

	Required prior knowledge	Knowledge to be explicitly taught	
Substantive knowledge	Plants need water and light to grow (YR) The basic parts of a plant are leaves, flowers, roots, stem/trunk/branch (Y1) Plants are classed as living things because they grow, move, reproduce, and need nutrition (food) (Y1)	• A seed is living • A seed is the embryonic stage of the plant life cycle. • A seed consists of three parts, the seed coat, the endosperm and the embryo • Germination is the development of a plant from a seed. During germination roots and shoots emerge and grow • To germinate a seed needs water and a certain temperature • Temperature is a measure of how hot or cold something is • Some plants grow from bulbs. A bulb is a resting stage for certain plants. They have a large underground food store, short stems and fleshy leaves. • When a plant grows it gets bigger. • Plants need water, light and a suitable temperature to grow • Many plants make fruits or vegetables; some of these grow below ground	The four main stages of the plant's life cycle include germination, pollination, fertilisation and seed dispersal (Y3) Pollination and fertilisation usually takes place in flowers. Dispersal is important to make sure there is enough space for seeds to germinate and plants to grow.(Y3) Plants need air (oxygen and carbon dioxide), water, light, nutrients from the soil, (Y3) Requirements for life vary from plant to plant and they adapt to their environment (e.g. some plants need less space, a lower Roots absorb nutrients from the soil and help anchor the plant (Y3) The stem/trunk supports the plant and transports water up the plant. The xylem transports water and nutrients from the roots, and the phloem transports food from the leaves to the all parts of the plant (Y3) Leaves use sunlight, carbon dioxide from the air and water to make their own food (Y3)

Disciplinary knowledge

Ask questions and make predictions about what will happen when something is tried (YR)
Measure/observe using senses (YR)
Record numerical or descriptive observations in a table (Y1)
Make simple statements about the results of an enquiry (Y1)

Investigate the conditions required for germination
Make a prediction based on substantive knowledge
It is important that we keep as much as we can the same, apart from the thing we measure and the one thing we change
Investigate how light affects the growth of plants
Make systematic observations of an object

Explain findings using scientific knowledge (Y3)
The thing that we measure is called the dependent variable; the thing we change is the independent variable (Y3)

- **Culture and Diversity** - which helps pupils to develop enquiring minds about the wider world –
- Different habitats around the world have different plants/trees
- Scientists' values and beliefs are influenced by the larger culture in which they live. Such personal views can, in turn, influence. Expose the children to human diversity related to race, culture, ability, gender and relationship preferences.
- Scientists' values and beliefs are influenced by the larger culture in which they live. Such personal views can, in turn, influence the questions they choose to pursue and how they investigate those questions.
- Scientific activities are social activities, so scientific culture is the product of humans' or particular groups of humans' activities. The thinking patterns, values, behavioural norms and traditions of science formed in its history reflect its cultural connotation.
- PSTT – 'A Scientist Just Like Me' - <https://pstt.org.uk/resources/curriculum-materials/ASJLM> Case studies of different scientists from diverse and under-represented backgrounds.

Environment and Community - which helps to instil in our pupils a respect for our environment and for our local and wider communities

- Visit to Cheltenham Science Festival
- Visit to St Mary's Church for Nature Count.
- Climate change and habitats
- Eco School
- Forest School
- School community reminders
- RESPECT characters reminders
- Children to appreciate our communities values, similarities and our unique qualities that make us special.
- **Creative arts and physical development** - which helps our pupils to express themselves and excel as holistic learners. Scientists have to use their imagination to come up with explanations, theories and predictions.
- Scientists have to use their prior and new knowledge to create links
- Links to art and nature in art (Forest School)

Learning to learn - which helps pupils to concentrate and focus and build resilience as learners –

- Observation of growth of plants and changes over time
- Pattern seeking, Identifying and classifying, Using secondary resources
- Respect characters model learning behaviours to develop resilience and perseverance.
- Respect characters model excellence in attitudes to learning.