a sense of excitement and curiosity about natural phenomena. They will be encouraged to ask questions about the world around them and work scientifically to further their conceptual understanding and scientific knowledge.

Children will be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. It will provide opportunities for the critical evaluation of evidence and rational explanation of scientific phenomena as well as opportunity to apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. Children will be immersed in key scientific vocabulary, which supports in the acquisition of scientific knowledge and understanding.

All children will be provided with a broad and balanced science curriculum which reflects the equality and diversity policies and practice in school.

Autumn	**EYFS**	**Key Stage 1**		**Key Stage 2**			
	Nursery/Year R Autumn	Year 1 Autumn	Year 2 Autumn	Year 3 Autumn	Year 4 Autumn	Year 5 Autumn	Year 6 Autumn
Knowledge	**Being me in my world** **Nursery** - Identify different parts of my body Explore collections of materials with similar/different properties Talk about what I see using a wide vocabulary **Reception** Talk about changing states of matter. Eg. I know that ice can melt Talk about changes I observe through the different seasons Describe what I see hear and feel whilst outside **Our colourful world**	**Material types and Properties.** Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock, brick, paper, fabrics, elastic and foil. 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	**Uses of everyday materials** Identify and compare the uses of a variety of everyday materials including wood, metal, plastic. glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending twisting and	**Plants** Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Explore the requirements of for life and growth (air, light, nutrients from soil, and room grow) and how they vary fro 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,	**Sound** 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 object that produced it Find patterns between the volume of a sound and the strength of the vibrations that produced it.	**Earth and Space** Describe the movement of the Earth, and other 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 sphere bodies Use the idea of the Earth's rotation to explain day and night and the apparent	**Electricity** Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches Recognised symbols when representing a simple circuit in a diagram.

	Nursery – Explore collections of materials with similar/different properties I can talk about what I see using a wide vocabulary **Reception** – Talk about changing states of matter. Eg. I know that ice can melt Talk about changes I observe through the different seasons Describe what I see hear and feel whilst outside	Hard/soft stretchy/stiff shiny/dull rough/smooth bendy/not bendy waterproof/not waterproof absorbent/not absorbent opaque/transparent **Plants** Identify and name a variety of common wild and garden plants, including deciduous and evergreen **Seasonal Changes** Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. I can answer questions about the weather. I can keep a weather chart and use it to answer questions. I can explain that the weather changes with different seasons.	stretching. **Plants** Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light, and a suitable temperature to grow and stay healthy.	including pollination, seed formation and seed dispersal. **Rocks** Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties Describe in simple terms how fossils are formed when things that have lived are trapped within rock Recognise that soils are made from rocks and organic matter	Recognise that sounds get fainter as the distance from the sound source increases **Electricity** Identify common appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Identify whether or not a lamp will light in a simple series circuit, based on 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.	movement of the sun across the sky Plan different types of scientific enquiries to answer questions, including recognizing and controlling variables where necessary.	
Skills	Self initiated discovery brought about through opportunities of discovery learning through teacher led activities.	Suggest what might happen and ways test ideas. Identify and name common plants (trees) Explore and answer questions about plants	Make observations and comparisons using simple equipment, following simple instructions. Use first-hand experience and, with help, simple information sources to answer questions.	Make predictions. With help, consider what constitutes a fair test. With help plan and carry out a fair test. Experiment to see what plants need to grow Dissecting a flower to see the parts of a flower. Water up the stem	Recognise why it is important to collect data to answer questions. Suggest questions that can be tested. Put forward ideas about testing and make predictions. With help, consider what constitutes a fair test.	**Forces / Space** Construct a fair test to measure the effect of friction on an object, selecting equipment and method to use. Investigate the effect of air resistance – ball drop experiment - Record measurements on a graph accurately. Use equipment accurately to measure time	**Electricity** Recognise the different parts of an electrical circuit and to be able to name them. Recognise when variables need to be controlled or cannot be controlled and when a fair test is the best way to answer a question. Plan a fair test selecting the most suitable variables to measure, change and keep the same. Use equipment accurately to collect observations. Record data appropriately and accurately. Use test results to make predictions to set up further comparative and fair tests. Recognise the patterns in results. Draw valid conclusions based on the data.

Spring	EYFS	Key Stage 1		Key Stage 2			
	Nurser /Year R Spring	Year 1 Spring	Year 2 Spring	Year 3 Spring	Year 4 Spring	Year 5 Spring	Year 6 Spring
Knowledge	**Help me!** **Nursery** – I can explore collections of materials with similar/different properties I can talk about what I see using a wide vocabulary I can use my senses in hands-on exploration of natural things **Reception** – I can talk about changing states of matter. Eg. I know that ice can melt I can talk about changes I observe through the different seasons I can describe what I see hear and feel whilst outside I can draw and label a simple picture of a plant **Healthy me** Spring growing and changes **Nursery** – I can explore collections of materials with similar/different properties I can talk about what I see using a wide vocabulary I can use my senses in hands-on exploration of natural things I can plant a seed and care for it I understand the key features of a plant and animal life cycle **Reception** – I can talk about changing states of matter. Eg. I know that ice can melt I can talk about changes I observe through the different seasons I can describe what I see hear and feel whilst outside I can draw and label a simple picture of a plant I understand what a plant needs to survive	**Skeletons and senses** Identify, name draw and label the basic parts of the human body and say which part of the body is associated with each sense. Teach the names of the main body parts. I can explain how I have changed since I was born Being fit and healthy	**Living things and their habitats** Explore and compare the difference between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro-organisms. 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. **Animals, including humans** Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	**Light** 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 a solid object Find patterns in the way that the size of shadows change Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials **Forces and magnets** Compare how things move on different surfaces Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other and attract some materials and not others describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing.	**States of Matter** 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 (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **All Living Things** Recognise that living 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.	**Forces** Explain that unsupported object falls towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms, including leers, pulleys and gears, allow a smaller force to have a greater effect. Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Use test results to make predictions to set up further comparative and fair tests. **Living things and their habitats:** Describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals **Animals, including humans:** Describe the changes as humans develop to old age.	**Animals, including humans** Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans.

	I can name and describe some plants						
Skills	Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	Make observations using appropriate senses. Explore using the five senses. Make simple comparisons and groupings.	With help, suggest some ideas and questions. Think about how to collect evidence. Suggest what might happen. Think about and discuss whether comparisons and tests are fair or unfair. Identifying and classifying- Living and non-living, creating their own criteria- using Venn and Carrol diagrams to show data in a variety of ways. To begin to use non-standard measuring skills. Record in simple tally charts. **Animals and their Habitats** Collecting data. Analyse by comparing numerical data Use scientific language to describe causal relationships. Use simple books and electronic media to find things out.	**Light** Describe how we see objects in light and can describe dark as the absence of light State that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses Define transparent, translucent and opaque Describe how shadows are formed by objects blocking light. Describe patterns in visibility of different objects in different lighting conditions and predict which will be more or less visible as conditions change Clearly explain, giving examples, that objects are not visible in complete darkness Describe and demonstrate how shadows are formed by blocking light Describe, demonstrate and make predictions about patterns in how shadows vary. Magnets Give examples of forces in everyday life	Make relevant observations and comparisons. Make measurements of temperature, time and force as well as measurements of length. Begin to think about why measurements of length should be repeated. With help, carry out a fair test recognising and explaining why it is fair.	Communicate findings in a variety of ways. Identify simple trends and patterns. Communicate findings in tables, bar charts and line graphs, whilst making appropriate use of ICT. Identify trends and patterns and offer explanations for these. To draw conclusions and communicate them in appropriate scientific language. Suggest improvements in their work giving reasons.	Communicate findings in tables, bar charts and line graphs, whilst making appropriate use of ICT. Identify trends and patterns and results that do not appear to fit the pattern. Provide explanations for differences in observations and measurements. **Animals Including Humans** Explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.

				Give examples of objects moving differently on different surfaces Name a range of types of magnets and show how the poles attract and repel Draw diagrams using arrows to show the attraction and repulsion between the poles of magnets Use their results to describe how objects move on different surfaces Use their results to make predictions for further tests e.g. it will spin for longer on this surface than that, but not as long as it spun on that surface Use classification evidence to identify that some metals but not all are magnetic Through their exploration they can show how like poles repel and unlike poles attract and name unmarked poles Use test data to rank			

Summer	**EYFS**	**Key Stage 1**		**Key Stage 2**			
	Nursery/Year R Summer	Year 1 Summer	Year 2 Summer	Year 3 Summer	Year 4 Summer	Year 5 Summer	Year 6 Summer

Knowledge	**All creatures great and small** Life cycles **Nursery** – I can explore collections of materials with similar/different properties I can talk about what I see using a wide vocabulary I can use my senses in hands-on exploration of natural things I can plant a seed and care for it I understand the key features of a plant and animal life cycle **Reception** – I can talk about changing states of matter. Eg. I know that ice can melt I can talk about changes I observe through the different seasons I can describe what I see hear and feel whilst outside I can draw and label a simple picture of a plant I understand what a plant needs to survive I can name and describe some plants **Treasure Island** **Nursery** – I can explore collections of materials with similar/different properties I can talk about what I see using a wide vocabulary I can use my senses in hands-on exploration of natural things **Reception** – I can talk about changing states of matter. Eg. I know that ice can melt I can talk about changes I observe through the different seasons I can describe what I see hear and feel whilst outside	**Animals**: Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals Sort carnivores, Herbivores and Omnivores Compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals Caring for the needs of pets. Sort wild animals and pets Group animals according to what they eat/need working scientifically Compare animals and how they live using videos and photos.	**Animals, including humans** Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Animals, including humans Identify that 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 Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	**Animals including humans** Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey.	**Properties and changes of materials** Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets Understand that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic Demonstrate that dissolving, mixing and changes of state are reversible changes 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 soda Recording data and results of increasing complexity using scientific diagrams and labels, classifications keys, tables, scatter graphs, bar and line graphs.	**Evolution and inheritance** Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Living things and their habitats** 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 · I can give reasons for classifying plants and animals based on specific characteristics

	I can name and describe some plants						
Skills	Children talk about the features of their own and immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	Comparing and classifying animals groups such as carnivore, herbivore, omnivore Perform simple tests Gathering and recording data	Collecting data. Analyse by comparing numerical data Use scientific language to describe causal relationships. Use simple books and electronic media to find things	Use first-hand experience and simple information sources to answer questions.	Sort animals into a range of complex groups according to own criteria, for example vertebrate / invertebrate. Use scientific language to explain findings. Use information sources to find information	Measuring amount of air in materials (displacement) Rate of evaporation experiment, Investigation – changing temperature of melting ice Separating mixtures using knowledge of materials and solubility / particle size. Use equipment to measure temperature / separate materials - carrying out careful observations e.g. eye level to read thermometer. Present data in tables and graphs (age-appropriate maths) including drawing scales accurately	Consider how scientists have combined evidence from observation and measurement with creative thinking to suggest new ideas and explanations for phenomena.

Impact (End Points)

EYFS	Key Stage 1		Key Stage 2			
Nursery/Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Children to be able to identify similarities and differences in relation to places, objects, materials and living things. They are able to discuss the features of their own environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	Children should be able to name, label and sort animals, plants and body parts into groups. They should be able to perform simple tests, gather data and discuss what they find out.	Children should be able to experience and observe phenomena, looking more closely at world around them. They should be curious and ask questions about what they notice. They should be developing their scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things and carrying out simple tests.	Children should be able to label the parts of a plant and have a secure knowledge of what a plant needs to survive. Undertake observations over a period of time, make predictions, present data and analyse findings. Explain how water transportation occurs. Children should be able to confidently compare and group together different kinds of rocks & fossils based on their appearance and physical features. To sort, name and identify magnetic and non-magnetic objects. To understand light & shadows, patterns and reflection.	Children should be able to explain how sound is made up of vibrations. Children have an understanding of different materials and their state of matter. Children have a deeper understanding of animals within their habitat and a food chain. Children should be able to scientific vocabulary to plan, carryout their own investigations.	Children use their knowledge of the solar system to explain regularly experienced natural processes such as day and night and gravity. They can explain similarities and differences between the life cycles of plants, animals and humans using appropriate scientific vocabulary.	Children use their scientific skills and vocabulary to plan, carry out and evaluate appropriate investigations to explore the wider world.