Year 3

Plants

Background knowledge
This will be an outdoor learning opportunity. Children can utilise the Forest School area, the park and the area surrounding County Hall. See links below for further information. Plants will be useful prior to teaching this topic. Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom. The roots absorb water and nutrients from the soil and anchor the plants in place. The stem transports water and nutrients around the plants and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal. The leaves use sunlight and water to produce the plant's food. Some plants produce flowers which enable the plant to reproduce. Pollen, which is produced by the male part of the plant, is transferred to the female part of other flowers (pollination). This forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways. Different plants require different conditions for germination and growth. <u>Common misconception</u> • Plants eat food. • Food comes from the soil via the roots. • Flowers are merely decorative rather than a vital part of the life cycle in reproduction. • Plants only need sunlight to keep them warm. • Roots suck in water which is sucked up the stem.

See Hamilton trust for Mantle of the expert resources https://www.hamilton-trust.org.uk/browse/science/y3/year-3-summer-1-plants-roots-and-shoots/117240

Hamilton Trust Seeds and pollination links to art https://www.hamilton-trust.org.uk/browse/science/y3/year-3-summer-2-plants-artful-flowers-fruits-and-seeds/117419

STEM resources Need to sign in but free to register – https://www.stem.org.uk/resources/community/collection/12535/year-3-plants

What children should already know/ can do
From Year 2 I can describe how seeds and bulbs grow into plants. I can describe what plants need in order to grow and stay healthy (light, water and suitable temperature.) I can carry out simple tests independently.

National curriculum objectives	Children's 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	I can describe the function of different parts of flowering plants and trees. I can explore and describe the different needs of plants for survival. I can explore and describe how water is transported within plants. I can describe the plant life cycle, especially in the importance to flowers.
<u>Science Enquiry</u> making systematic and careful observations and, where appropriate, taking accurate measurements using standard units setting up simple comparative tests	I can set up a simple scientific enquiry to answer a question. I can set up a test to compare. I can make a prediction with a reason. I can make accurate observations. I can measure accurately using standard units. I can draw a bar chart.

Assessment
Can you name the parts of the plant and state their function? Can you name different ways seeds are dispersed and sort seeds into the correct method? Can you give reasons as to why you think the seed travelled the furthest? What does a healthy plant need to grow? Why is a stem important to the plant? Which of your plants grew the healthier and why? Can you describe the life cycle of a flowering plant?

Working Towards	Expected	Exceeding
I can name the parts of a plant and with support, describe their functions. I can work with a group to investigate what a plant needs to grow. I am beginning to present my results. I can name some of the stages of the plant life cycle. I know some conditions a plant needs to grow.	I can describe the functions of the parts of a flowering plant. I can predict and investigate what a plant needs to grow and can take simple measurements. I can present this information in a bar chart and say what it shows. I know the conditions a plant needs to grow. I can describe the life cycle of a plant.	I can confidently describe the functions of the parts of a flowering plant. I can predict and confidently investigate what a plant needs to grow and can take accurate measurements. I can present this information in a bar chart and draw simple conclusions. I know the conditions needed for a plant to grow. I can describe the different stages of the life cycle of a plant in detail.

Key Vocabulary	
Plant – a living thing that grows. Root – grows underground. It keeps the plant anchored in the soil and takes up water and nutrients. Stem – keeps the plant upright and transports water and nutrients to the leaves and flowers. Leaf – part of the plant that makes the plants food. Flower; the usually colourful part of the plant where the seeds are made. Pollen; a yellow powder which is carried from one part of a plant to another so seeds can be made. Petal; the colourful part of the flower which attracts insects. Pollination : the pollen is moved from one plant to another so seeds can be made. Seed – the part of a plant which moves away from the parent plant and can grow into a new plant Seed dispersal- the way in which a seed moves away from a parent plant. Function- the job something does.	Comparative test; an investigation where you compare one factor with another. Conclusion; To look at our results and explain what we have found out. Observe – to look at something closely Predict – to say what you think might happen Measure – to see how tall something is. Bar chart – a way of displaying information Investigation – to find something out Result – to record what we have found out

Character opportunities	Possible STEM careers linked to unit
Curiosity and critical thinking	Agricultural engineer (studies agricultural production and processing) Tree surgeon (plants, maintains and manages trees) Ecologist (studies interactions between living things and their environment)

Objectives	Working Scientifically	Lesson Objectives	Activities
To identify and describe the basic structure of plants (revision from KS1	Use straightforward scientific evidence to answer questions or to support findings	● To name the main parts of a range of flowering plants ● To know that we eat different parts of different plants ● To introduce the idea that different parts of the plant have different functions	● Name a selection of different flowers. Identify some plants that are used for food and which parts we eat – make a collection/collage of different flowers and food from plants
See https://www.hamilton-trust.org.uk/science/year-3-science/plants-roots-and-shoots/ for the following activities as Mantle of the expert approach			
To identify and describe the basic structure of plants; roots stem leaves and flowers	Record findings using simple scientific language , drawings, labelled diagrams, charts and tables	● To know that roots take up water and anchor the plant to the ground	● Draw labelled diagrams of the plant. ● Google ' root system images' for examples of root systems
To identify and describe the basic structure of plants; roots stem leaves and flowers	Set up a simple practical enquiries, comparative and fair tests Record findings using simple scientific language , drawings, labelled diagrams, charts and tables	● To understand the way in which water is transported in plants	● Put the cut stem of a white carnation/ chrysanthemum or celery stick into water containing food colouring on observe the petals change colour. Record using photographs/drawings. Discuss the need for a control where flower is kept in uncoloured water to use as a comparison
To identify and describe the basic structure of plants; roots stem leaves and flowers	Set up a simple practical enquiries, comparative and fair tests Record findings using simple scientific language , drawings, labelled diagrams, charts and tables	To know that leaves are needed for healthy plant growth	● Remove leaves from a plant and compare with growth of a plant with leaves
To identify and describe the basic structure of	Set up a simple practical enquiries, comparative and fair tests	To know that light is need for healthy plant growth	● As above but remove light for one plant and air from another

plants; roots stem leaves and flowers	Record findings using simple scientific language , drawings, labelled diagrams, charts and tables	To know that air is needed for healthy plant growth	
To explore the requirement of plants for life and growth and how they vary from plant to plant	Ask relevant questions Gather and record and classify and present data in a variety of ways to help answer questions	● To know that too much or too little water inhibits healthy plant growth ● To know that nutrients in the soil are needed for healthy plant growth	● Carry out an experiment where plants are over/underwatered and observe consequences ● See scholastic 100 sci lessons ● Explore the plants in different habitats
To explore the role that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal		● To understand the process of pollination IN PLANTS AND THE ROLE OF FLOWERS	● *Plant pollination game (Scholastic 100 sci lessons, wk4 lesson 2)*
To explore the role that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal	Identifying differences, similarities or changes related to simple scientific ideas and processes	● To understand that seeds can be dispersed in a variety of ways	● Investigate seed dispersal systems in different plants including by wind, animals and birds
To explore the role that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal	Record findings using simple scientific language drawings, labelled diagrams etc	● To understand the contribution of the work of Maria Sibylla Merian to understanding of plant life cycles	● Investigate life and work of Maria Sibylla Merian ● www.botanicalartandartists.com/about-maria-sibylla-merian.html

To explore the role that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal	Record findings using simple scientific language drawings, labelled diagrams etc	● To understand and order the lifecycle of flowering plants	● Investigate plant lifecycles
To explore the role that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal	Record findings using simple scientific language drawings, labelled diagrams etc	● To know that if pollination takes place a fruit is produced that contains seeds	● Look at different types of common fruit and find seeds Look for signs of pollination and fruit in school garden. Take photos of different stages where possible