

Science Curriculum Planning

First order concepts (substantive).

First order concepts involve knowledge of the products of science, such as concepts, laws, theories and models, referred to in the national curriculum, as scientific knowledge and conceptual understanding. (It is organised into the three subject disciplines of biology, chemistry and physics).

EYFS

Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Draw pictures of plants and animals.

Y1

Plants

Identify and name plants

Identify and describe the structure of trees and other plants

Animals

Identify and name common animals including from the sub groups of herbivores, carnivores, omnivores, mammals, fish, reptiles, birds and amphibians.

Describe the structure of animals from the above groups.

Identify, name draw and label parts of the human body

Name and link the five senses with corresponding part of the body.

Materials

Identify, name and describe the common materials

Distinguish between objects and the materials they are made from.

Compare and group materials according to their properties.

Seasons

Name and describe changes between seasons

Observe and describe the weather and how the length of day changes during the year.

Y2

Living things and their habitats.

Explore and compare the differences 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-habitats.

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.

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.

Animals

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).

Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Everyday Materials

Identify and compare the suitability 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 stretching.

Second order concepts (disciplinary).

Second order concepts refer to how scientific knowledge is generated and grows... this is specified in the 'working scientifically' sections of the national curriculum and includes knowing how to carry out practical procedures. It is through disciplinary knowledge that children gradually become more expert by *thinking like a scientist*. The National Curriculum for science details this through the Working Scientifically objectives.

EYFS

Explore the natural world around them, making observations of animals and plants.

KS1

In KS1, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- Ask simple questions and recognising that they can be answered in different ways.

They should ask people questions and use simple secondary sources to find answers.

- Observe closely, using simple equipment and performing simple tests.

E.g. Use simple measurements and equipment (for example, hand lenses, egg timers) to gather data, carry out simple tests, record simple data, and talk about what they have found out and how they found it out.

- Identify and classify.
- Use their observations and ideas to suggest answers to questions

Pupils in years 1 and 2 should explore the world around them and raise their own questions. They should experience different types of scientific enquiries, including practical activities, and begin to recognise ways in which they might answer scientific questions.

- Gather and recording data to help in answering questions.

With support as appropriate, they should record and communicate their findings in a range of ways and begin to use simple scientific language.

Term	Foundation 1	Foundation 2	Year 1	Year 2
See MT planning for detailed breakdown Continuous – the weather and seasons. Continuous - using equipment and apparatus				
Autumn 1	.Who am I? Name the parts of the body. Observe using our senses. Using all their senses in hands-on exploration of natural materials.	My Body Name and use the 5 senses. Observe and describe, notice differences and similarities Predicting Asking questions.	Our bodies. Human growth The 5 senses and corresponding part of the body. Observing	I am healthy Food/diet Exercise Basic needs of different animals including humans. Making observations and describing what happens.
Autumn 2	Time to celebrate. Use relevant vocabulary. Name materials. Exploring our environment Explore and talk about different forces they can feel. •talk about the differences between materials and changes they notice	Seasons including the weather (name and identify). Describe and observe. Sort according to types of weather. Ask questions.	The weather and seasons. Identify seasonal changes and features of seasonal weather. Classifying	Weather/seasonal change Measuring and recording the weather e.g. rain gauges. Making comparisons and identifying changes. Measuring, recording and interpreting data.

	•talk about what they see, using a wide vocabulary.			
Spring 1	Why is it so cold? Identify differences between materials. Explore collections of materials with similar or different properties Talk about the differences between materials and changes they notice.	Materials. Name and describe/sort/compare according to basic properties. Seasons and weather (winter). Understand and use relevant vocabulary. Compare change over time, e.g. weather and seasonal. Sort materials in a range of practical activities. Explain what they have done and why.	Animals Name common animal groups and the features of each. Name animals belonging to each group. Identify similarities and differences. Comparing, sorting and grouping. Give reasons and explain Reasons for their choices. Use sources of information. Ask questions	Seasonal change and weather. Materials – identifying and naming. Describe and sort. Identify uses of materials, changing forms. Know and use relevant terminology. Classifying and grouping. Explore and investigate materials using first- hand experience. Observe and evaluate what has happened. Record findings. Suggest reasons for what happened. Ask questions and discuss the answers.

Spring 2	Farms 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. Know and use vocabulary. Ask questions about our world. Observe and talk about how plants and animals change over time (E.g. ducklings/chicks).	Identify changes in the season and weather (spring related). Asking questions. First hand observations. Use primary and secondary sources and compare.	The weather and seasons in the UK and other countries Asking questions and comparing answers. Use first and secondary sources. Comparing features.	Plants and animals (living things and their habitats). Understand the terms and identify features of the groups living, once alive and never been alive. Name features of animal habitats and know why different habitats are important. Identify food chains. Name ways that animals adapt to their environment Identify the conditions animals and plants need to grow/alive. Use a range of sources to gain information. Discuss cause and effect. Suggest answers and reasons for how external factors could affect animals and plants. Classifying, comparing similarities and differences. Use secondary sources.
Summer 1	Spring Name differences between materials and changes they notice. Begin to understand the need to respect and care for the natural environment and all living things Use all their senses in hands-on exploration of natural materials.	Life cycles. Know the life cycles of butterflies, sunflowers and tadpoles.	Plants Know the life cycle of plants Name the basic needs of plants.	Around the world in 80 days. Weather and Seasons. Identify features of each season. Observe the weather. Around the world in 80 days. Identify how seasons and weather differ at times of the year in different parts of the world.

	Practical activities – Understanding cause and effect. Plant seeds and care for growing plants. Use their senses and talk about what they have noticed/found out. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary.	Talk about cause and effect. Record observations using pictures and simple sentences.	Identifying and describing patterns. Ask questions and suggest answers for cause and effect. Plant seeds and observe first hand change over time. Draw conclusions Analyse, discuss and record the results of practical activities.	Notice relationships, describing and seeking patterns. Record observations. Make predictions. Interpret, compare and ask/answer questions about different sources of information e.g. weather pictures, forecasts, symbols. Discuss the accuracy and changes that can occur when using sources of information and observation.
Summer 2	The Beach. Name the season and types of weather. Practical activities – predicting skills, observing and discussing the weather.	'Forces' Summer – weather and seasons. Making predictions. Make observations and discuss. Differentiate between facts and opinions/preferences.	Materials Carrying out tests, recording results and drawing conclusions. Recording work. Use and compare first hand and secondary sources of information.	Observe, predict and record the weather. Carrying out tests, recording results and drawing conclusions. Comparing information from different sources. Understanding and analysing 'fair testing'.