

Peover Superior Endowed Primary School

Upper Key Stage 2 Science Curriculum



These are the skills that children need to learn to make progress:

- observe and explore to generate ideas, define problems and pose questions in order to develop investigations and products
- engage safely in practical investigations and experiments and gather and record evidence by observation and measurement
- apply practical skills to design, make and improve products safely, taking account of users and purposes
- communicate and model in order to explain and develop ideas, share findings and conclusions
- to continually make systematic evaluations when designing and making, to bring about improvements in processes and outcomes.

	Which skills are the children learning?		What Core Knowledge will the children acquire? Y5		What Core Knowledge will the children acquire? Y6
UKS2	1. to investigate and explain how scientific and technological developments affect the physical and living worlds 2. to explore and explain practical ways in which science can contribute to a more sustainable future	Working scientifically	<ul style="list-style-type: none"> 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 recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs using test results to make predictions to set up further comparative and fair tests using simple models to describe scientific ideas reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of 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. 		
	Prior Skills: 1. to apply scientific knowledge and understanding to grow healthy plants and explain how humans and other animals stay fit and healthy 2. to investigate the physical characteristics of the local environment and the living things in it, comparing them with those from another locality	All living things	<ul style="list-style-type: none"> explain the differences 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. 	All living things	<ul style="list-style-type: none"> 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 give reasons for classifying plants and animals based on specific characteristics.
	3. to apply knowledge and understanding to describe and explain the structure and function of key human body systems including reproduction 4. to investigate the structure, function, life cycle and growth of flowering plants and how these grow and are used around the world	Animals, including Humans	<ul style="list-style-type: none"> describe the changes as humans develop from birth to old age. 	Animals, including Humans	<ul style="list-style-type: none"> identify and name the main parts of the human circulatory system, and explain 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.
	5. to investigate, identify and explain the benefits of micro-organisms and the harm they can cause 6. to investigate and explain how plants and animals are interdependent and are diverse and adapted to their environment as a result of evolution				Evolution and Inheritance

<p>Prior Skills: 3. to identify, group and select materials using properties and behaviours that can be tested, and identify and group living things using observable features and other characteristics 4. to investigate what happens when materials are mixed, and whether and how they can be separated again</p> <p>7. to explore, explain and use reversible and nonreversible changes that occur in the world around them and how changes can be used to create new and useful materials</p>	Properties and changes of materials	<ul style="list-style-type: none"> compare and group together everyday materials based on evidence from comparative and fair tests, 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 of soda. 		
<p>8. to explore and explain how time measurement relates to day and night and the Earth's place in the solar system</p>	Earth and Space	<ul style="list-style-type: none"> 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 spherical bodies use the idea of the Earth's rotation to explain day and night. 		
<p>Prior Skills: 5. to investigate how light and sound travel and how shadows and sounds are made</p> <p>9. to investigate the properties and behaviour of light and sound in order to describe and explain familiar effects</p>			Light	<ul style="list-style-type: none"> understand that light appears to travel in straight lines 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 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 use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.
<p>Prior Skills: 6. to investigate the effects of different forces and how they can use these to move mechanical parts or objects in specific ways</p> <p>10. to investigate and explain the effect of changes in electrical circuits 11. to investigate combinations of forces</p>	Forces	<ul style="list-style-type: none"> explain that unsupported objects fall 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 understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. 		
			Electricity	<ul style="list-style-type: none"> 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 use recognised symbols when representing a simple circuit in a diagram.

How will the children be enabled to do this? 'Breadth of Learning'

a. When investigating science and design and technology children should:

1. share their expertise in subjects that interest them and respond to relevant and current issues, locally and in the national media
2. apply their knowledge and understanding in real-life contexts, relating it to the world around them and visiting places to learn about science and design and technology
3. work with experts and enthusiasts to find out how science and design and technology are used and applied in day-to-day life.

b. Children should use investigations and designing and making activities to:

1. explore a range of familiar and less familiar contexts, environments and products
2. develop practical skills that will help them to carry out investigations and to make functional products from their design ideas.
3. use design and technology contexts to develop scientific understanding and apply their scientific knowledge to inform their designing and making
4. work collaboratively towards a common goal by sharing ideas, making compromises, negotiating and providing feedback.

c. When applying their knowledge and understanding of science and design and technology children should:

1. think creatively and inventively about how things work¹⁰, identify patterns and establish links between causes and effects
2. test their ideas through practical activities and review their own and others' ideas and investigations, designs and products
3. carry out their own investigations, deciding what kind of evidence to collect and what equipment and materials to use
4. suggest the results they expect and explain their observations and the significance and limitations of the conclusions they draw.

d. When developing their own design ideas children should:

1. explore ways of improving designs for products, mechanisms, structures, systems and control
2. investigate different materials, and use them to provide functional solutions to meet user needs, evaluating and refining their products as they work.