Science Progression of Knowledge — Year 1 — Topic: Plants

National Curriculum Objectives:	Essential Vocabulary:	Substantive Knowledge: - children MUST know this by the end of the unit	Working Scientifically Objectives:
• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees	• Names of common plants: **wild plant, garden plant, evergreen** tree, **deciduous** tree, common flowering plant, **weed,** grass. • Name some features of plants: e.g. **flower**, vegetable, **fruit**, berry, **leaf/leaves**, blossom, **petal**, **stem**, trunk, branch, **root**, **seed, bulb,** soil. • Name some common types of plant e.g. sunflower, daffodil.	• Plants include trees (deciduous and evergreen), flowers (wild and cultivated) and hedges and bushes. • Most plants usually grow from seeds and bulbs. • Plants need warmth, light and water to grow and survive	• Observe plants closely and draw my findings. • Use a simple classification key to identify wild flowers. • Use close observation to explain how a seed changes to a plant.
Prior Knowledge:	**Future Knowledge:**	**Working at Greater depth:**	**Science Enquiry/Key Questions:**
In EYFS children should: • They make observations of animals and plants and explain why some things occur, and talk about changes. • Children know about similarities and differences in relation to places, objects, materials and living things.	**In Year 2 children will learn:** • 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	• Can they begin to describe what each part of a plant does? (e.g. roots, stem, leaves, petals, pollen) on a range of plants.	• Plant sunflower, bedding plants observation, naming plants walk. • Which tree has the biggest leaves? • How does my sunflower change each week? • How does the oak tree change over the year? • Which type of compost grows the tallest sunflower?

Science Progression of Knowledge — Year 2 — Topic: Plants

National Curriculum Objectives:	Essential Vocabulary:	Substantive Knowledge: - children MUST know this by the end of the unit	Working Scientifically Objectives:
• 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	• Growth of plants: **germination**, **shoot, seed dispersal,** grow, food store, life cycle, die, wilt, seedling, sapling. • Needs of plants: **sunlight, nutrition,** light, healthy, space, air. • Name different types of plant: e.g. bean plant, cactus. • Names of different habitats: e.g. rainforest, desert. Previously introduced vocabulary: **water**, **temperature**, warm, hot, cold, habitat.	• A seed produces roots to allow water to get into the plant and shoots to produce leaves to collects the sunlight. • All flowering plants make seeds that can grow into new plants • Sometimes the plant dies after it has produced its seed and sometimes the plant lives for many generations producing seeds each year.	• Carry out an experiment to observe how the roots of a bulb grow. • Use close observation to examine different fruits to see how many seeds they have, making predictions beforehand. • Plan and set up an experiment to find out which conditions are best for seed germination. • Suggest how to make an experiment a fair test. • Use the results of my experiment to draw a diagram explaining the best conditions for seed germination. • Use observation to explain how a seed changes over time.
Prior Knowledge:	**Future Knowledge:**	**Working at Greater depth:**	**Science Enquiry/Key Questions:**
In Year 1 children should: • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies	**In Year 3 children will learn:** • 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	• Can they describe what plants need to survive and link it to where they are found? • Can they explain that plants grow and reproduce in different ways?	• Plant cress and beans. What does a plant need to stay healthy? Control: light, water, air, soil. • Do cress seeds grow quicker inside or outside? • How can we identify the trees that we observed on our tree hunt? • What happens to my bean after I have planted it? • Do bigger seeds grow into bigger plants? • How does a cactus survive in a desert with no water? • What should I do to grow a healthy plant?

Science Progression of Knowledge — Year 3 — Topic: Plants

National Curriculum Objectives:	Essential Vocabulary:	Substantive Knowledge: (children MUST know this by the end of the unit)	Working Scientifically Objectives:
• 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	• Water transportation: transport, **evaporation, evaporate, nutrients,** absorb, anchor. • Life cycle of flowering plants: **pollination** (insect/wind), pollen, nectar, pollinator, seed formation, **seed dispersal** (animal/wind/water), reproduce, **fertilisation,** fertilise, **stamen,** anther, filament, **carpel (pistil),** stigma, style, ovary, ovule, **sepal**, carbon dioxide. Previously introduced vocabulary: life cycle.	• Plants make their own food in their leaves to provide them with energy, grow, repair, and reproduce. • Leaves absorb sunlight and carbon dioxide through leaves. • Plants have roots to provide support and to draw moisture from the soil, through stems to take water to the rest of the plant. • The plant makes its food from water and carbon dioxide, using sunlight as energy, in the green parts of plants (mainly leaves) • Flowering plants have evolved specific parts to carry out pollination, fertilisation and seed growth. • Seed dispersal improves chances of enough seeds germinating and growing to mature plants and reproducing. • Seeds and bulbs need the right conditions to germinate. They contain a food store for the first stages of growth (i.e. until the plant is able to produce its own food)	•Observe the lifecycles of plants and how these are associated with the seasonal changes. • Observe root growth over a period of time and record observations in a table. • Generate ideas for an experiment to test water transportation in plants. • Plan, set up and carry out an experiment to show how water is transported in plants, making a prediction and recording observations. • Make a comic strip to explain the process of pollination, using vocabulary such as stamen, stigma, ovary, nectar and petals. • Classify plants according to their seed dispersal method. • Taste test a variety of different seeds. • Gather data about the class's favourite seeds in a chart. • Ask and answer questions about the data gathered about the seeds.

Prior Knowledge:	Future Knowledge:	Working at Greater depth:	Science Enquiry/Key Questions:
In Year 2 children should: • 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	**In Year 4 children will learn:** • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to plants.	• Can they classify a range of common plants according to many criteria (environment found, size, climate required, etc.)?	• Celery ink. • How does the length of the carnation stem affect how long it takes for the food colouring to dye the petals? • Which conditions help seeds germinate faster? • How many ways can you group our seed collection? • What happens to celery when it is left in a glass of coloured water? • How do flowers in a vase change over time? • What colour flowers do pollinating insects prefer? • What are all the different ways that seeds disperse? • Why do plants have flowers?