

St Buryan Academy Coverage and Progression – Concept Map

Science

What the National Curriculum says...

Key Stage 1	Key Stage 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 Programme of Study: Plants Animals, including humans Use of everyday materials Seasonal changes Living things and their habitats	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. 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 a 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 Programme of Study: Plants Animals, including humans Rocks Light Forces and magnets Living things and their habitats States of matter Sound Electricity Properties and changes of materials Earth and Space Forces Evolution and inheritance
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Every child at St Buryan is a scientist – we aim to for each and every child to fulfil our ‘characteristics of scientists’ to help achieve this. Our coverage is inspired by our Key Concepts, which indicate clear progression between classes and year groups as well as being held together by our over-arching concepts: Creativity, Confidence, Collaboration and Independence.

As well as using inspiring Scientists who celebrate diversity and equity, we aim to maximise our unique locality to enhance knowledge and understanding. Science is taught through our learning contexts when and where appropriate; however, should higher quality teaching and learning take place when taught explicitly, then learning may not be directly linked to a topic. High quality science teaching and learning allows children to understand more about the world around them; we aspire to deliver our teaching in an inspiring, practical way that allows children to develop their observation skills and follow their own lines of enquiry, using scientific evidence to come to answers.

We aspire to produce scientists who are proud of their outcomes and strive for the want of continuous development of skills and knowledge. Our key concepts ensure progression through the year groups, carefully designed to build knowledge and understanding. The selection of skills, coming from the National Curriculum as a starting point, ensure that learning is built on year-on-year.



Science in Nursery

Laying the early foundations for scientific enquiry falls under the 'Understand the World' area of the EYFS framework. Understanding the world involves guiding children to make sense of their physical world and their community.

The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters.

In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world.

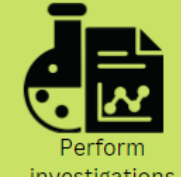
As well as building important knowledge, this extends their familiarity with words that support understanding across domains.

Enriching and widening children's vocabulary will support later reading comprehension.

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Key Concept	EYFS/Year 1	Year 2/3	Year 4/5/6
 Observations	-I can name a variety of common wild plants. -I can name a variety of common plants that we can eat. -I can distinguish between an object and the material from which it is made. -I can observe and describe changes across the four seasons. -I can observe how day length varies. -I can describe weather associated with the seasons. -I can observe and describe changes across the four seasons. -I can observe how day length varies.	-I notice that animals, including humans have offspring which grow into adults. -I can observe and describe how seeds grow into mature plants. -I can recognise that there needs to be light in order to see things and that darkness is the absence of light -I can notice that light is reflected from surfaces. -I can recognise that light from the Sun can be dangerous and that there are ways to protect your eyes and skin from the Sun.	-I can recognise that there needs to be light in order to see things and that darkness is the absence of light -I can notice that light is reflected from surfaces. -I can recognise that light from the Sun can be dangerous and that there are ways to protect your eyes and skin from the Sun. -I know that shadows take on the shape of the opaque object. -I can observe that some materials change state when they are heated or cooled. -I can recognise common conductors and insulators. -I can recognise that light appears to travel in straight lines.

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 Plan Investigations  Perform investigations	-I understand that plants can grow -I can describe the physical properties of a variety of everyday materials.	-I can construct a simple food chain. -I can find out about and describe the basic needs of animals, including humans, for survival. -I can investigate the way in which water is transported within plants. -I can explore the part that flowers play in the life cycle of flowering plants, including pollination. -I can explore the part that flowers play in the life cycle of flowering plants, including seed formation and seed dispersal. -I can explore the requirements of plants for life and growth. -I can investigate the properties of different materials.	-I can explore how magnetic forces act at a distance. -I can predict whether two magnets will attract or repel each other, depending on which poles are facing. -I can record my findings using simple scientific vocabulary. -I can recognise that there needs to be light in order to see things and that darkness is the absence of light -I can predict where a shadow will form in relation to an opaque object and a light source. -I can find patterns in the way that the length of shadows change. -I can explore how magnetic forces act at a distance.
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		-I can explore how magnetic forces act at a distance. -I can predict whether two magnets will attract or repel each other, depending on which poles are facing. -I can predict where a shadow will form in relation to an opaque object and a light source. -I can find patterns in the way that the length of shadows change.	-I can predict whether two magnets will attract or repel each other, depending on which poles are facing. -I can compare how different things move. -I can compare how objects move on different surfaces -I can recognise that shadows are formed when light from a light source is blocked by an opaque object. -I can associate the rate of evaporation with temperature. -I can investigate the thermal insulation of different materials. -I can predict how I could separate mixtures.
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			-I can investigate switches. -I can recognise that vibrations from sounds travel through a medium to the ear. -I can find patterns between the pitch of a sound and features of the object that produced it. -I can find patterns between the volume of a sound and the strength of vibrations. -I can investigate variations in how components function.
	-I can identify different plants. -I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. -I can identify and	-I can identify and name a variety of plants and animals in their habitats, including microhabitats. -I can identify and name a variety of plants and animals in their habitats. -I can identify that most living things live in a	-I can explore and use classification keys to help group, identify and name a variety of living things in my local environment. -I can recognise that living things can be grouped in a variety of ways.



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	name a variety of common animals that are carnivores, omnivores and herbivores. -I can identify, name, draw and label the basic parts of the human body. -I can identify which part of the body is associated with each sense. -I can identify and describe the basic structure of plants. -I can identify, name and describe the basic structure of deciduous and evergreen trees. -I can identify a variety of everyday materials. -I can identify a variety of everyday materials.	habitat to which they are suited. -I can identify that fruit, vegetables and herbs are types of plant that we eat. -I can identify that humans have bones for support, protection and movement. -I can identify that some other animals have bones for support, protection and movement. -I can identify, locate and describe the function of different parts of flowering plants. -I can identify, locate and describe the function of the roots in plants. -I can identify a variety of everyday materials. -I can identify a variety of everyday materials.	-I can describe how living things can be classified into broad groups. -I understand how I can use classification keys to help group, identify and name a variety of living things. -I can describe how living things can be classified into broad groups. -I understand that microorganisms are also living things. -I can describe how living things can be classified into broad groups. -I know that scientists have developed different ways to classify living things. -I can identify how plants are adapted to their environment.
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	-I can describe the physical properties of a variety of everyday materials. -I can distinguish between an object and the material from which it is made. -I can compare and group together a variety of everyday materials on the basis of their simple physical properties.	-I can distinguish between an object and the material it is made from. -I can compare and group together different kinds of rocks on the basis of their appearance. -I can compare and group together different kinds of rocks on the basis of their physical properties. -I can compare how different things move. -I can compare how objects move on different surfaces. -I can compare and group various everyday materials based on whether they are attracted to a magnet.	-I can identify how animals are adapted to their environment. -I can identify solids, liquids and gases. -I can identify the part played by evaporation and condensation in the water cycle. -I can compare and group materials according to whether they are solids, liquids or gases and name their properties. -I can compare and group materials based on their response to magnets. -I can identify common appliances that use electricity. I can construct a simple circuit and name the parts of the circuit. -I can identify if a bulb will light up in a circuit.
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			-I can identify how sounds are made, associating some of them with something vibrating. -I can identify the effect of friction between moving surfaces. -I can identify the effect of air resistance. -I can identify the effect of water resistance.
 Gather and record data		-I can explore and compare the differences between things that are living, dead, and things that have never been alive. -I can record my findings using simple scientific vocabulary, specifically within forces and magnets.	-I can construct and interpret a variety of food chains. -I can take accurate measurements using thermometers. -I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.

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 Report and present  Use evidence	-I can compare a variety of common animals including fish, amphibians, reptiles, birds and mammals. -I can compare humans. -I can sort a variety of plants. -I can compare and group together a variety of everyday materials on the basis of their simple physical properties. -I can describe weather associated with the seasons.	-I can describe the importance for humans to exercise. -I can describe the importance for humans to eat the right amounts of different types of food. -I can describe the importance for humans to have good hygiene. -I can describe the importance for humans to look after themselves. -I can explain the life cycle of plants. -I know what plants need to grow and stay healthy. -I understand that animals, including humans, need the right type of nutrition. -I can compare and group together different kinds of rocks on the basis of their physical properties.	-I understand what producers, predators and prey are. -I can recognise that environments can change and that this can sometimes pose dangers to living things. -I can describe the human life cycle. -I understand how a foetus develops in the womb. -I can describe what happens when I am a teenager. -I can describe what happens when I am a senior. -I can discuss the seven life processes. -I can explain how mammals
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		-I can explain how some rocks are formed. -I can explain how the Earth is made up of different layers of rocks and soils. -I can describe how fossils are formed when things that have lived are trapped within rock. -I can recognise that shadows are formed when light from a light source is blocked by an opaque object. -I know that shadows take on the shape of the opaque object.	-I can explain how animals -I understand reproduction in plants. -I can describe the differences in the life cycles of mammals, amphibians, reptiles, insects and birds. -I can explain the life cycle of plants. -I can identify and name the main parts of the human circulatory system. -I can identify and name the main parts of the heart. -I can describe how water and nutrients are transported in humans. -I can identify how humans can live a healthy lifestyle.
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			-I can explain natural selection and how it may lead to evolution. -I can explain how adaptations may lead to evolution. -I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. -I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. -I can describe the properties of materials using scientific vocabulary. -I know that some materials dissolve in a liquid to make a solution.
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			-I can explain why some changes are irreversible. -I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and falling objects. -I can use symbols when drawing a simple circuit diagram. -I can associate the brightness of a lamp with the number and voltage of cells used in the circuit. -I can name renewable and non-renewable sources of energy. -I can 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. -I can explain how the eye works.
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			-I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. -I can explain how shadows change during the day.
	-I can name scientists who were inspirational in the areas that I have studied	-I can name scientists who were inspirational in the areas that I have studied	-I can name scientists who were inspirational in the areas that I have studied