



Science
Knowledge and Skills Organiser:
Plants (Y1,Y2,Y3)

Our Science Knowledge and Skills organisers are primarily a planning guide for the teachers. They include the statutory statements (**Subject Knowledge to be covered**) and the non statutory guidance (in blue). They offer suggestions (in red) for how these statements might be taught **working scientifically** – which is a requirement of the National Curriculum.

The Knowledge and Skills Organisers map out how and when these areas are taught and help to build a clear, progressive scientific statement of intent for our children as they progress through the school.

We have added additional ideas and guidance for the teachers, which they can choose to use and interpret i.e. how the local area might be used, key questions and ideas which might be pursued, outdoor learning opportunities and cross curricular links as these are features we recognise are important in terms of our holistic curriculum provision.

Parental/ carer support:

By mapping out our curriculum in this way we hope that these documents also help parents and carers support the learning of their child/ren by

- Showing the knowledge being covered
- Offering some suggestions which might also be investigated at home
- Sharing key vocabulary, which can be discussed to ensure your child's understanding
- Suggestions of places to visit

EYFS

Nursery

Development Matters Ages and Stages to be covered:

3-4 Year olds:

- 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.

Characteristics of Effective Learning to be covered

Creating and Thinking Critically thinking

Having their own ideas

- Thinking of ideas
- Finding ways to solve problems
- Finding new ways to do things

Making links

- Making links and noticing patterns in their experience
- Making predictions
- Testing their ideas
- Developing ideas of grouping, sequences, cause and effect

Choosing ways to do things

Planning, making decisions about how to approach a task, solve a problem and reach a goal
Checking how well their activities are going
Changing strategy as needed
Reviewing how well the approach worked

Reception

Development Matters Ages and Stages to be covered:

- Explore the natural world around them. Describe what they see, hear and feel whilst outside.
- Recognise some environments that are different from the one in which they live. Understand the effect of changing seasons on the natural world around them.

• Early learning goals:

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

• Characteristics of Effective Learning to be covered

• *Creating and Thinking Critically thinking*

• Having their own ideas

- Thinking of ideas
- Finding ways to solve problems
- Finding new ways to do things

• Making links

- Making links and noticing patterns in their experience
- Making predictions
- Testing their ideas •Developing ideas of grouping, sequences, cause and effect

• Choosing ways to do things

- Planning, making decisions about how to approach a task, solve a problem and reach a goal
- Checking how well their activities are going
- Changing strategy as needed
- Reviewing how well the approach worked

Science skills (**Working Scientifically**) to be covered

- asking simple questions and recognising that they can be answered in different ways
- **observing closely, using simple equipment**
- performing simple tests
- **identifying and classifying** –gathering and recording data to help in answering questions – e.g observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example, the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.

Outdoor Learning:

Forest school/ Cobbins corner

Tree identification
Rubbings tree/bark

Pupils should use the **local environment throughout the year** to explore and answer questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted.

Year 1 – Plants Topic

Subject Knowledge to be covered:

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (e.g They should become familiar with common names of flowers, examples of deciduous and evergreen trees)
- identify and describe the basic structure of a variety of common flowering plants, including trees (they should become familiar with plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem).

Key Vocabulary for topic

leaf, flower, blossom, petal,
fruit, berry, root, seed, trunk,
branch, stem, bark, stalk, bud
Names of some trees in school
grounds
Names of some plants in school
grounds

Possible Questions/ experiences

Make observations of leaves, seeds, flowers etc.
Identify parts of plants
Identify plants in the local area using simple charts
What is similar/different about these
leaves/seeds/flowers etc?
Observe how plants over a period of time
Eg how deciduous trees change
Grow own flowers and record changes

Cross -Curricular links

Art- observational art work
Geography- map where growing
areas are in school
History – what happens in a tree's
lifetime

Science skills (**Working Scientifically**) to be covered

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment e.g **observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth;**
- **performing simple tests e.g setting up a comparative test to show that plants need light and water to stay healthy**
- identifying and classifying –
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Outdoor Learning:

Plant window box or in the garden

Forest School:

Seed search
Leaf it out – identification game
Branching out – tree games

Local Links

Allotment visit – find a local owner

Explore local park

Key Vocabulary for topic

Year 1 vocab - leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud

Names of some trees in school grounds

Names of some plants in school grounds

Light, shade, warm, cool, water, grow, healthy

Possible Questions/ experiences

Experiment with different ways to make a seed germinate without soil
Experiment with ways to prove that plants need water to stay healthy
Experiment with ways to prove that plants need light to stay healthy

Subject Knowledge to be covered:

- 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

e.g Pupils should use the local environment throughout the year to observe how plants grow. Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as the processes of reproduction and growth in plants.

Note: seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them.

Cross -Curricular links

Music and movement

Art – watercolour

SRE- Plant growth

Year 2 – Plants Topic

Science skills (Working Scientifically) to be covered

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests- e.g comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser;
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers e.g discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers
- 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.

Outdoor Learning:

Compare factors that affect plant growth in the local area.

Investigating ways to speed up pollination with own grown flowers.

Growing plants in the garden.

Local Links

Compare factors that affect plant growth in the local area.
Celtic Harmony camp – farming/plants grown

Key Vocabulary for topic

Pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), roots, stem/trunk, nutrients, (photosynthesis, germination)

Year 3 –Plants Topic

Possible Questions

- How does a plant get water?
- What is the role of the flower?
- How does pollen travel from one plant to another?
- How do the new seeds get to the soil to grow?
- What does a plant need to grow?

Subject Knowledge to be covered:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant 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, including pollination, seed formation and seed dispersal

Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.

Note: pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.

Cross -Curricular links

What foods did the Celts farm?
How does it differ from food which we grow today?