

Medium Term Plan: Supporting Implementation of LTP/Progression Grid

Subject: Science Year:Y3– Plants (life cycle)

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

Session 1: review prior learning

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) Introduce career scientist and watch David Attenborough

<https://www.youtube.com/watch?v=A39ATKA7Pfw>

<https://www.youtube.com/watch?v=JPvGQWXN4YM> Agnes Arber

Session 2: Recap: parts of plant and conditions needed for healthy growth

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

FOCUS: To recognise the function of parts of a plant

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Children have access to different images of roots, stems, leaves and flowers to see the variation to avoid any misconceptions - (on presentation)

<https://www.youtube.com/watch?v=A-xScqCNOGA> function (2.29 – 5.31)

YTPE presentation up to slide 15

Nb: have 2 identical plants in class, take most of the leaves from one to highlight how important the leaves are as children will see difference in growth

Vocabulary: roots, anchor, nutrients, stem, leaves, flower, reproduce, attract, produce, photosynthesis

Session 3: Recap: function of roots, flower, stem, and leaves

FOCUS: Using observation to determine what a plant needs to live and grow

Use YTPE up to slide 24

Complete plant investigation as suggested by YPTE. Record results and conclusion.

N.b this will take 2-3 weeks potentially

FOCUS: To research and compare the needs of other plants

While recording observations children research and compare the needs of other plants which are usually dependent on its environment. Use cacti, water lilies, snow drops as a minimum

Vocabulary: variation, vary, air, light, water, nutrients, space, material

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

Session 4: Recap: plants need air, light, nutrients, space, warmth

Children learn water travels up a plant after being absorbed from the soil.

FOCUS: To understand the transportation of water through observation

Watch <https://www.youtube.com/watch?v=tk5IwL2iNgU> David Attenborough water transport in a plant

Use white carnation and celery to prove water travels up,

A plant stem contains lots of little tubes which take the water to where it is needed. The experiment showed that the food colouring in the water travelled upward in the stem, as the petals of the white carnation turned red. When the celery was cut into a cross-section, the tube-like structures could 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

Does the location affect the rate of transportation? Yes, a warmer temperature increases rate of transportation

Vocabulary: transport, tube-like, cross-section

Session 5: Recap: the life cycle of a plant and how water is transported in 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

FOCUS: to understand pollination and seed formation in flowering plants

Watch <https://www.youtube.com/watch?v=nTVOH8-xb1I> pollination

YPTE slides 31-34

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.

Vocabulary: pollination, seed formation, pollen, male and female parts

Week 6: Recap: Pollination and seed formation

Children learn seeds are dispersed by wind, water, animals or by explosion

FOCUS: to understand how flowering plants disperse seeds

Watch <https://www.youtube.com/watch?v=buZV0h4vfmQ>

<https://www.youtube.com/watch?v=8ZLv3xAjH3Q> both by David Attenborough

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)

In late summer/ early autumn go on a seed hunt:

There are seeds to be found everywhere - they will fall from the trees, and lots can be found on the ground. Ask the children to keep one example of each seed collected and to try and identify them. Can they work out how they have been dispersed?

The Woodland Trust (Nature Detectives) website has particularly useful spotter sheets for identifying seeds and fruits: <http://www.woodlandtrust.org.uk>

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