Subject: Science
Year3: Plant Reproduction
NC/PoS:

- 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.

Use YPTE (Young People's Trust for the Environment) presentation for support

Prior Learning (what pupils already know and can do)
Seeds and bulbs grow into mature plants through stages of germination, seedling, and mature plant. Know the basic structure of flowering plants and how flowering plants change through the seasons. Know plants need water, light and warmth to grow and stay healthy.

End Goals (what pupils MUST know and remember)

- Know the flower is needed for reproduction
- Know the leaves are needed for nutrition (leaves use sunlight to change carbon dioxide and water into food – photosynthesis)
- Know the stem holds the plant up towards the light and carries water and minerals from the roots to the rest of the plant
- Know the root anchors the plant and root hairs soak up water and minerals from the soil
- Know water travels up a plant after being absorbed from the soil
- Know that each flowering plant has a male (stamen) and female (carpel) part
- Know the stamen contains pollen grains
- Know the carpel contains the eggs
- Know flowers are pollinated by insects or wind and pollen carried to stigma of another plant
- Know that when pollen and egg join – a seed is made
- Know the ovary becomes a fruit which contains the seeds e.g. acorn is the fruit of the oak tree
- Know seeds are dispersed by wind, water, animals or by explosion

Key Vocabulary: minerals, transport, nutrition, photosynthesis, dispersal, reproduce, reproduction, pollination

Safety: Always wash your hands after handling plants, soils, compost etc.

Session 1:
Use Kapow lesson 1: Plant growth
Before starting this unit, check the children can recall the following key facts from the unit *Science, Year 2, Plants: Plant growth*.

- Identify plants and their features.
- Recall that plants need air, water and light to grow healthily.
- Recall that seeds and bulbs come from plants.
- Recognise that humans can care for plants.

Recap plants grow from seeds and bulbs. Seeds (sunflower, vegetable seeds, apple etc) Bulbs (daffodil, onion, garlic, tulips) how a seed develops (seed, germinate, seedling, mature plant) Plant requirements for growth and basic parts (roots, stem, leaves, petals)
LO: To identify the growth and survival needs of plants.

Working scientifically LO: To pose relevant questions.
Follow the lesson plan but print one copy of Air Enquiry Results sheet in A3 and fill in observations each day as a class not individually.
The focus of the lesson is 'testable questions' relating to plant growth.
Children can write some 'testable questions' in their books.
Vocabulary: air, testable, soil, sunlight, water

Session 2:
Use Kapow lesson 2: Structure and function
Recap and recall: Children write their own quiz questions about plant growth and 'testable questions'
LO: To describe the relationship between structure and function in plants.
Children learn the flower is needed for reproduction. The leaves are needed for nutrition (leaves use sunlight to change carbon dioxide and water into food – photosynthesis) The stem holds the plant up towards the light and carries water and minerals from the roots to the rest of the plant. The root anchors the plant and root hairs soak up water and minerals from the soil.
In the main event section set up the investigation and design a table to record results as a class, not individually. Children can make predictions.
Vocabulary: roots, anchor, nutrients, stem, leaves, flower, reproduce, attract, produce, photosynthesis

Session 3:
Use Kapow lesson 3: Transporting water
Recap and recall: Play 'Fact tennis'. Remind them to discuss:

- Parts of the plant.
- The function of different parts.
- What a plant needs to grow.
- Different types of plants they have worked with.

LO: To investigate how water is transported in plants.
Working scientifically LO: To plan a simple enquiry.
Follow the lesson plan and groups set up the 'Water transport enquiry' investigation using celery.
A plant stem contains lots of little tubes which take the water to where it is needed. The experiment shows that the food colouring in the water travels upward in the stem. When the celery is cut into a cross-section, the tube-like structures can be seen as coloured dots in the stem. This shows very clearly that nutrients and water can travel up the stem to reach all the other parts of the plant
Vocabulary: support, transport, water, nutrients, stem
Additional resource: Watch https://www.youtube.com/watch?v=tk5IwL2iNgU David Attenborough water transport in a plant

Session 4: Use Kapow lesson 4: Flowers
Recap and recall: Water transport in plants
LO: To explore the role of flowers in the life cycle of a plant.
Children learn that each flowering plant has a male (stamen) and female (carpel) part. The stamen contains pollen grains, and the carpel contains the eggs. Flowers are pollinated by insects or wind and pollen carried to stigma of another plant. When pollen and egg join – a seed is made. The ovary becomes a fruit which contains the seeds e.g. acorn is the fruit of the oak tree
Follow the lesson plan and use the resource sheets as a scaffold to support the children to draw and label their own life cycle of a flowering plant.
NB: Some plants e.g. many grasses and weeds have small, dull off-white flowers. These plants are not pollinated by insects but use the wind to blow pollen grains to other plants.
You can look at the 'Interpreting Data' section and discuss it, but there is no need to complete the activity sheet.
Vocabulary: pollination, seed formation, pollen, male and female parts, reproduction

Session 5:
Use Kapow lesson 5: Evaluating an enquiry
Recap and recall: The life cycle of a plant.
LO: To apply knowledge of plant life and growth. The focus of this lesson is to draw conclusions and suggest improvements that could have improved their scientific enquiries undertaken during the unit.
Use the stem sentences in the 'Attention grabber' section to allow children to demonstrate their knowledge of plant life and growth.
As a class complete the Controlling variables sheet on A3 for the floorbook to demonstrate the children's understanding of how a method can be improved.
Vocabulary: conclude, improve, evaluate

Week 6:
Use Kapow lesson 6: Seed dispersal
Recap and recall: Improving scientific enquiries.
LO: To explore seed dispersal methods.
Children learn seeds are dispersed by wind, water, animals or by explosion.
Plants that create seeds need to spread (disperse) them over a wide area. This is so that new plants do not have to compete for light, water, and nutrients. Sometimes the pod or fruit containing the seeds is carried away from the parent plant and sometimes individual seeds can be spread. The size and shape of the seedpod, fruit or seeds will influence how they are dispersed. There are several different ways in which seed dispersal happens: animal, wind, water, and self-dispersion (explosion)
Follow the lesson plan but **do not** do the junk modelling activity. Instead, children write/draw examples of seeds dispersed in different ways using the presentation 'Seed dispersal' within the main activity to help them.

Vocabulary: seed dispersal, explosion, hooks, spikes, animal, wind water

Link to career scientist:
https://pstt.org.uk/application/files/6216/3525/6982/Plant_Biologist-_Angie_Burnett.pdf

Scientists who have helped develop understanding in this field: David Attenborough, Agnes Arber (British) – anatomy of plants