

## **St Peter's CE Primary School** Plants Topic Overview

#### Unit Overview:

This topic fills the National Curriculum requirement to learn about plants. Throughout this unit, year 3 and 4 will identify and describe the functions of different parts of flowering plants including the roots, stem/trunk, leaves and flowers. They will investigate the way in which water is transported within plants and recognise that environments can change and that this can sometimes pose dangers to living things.

Year 5 and 6 will explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. They will 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.

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

Pupils will be introduced to the idea that plants can make their own food, but at this stage they will not learn about photosynthesis in depth.

#### Working Scientifically

Alongside the plants topic and throughout the year, pupils will continue to work scientifically in lower KS2 by:

- 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.

In upper KS2 by:

- 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

#### Key Questions:

#### Summer 1 LKS2

- 1) What are the scientific word associated with plants?
- 2) How is water transported within plants? (investigation)
- 3) What are the parts of a flowering plant called?
- 4) What are the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers?
- 5) How and why do environments change?
- 6) How do changes of environments affect plants?

#### Summer 1 UKS2

- 1) What are the scientific word associated with plants?
- 2) What are the best conditions for a plant to grow? (investigation)
- 3) What are the parts of a flower?
- 4) What function do flowers have in the life cycle of a plant?
- 5) What is pollination?
- 6) How are seeds formed and dispersed?

Objectives co	vered in this unit:					
Science	LKS2:					
(see	<ul> <li>identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> </ul>					
progression	<ul> <li>investigate the way in which water is transported within plants</li> </ul>					
in	• recognise that environments can change and that this can sometimes pose					
expectations	dangers to living things.					
document)	UKS2:					
	<ul> <li>explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> <li>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</li> </ul>					
	Investigations					
	LKS2					
	How do plants transport water? Water transport experiment using celery and food					
	colouring in water					
	UKS2					
	What does a plant need to grow? Germination experiment-					
	Cress seeds:- Soil no water no light					
	Soil with water no light					
	Soil water and light					
	No soil, just water no light					
	No soil water light					
	Temperature, hot place (soil, water and light)					
	Temperature, hot place (no soil, water and light)					
	Temperature, cold place (soil and water, no light)					
	Temperature, cold place (no soil and water, no light)					
Geography	n/a					
History	n/a					
Art	n/a					
DT	Linked in with science by a DT project based on electrical circuits as a separate					
	unit.					



# Plants Key Knowledge

What are the scientific words	See Vocabulary grid on the last page.					
associated						
with plants?						
2	Pupils observe how water is transported in plants, for example, by putting cut					
LKS2	white carnations into coloured water and observing how water travels up the stem					
	Pupils plan and carry put a full investigation and observe over time.					
How is water						
within plants?						
2.						
	Pupils plan and carry out an investigation comparing the effect of different					
UKS2	factors on plant growth, for example, the amount of light etc:					
What are the						
best	Soil no water no light					
conditions	Soil with water no light					
Tor a plant to	Soil water and light					
(investigation	No soil, just water no light					
)	No son water light					
3.	Pupils should be introduced to the relationship between structure and function: the					
LKS2	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.					
What are the	·					
flowering plant	Note: Pupils can be introduced to the idea that plants can make their own food, but					
called?	at this stage they do not need to understand how this happens.					
	Photosynthesis can be mentioned but does not need to be covered in depth.					
	Parts and function of a plant PowerPoint on Twinkl					
	Different Parts of Plants and their Functions PowerPoint (twinkl.co.uk)					

	Pupils should label a diagram of a plant but <b>not</b> functions for this key question.					
3. UKS2 What are the parts of a flower?	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. Photosynthesis can be mentioned but does not need to be covered in depth. Parts of a flower on Twinkl Interactive Plants eBook - Fertilization in plants (twinkl.co.uk)					
4.						
LKS2	Pupils look at the functions of parts of the plant in more depth					
LKS2 What are the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers?	<ul> <li>Focus on the Roots: The roots of a plant take up water and nutrients from the soil. They also anchor the plant to the ground and keep it steady.</li> <li>What do a plant's roots and stem do? - BBC Bitesize</li> <li>Focus on stem: The stem carries water and nutrients to different parts of the plant. It also provides support and keeps the plant standing upright.</li> <li>Leaves: Its main functions are photosynthesis and gas exchange. A leaf is often flat, so it absorbs the most light, and thin, so that the sunlight can get to the chloroplasts in the cells. Most leaves have stomata, which open and close. They regulate carbon dioxide, oxygen, and water vapour exchange with the atmosphere.</li> <li>Flowers: Most flowers have male parts, called stamens, and female parts, called carpels In many flowers, it is the job of the petals to attract insects, so that pollen can be transferred to other flowers. This process is called pollination. The pollen then joins together with, or fertilizes, the ovules, and produces new seeds.</li> <li>This website contains lots of great information:</li> <li><u>https://www.ducksters.com/science/biology/flowering_plants.php</u></li> </ul>					
4.	<ul> <li>Flowers: Most flowers have male parts, called stamens, and female parts, called carpels In many flowers, it is the job of the petals to attract</li> </ul>					

UKS2 What function do flowers have in the life cycle of a plant?	<ul> <li>insects, so that pollen can be transferred to other flowers. This process is called pollination. The pollen then joins together with, or fertilizes, the ovules, and produces new seeds.</li> <li>The primary purpose of a flower is reproduction. Since the flowers are the reproductive organs of plant, they mediate the joining of the sperm, contained within pollen, to the ovules — contained in the ovary. Pollination the movement of pollen from the anthers to the stigma.</li> </ul>					
5. LKS2	Focus on changes in the environment. How do humans affect the environment?					
How and why	Pupils explore climate change and the impact on plants. Pupils could look at bush fires in Australia and the impact that tees burning down					
do environments	has on the environment. Pupils could look at deforestation- Amazon rainforest being cut down and the					
change /	https://www.bbc.co.uk/bitesize/topics/zp22pv4/articles/z2md82p					
5.	Pupils look at reproduction in more depth and focus on pollination					
UKS2	Pupils learn about sexual and asexual reproduction in plants					
What is pollination?	There is a pack on Twinkl including a PowerPoint about plant reproduction					
	https://www.twinkl.co.uk/resource/tp2-s-236-planit-science-year-5-living- things-and-their-habitats-lesson-2-making-new-plants-2-lesson-pack					
6. LKS2	Recap of previous lesson when pupils looked at how the environment can change and how humans impact the environment.					
How do changes of	Pupils look at the impact of dryer climates on plants.					
environments affect plants?	If any <b>environmental</b> factor is less than ideal, it limits a <b>plant's</b> growth and/or distribution In other cases, <b>environmental</b> stress weakens a <b>plant</b> and makes it more susceptible <b>to</b> disease or insect attack. <b>Environmental</b> factors that <b>affect plant</b> growth include light, temperature, water, humidity, and nutrition.					
	Pupils compare plants in a hot climate to a tropical climate and discuss the difference.					
	Pupils could compare the amazon rainforest to a desert.					
6. UKS2	<b>Seeds</b> are the result of plant reproduction When pollen lands on the flower's stigma, it germinates and forms a pollen tube, which then quickly grows towards					

How are seeds formed and dispersed?	the plant's ovary. Once it finds an ovule, the pollen tube bursts to release sperm cells, which fertilize the ovule and initiate <b>seed formation</b> . <u>How plants produce seeds - KS2 Science - BBC Bitesize</u>
	Flowers are special structures that help flowering plants make more plants. In order to make more plants, pollen must move from the male part of a flower to the female part of a flower, and then the pollen tube must grow to the ovary to make a seed The ovules inside the ovary develop into seeds inside of this fruit.
	Seed dispersal Plants disperse their seeds in lots of different ways. Some seeds are transported by the wind and are shaped to float, glide or spin through the air Some seed pods are designed to explode and throw the seeds a good distance from the parent plant. Many plants also use animals to carry their seeds.



### Plants Vocabulary

Vocabulary				
Tier 1 (general)	Plant	Sunlight	Water	Soil
	Nutrients	Transport	Reproduction	Fruit
	Life cycle	Dispersal	Deciduous	Oxygen
	Absorb	Minerals	Asexual	
Tier 2	Flower	Petal	Seed	Bulb
	Pollen	Stem	Leaf	Seed
	Carbon	Germinate	Pollinate	Fertilise
	dioxide	Coniferous	Root	
Tier 3	Stamen	Phloem	Xylem	Photosynthesis
	Gamete	Ovule	Anther	Receptacle
	Sepal	Style	Filament	ovary