Year 1 Science Summer 1 and 2 Plan - Plants and Growth

Unit Rationale

This is the first science unit on plants that the children will be exposed to. It has been placed in the summer term to give maximum opportunities to grow and observe plants and flowers.
In this unit,children will learn to name the basic parts of a plant, including seeds. They will have the opportunity to plant their own seeds and to make observations of how they grow over time. Children will also learn to identify, name and describe a variety of garden and wild plants as well as evergreen and deciduous trees. In their final lesson, the children will use all of their knowledge gained throughout the topic to identify, compare and classify plants

Common misconceptions:

- Some children do not know that trees are plants
- Some children do not realise that all plant need light and water to survive and thrive
- Some children may not associate the seed with a growing plant.
- Some children may think that plants are not living things

National Curriculum Objectives

- Children should be able to 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

Revisit Seasonal change

- Pupils should be taught to: observe changes across the four seasons
- Observe and describe weather associated with the seasons and how day length varies.

Cross Curricular Links:

- Art - Drawing flowers
- Maths - Counting the cost of a range of bulbs
- Geography - Where do some plants come from?
- History - Charles Darwin - orchids

Disciplinary Knowledge: Working Scientifically

• **Methods used to answer questions** (use of models, classification, correlations and patterns, experimentation, fair testing)
• **Using apparatus and techniques** (accurate measurement, collecting and recording data, carrying out procedures safely and accurately)
• **Data analysis** (processing and presenting data, exploring relationships, communicating results in tables / graphs, identifying correlations)

Substantive knowledge:

- Name the root, stem, flower and leaf on a plant.
- Describe the function of a root, stem, flower and leaf.
- Most plants have roots, stems, leaves, but they are all different.
- A tree is a plant.
- The trunk is a tree's stem.
- Name and identify different wild and garden plants and flowers

• **Using evidence to develop explanations** (using evidence / scientific knowledge to draw conclusions, explain laws, models, concepts and findings)	• Spring is in March, April and May. • Days start to get longer in Spring. • Warm, sunny, showery weather in Spring.
Trips and Visits	**Modern Day Links: STEM**
• Trip to a local garden centre to look at a wide range of plants, children could purchase bulbs to grow and nurture. • Trip to a park - some may offer educational workshops - Beckenham Place Park has these. • Kew gardens https://www.kew.org/kew-gardens/school-visits/browse-sessions/key-stage-1	• Books about Plants and growth • Keeping a garden patch at school to grow herbs and flowers
Prior learning:	**What next?**
Nursery • Plant seeds and care for growing plants • Understand the key features of the life cycle of a plant • Begin to understand the need to respect and care for the natural environment and all living things **Reception** • Explore the natural world around them • Understand the effect of changing seasons on the natural world around them	

Lesson	WALT	What should the children remember?	Lesson plan and outcome	Key Vocabulary	Key Questions
Lesson 1	**WALT**: name parts of plants**.** **Resources:** 15 plants - primrose + 15 bits of grass with roots. **Enquiry type:** Classification **Skill:** Observing closely Comparing- the same and different. Using scientific language NC link: Identify and describe the basic structure of a variety of common flowering plants, including trees	Name the root, stem, flower and leaf on a plant. Know the function of a root, step, flower and leaf.	**Organisation** - For this lesson get the children to work in pairs. Each pair will need a primrose and piece of grass with roots. In addition to the lessons. If you can set up a small garden, in grow bags, outside your classroom. Plant some wild bird seed and see what comes up or get some plant plugs from a garden centre. Let the children look after the plants - What do they think the plants will need to grow well? **Prior Knowledge** (SLIDE 2) **Retrieval** (SLIDE 3 and 4) **Introduction** (SLIDE 5) WALT. Explain to children that today we are going to learn about the parts of a plant and their functions. (SLIDE 6) Show the children 2 different plants that you have brought in. Make sure they have a sample of each for each pair to look at. Primrose or a dandelion and a bit of grass is good.  What are they? Why are they plants?	leaf, flower, root, stem (petal may also come up in discussion)	Which plants are they familiar with? What parts of the plants are they able to identify?

			What do they have in common? How are they different? (SLIDE 7) What else do they know about plants? Oracy - trios - 2 children discuss and the 3rd listens and then summarises to the group - purpose - gather and share information (SLIDE 8-9) Introduce vocabulary - What are the different parts of the plant? (SLIDE 10) What is the purpose/function of the different parts? What do the different parts do? Teacher to pull a plant apart and discuss each of the parts and what their function is. (Roots - anchor in the ground and absorb water. Stem - support the plant and transport food and water. Leaves - make food from sunlight. Flower- for reproduction -making new plants.) (SLIDE 11) Create actions for the different names (SLIDE 12 -13) <u>Activity</u>   Children lay the parts out on the table. Use a table marker to name the parts and what their role is. Working in pairs and discussing each of the parts (opportunity for Oracy)		

			Teacher to take photographs to go into their science books. Model the actions for Stem, Leaves, Roots and Flower (**Quiz** - SLIDE 14) **Adaptation** All children should be able to name the 4 parts of the plant and be able to explain their function. Some could need support in dissecting their plant. They may need a word bank to help with spelling.. Some children could research and discuss why not all plants have flowers and how that affects how they reproduce.		

Lesson 2	**WALT**: perform a simple test **Resources:** A selection of plants that the children can use to investigate on **Enquiry type:** Comparative **Skill:** Predicting, Hypothesising NC link: Identify and describe the basic structure of a variety of common flowering plants, including trees		**Organisation** - For this lesson get the children to work in pairs. Each pair will need a primrose and piece of grass with roots. **Retrieval** (SLIDE 2 and 3) **Introduction** (SLIDE 4) WALT. (SLIDE 5) Which is the odd one out?  https://explorify.uk/en/activities/odd-one-out/underground-overground Look at the explorify website for background knowledge. Discuss as a class - opportunity for Oracy. paired talk - purpose - generate ideas and opinions Try to draw out this information: Most plants rely on roots to carry out two essential roles, keeping the plant steady and upright, and absorbing (taking in) water and minerals from the soil around them in a process called capillary action. All roots grow downwards due to gravity. The main root, starting at the base of the stem, anchors the plant to the ground. Secondary roots then grow out from the main root, burrowing further into the earth and preventing the plant from being blown over by strong winds. The bigger the	leaf, flower, root, stem	Does a plant need roots? How many roots can it lose and still grow? Can a plant lose it's leaves and still grow?

			plant, the deeper the roots will grow. Fine root hairs form at the tip of each root and absorb essential nutrients from the soil, which are then transported around the plant, via the stem. It is important for children to understand that plants do not get their 'food' from the soil but use the water they absorb from the soil to make their own energy in a process called photosynthesis. (SLIDE 6) Big Question Do plants need roots? Do they need leaves? What do they think would happen to a plant if you take away some of the roots? All of the roots? What about if we took away some of the leaves? All of the leaves? (SLIDE 7) How could we test it? **(Can try doing roots and leaves, or if too complex choose as a class which one to investigate.)** Elicit that we are going to have 2 plants (Per 4 children) , Plant 1 we shall cut half of its roots away. Plant 2 all of the roots away. The teacher will have a couple of plants that are the control for the whole class. (SLIDE 8) The same with the leaves: plant 1 half the leaves off, plant all of the leaves off. Set up the investigation. Half the class do leaves, the other do roots.		

(SLIDE 9) Back on the carpet get them to predict what they think will happen and hypothesise.
oracy - paired talk - generate ideas and opinions

(SLIDE 10) In their books the children draw what they think will happen to the plants

Control	Half roots	No roots

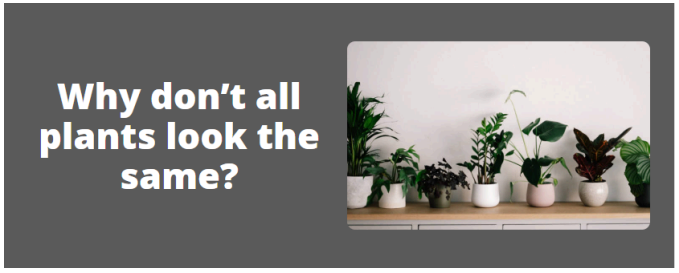
As a class set up these investigations. Each child chooses one investigation to predict what they think will happen - children draw their prediction and where capable explain their diagram.

Each week also look at the plants you are investigating. Please make sure they are easily accessible for children to observe their progress over time.

(SLIDE 11) Revisit your Odd one Out question. Think about what you have learned today and add additional learning in a different coloured pen.

(**Quiz** - SLIDE 12-13)

Adaptation

			All children should be able to explain why leaves and roots are important and what might happen if these are removed. Some could need support in dissecting their plant. They may need to use the widgets to help with simple diagrams. Some children could come up with their own investigations (SLIDE 14)		
Lesson 3	**WALT**: understand that there are different plants. **Resources:** Sticky tape or collecting tray **Enquiry type:** Classification **Skill:** Observing, comparing, scientific language NC link: Children should be able to identify and name a variety of common wild and garden plants	Most plants have roots, stems, leaves, but they are all different. A tree is a plant. The trunk is a tree's stem.	**Observation over time -** Check in on the plants you are investigating from lesson 2. **Organisation** - For this lesson get the children to work individually, but you may find that some children benefit from being in pairs. Each child will need a length of sticky tape or a collection tray. **Retrieval** (SLIDE 2 and 3) **Introduction** (SLIDE 4) WALT. (SLIDE 5) Re-cap on parts of a plant with the actions and recall <u>(SLIDE 6) Big Questions</u>  Do all plants have flowers? Do different plants like to grow in different places?	leaf, flower, root, stem, trunk, branch Additionally, you will use the names of common plants in your school environment, e.g. rose, daffodil, poppy, dandelion, daisy, buttercup.	Do different plants like to grow in different places? Do all plants have flowers? What is the biggest plant you know? What is the smallest?

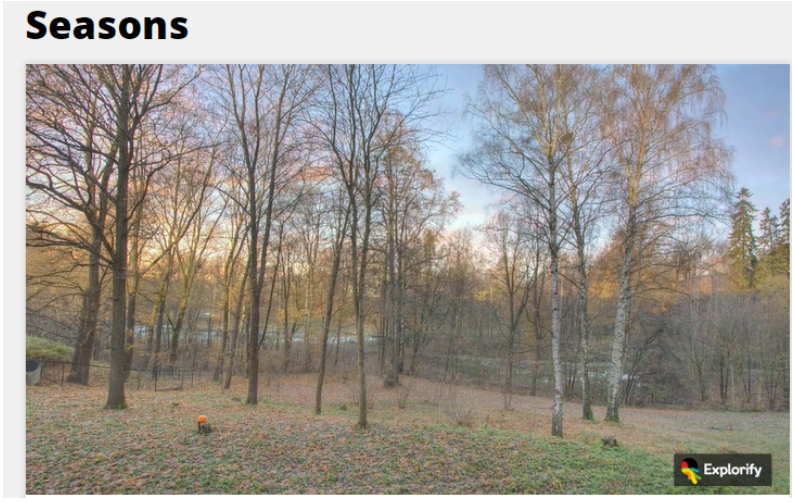
			What is the biggest plant you know? What is the smallest? Oracy - paired talk - purpose - to generate ideas and opinions Explain that plants have all adapted to suit where they grow and this means that some are big, others are small , they are different shapes and colours. (SLIDE 7) We are going to go on a local plant hunt in the school field. Take the children onto the field and let them look at plants in a restricted area. Can you see their roots, stems, leaves and flowers - if they have them? Collect different sized leaves - . Go from the smallest to the largest. Collect different coloured leaves. Collect parts of a plant that are different colours - how many different colours can they find. Collect as many parts of a plant that are different shades of green. Take pictures of the plants and flowers that you find. Bring them back as a group and discuss what they saw. Elicit the variety of plants, sizes and colours. Do they know the names of any of the plants? You could now send them off to find the biggest and smallest plant - 3 minutes. Bring them back to discuss what they found -ask if any of		

			them chose a tree? Is a tree a plant? Ask them to point out the stem - what is the name for a tree's stem - trunk. Are there any other words we use to describe trees that we might not use for other plants? Elicit branch, bark, twig. (SLIDE 8) Back in the class the children put their collections in their place - the children look at each others' and notice the different shapes, colours etc. Elicit that there are many different types of plants, but that they (mostly) have the same parts - roots, leaves, stem, flower Oracy - trios - 2 children discuss, 1 to summarise and feedback. Purpose - to analyse and evaluate (SLIDE 9 - when back in class) Create an action for Trunk and Branch to add to the plant actions you already know. (SLIDE 10 - when back in class) Are trees the same as plants? Yes. Trees are classed as plants but some of their parts have different names ie.g. its trunk is the same as the stem on a plant. . Photo lesson - pictures of the different plants that the children found outside. In pupil books, children can label a tree with the new words. (**Quiz** - SLIDE 11-12) **Adaptation** All children should be able to explain how plants are the same and different. They should understand that a tree is a plant but it has some different names for its parts (trunk and branch).. Some children would benefit from working with a partner.		

			Some children can explore pattern seeking questions such as 'Do big plants have big leaves?' ***For next lesson - You will need to create a key sheet of common plants in the school grounds that can be printed out for the children. A version without the photos only (no names) needs to be added to SLIDES 8 and 11 of Lesson 4 ppt.***		
Lesson 4	WALT: To name some common plants. To be able to use a key. **Enquiry type:** Classification Skill Observing, comparing. NC link: Children should be able to identify and name a variety of common wild and garden plants	Know and identify at least one plant they didn't know at the beginning of the lesson.	*Before the lesson - Teacher finds 6/8 common plants in the school grounds - take a picture of each and create a simple key with the picture and the name on an A4 piece of paper.* You will also need to add an unnamed version of this to SLIDES 8 and 11 of today's lesson ppt (ie. pictures only for the children to identify).  *Here is an example. Have an additional set of two plants that are in the grounds, but they probably won't know.* **Observation over time -** Check in on the plants you are investigating from lesson 2. **Organisation** - For this lesson get the children to work individually, but you may find that some children benefit from being in pairs, especially when using the key to identify the plants.	The names of the 6-8 plants from your school grounds that you are focussing on in your key.	What plants can you name and identify in the school grounds? What will help you look for the plants we have seen in the classroom?

			Retrieval (SLIDE 2 and 3) **Introduction** (SLIDE 4) WALT. (SLIDE 5) Re-cap on parts of a plant and tree with the actions and recall (SLIDE 6) Re-cap on their plant hunt from last week. Can they remember any plants that they knew the names of? Do they know any other names of plants they might find in the school grounds? (SLIDE 7) Show some common plants that they already know e.g. daisy, daffodil, grass, along with some common trees. What do we recognise from our plant hunt in school last week? (SLIDE 8) has been left blank for you to add the key you have made before this lesson. The key should show the six plants that the teacher has already found and identified in the school grounds without the names - make sure there is a tree. Ask the children. Have you seen these before? Do you know what they are called? Share with them the names. (SLIDE 9) Plant Hunt Switch off the white board - explain that they are now going to look for the plants they have just seen… Go outside and give them 5 minutes to see if they can find any. Get them back - ask them if they found it hard to remember what the plants looked like or what they were called? What would make it easier? Elicit that pictures of the		

			plants would help. Give them the A4 key sheet that you have made with the pictures and names of the plants. - tell them that in science this is called a key and they are using it to find plants. Ask them what skills they will need to use the key (observe closely, compare the pictures with the real plants/look for leaf shape, petal colour etc.) Let the children have another go at finding the plants on the key. Get them to help each other if a pair can't find one. (SLIDE 10) Back in the classroom discuss if it was easier the second time with the key. (SLIDE 11) See how many children can remember the different plants. Photo lesson- If time, the children could pick their favourite - draw it or cut and stick the photo from their key sheet, name it and say where they found it. (**Quiz** - SLIDE 12-13) **Adaptation** All children should be able to name some common plants that grow in your school environment, and identify them by sight. They should know how to use a key to help them. They should be able to name at least one tree. Some children would benefit from working with a partner, especially when working with the key sheets. Some children can extend their knowledge by focussing on the more formal beds in the school. How are the plants there different? What do we call wildflowers and plants that grow in formal beds - weeds. Why is that?		

			For next lesson - You will need to collect evergreen leaves - 2 different types for children in pairs.		
Lesson 5	WALT: describe spring **Enquiry type:** Classification Observing over time NC Link: Pupils should be taught to: observe changes across the four seasons	Spring is in March, April and May. Days start to get longer in Spring. Warm, sunny, showery weather in Spring.	**Retrieval** (SLIDE 2 and 3) **Introduction** (SLIDE 4) WALT.  (SLIDE 5) Re-cap seasonal change. Watch this quick video in explorify: https://explorify.uk/en/activities/whats-going-on/seasons • Which seasons can they see in the video? • What changes do they notice during the film? • What plants can they see? • How do they change? Oracy - paired talk - purpose - to generate ideas and opinions.		

			(SLIDE 6) can the children order the trees and name which tree goes in which season? (SLIDE 7) cold task - what season are we in now? (SLIDE 8) watch video clip about spring and pull out features of spring time. Write these on a flip chart to use later on when you go on a 'signs of spring' hunt. (SLIDE 9) take the children on a 'signs of spring' walk. use the checklist created while watching the video clip. collect and take pictures of the signs of spring. revisit the tree from last half term. What is different about it? record the temperature and weather for the day and sunrise and sunset. (SLIDE 10) back in class, discuss the signs of spring walk and what signs they saw, what the weather was like etc. **oracy** - onion - form two circles, one inside the other. the inside circle face the children in the outside circle. The children talk to each other about the signs of spring that they saw. the inside circle then moves around so that they are talking to a different child. Purpose - gather and share information (SLIDE 11) task - children draw a picture of spring and describe what spring looks like. (**Quiz** - SLIDE 12-13) **Adaptation** research spring in other countries - which months?		

Lesson 6	WALT: explain our results NC Link: Identify and describe the basic structure of a variety of common flowering plants During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and	Know what a conclusion is. Know that to get results we have to observe closely.	**Observation over time -** Hand out the plants you are investigating from lesson 2, but only when you get to slide 8. **Organisation** - For this lesson get the children to work in the same pairs they were in in Lesson 2. Each pair will need to check their own plant that they experimented on. They have been checking on its progress at the start of every lesson this term). **Retrieval** (SLIDE 2 and 3) **Introduction** (SLIDE 4) WALT. (SLIDE 5) Let's recap what we did back in lesson 2. We were exploring the big question - Do plants need leaves and roots? (SLIDE 6-7) What did we test? We tested how the amount of roots or leaves affected the growth of the plant. We used a control to see what would happen if we hadn;t removed any of the plant. (SLIDE 8) *Hand out the plants to the individual children/pairs* - What can you see? Why do you think the plants look like this? paired talk - purpose - reach a consensus *Teachers to consider:* Be careful with your explanation because the plant without leaves may be able to photosynthesise with just the stem (if it is a green stem) and may begin to grow more leaves - you will have to see what happens - the plant with only half the roots may also grow well and start to grow more roots. (SLIDE 9) Check your predictions in your books. Were you right? Use a different colour pen to show how your results have changed your thinking.	**Conclusion** **Results** **Observe** **Experiment**	**What has happened to the plants without leaves?/ without roots.**

	classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions.		(SLIDE 10) Explain to the children that they are going to tell the children around them what they have seen ('observation'), what happened ('results') and why they think this is ('conclusion'). Get children to split and share their results with others on their table e.g. 3 pairs on a table can split into 2 groups of three, with each pair split. You may find it easier to get the children to prepare what they are going to say with their partner, before they split. Some children may need prompts to support them. 'I can see that the plant is unhealthy and wilted without any roots. This is because it is unable to take in water and plants need water to be healthy.' Draw the plant in their book with some simple labels to describe it - limp, wilted, unhealthy etc. (SLIDE 11) So, let's revisit the big question and come up with a conclusion - do plants need roots and leaves? Why? NB - plants do not need to be kept past this lesson. (**Quiz** - SLIDE 12-13) **Adaptation** All children should be able to explain how their plant has changed across the experiment and explain verbally why this has happened. Some children will need an adult to scribe on a post it note or in their book their explanation of why this has happened. Some children will need prompts when explaining their results to others. Some children will be able to write a simple explanation unaided, or using a word bank.		

			NB You will need to collect leaves from a variety of trees in the school grounds before the start of the next lesson. You only need some example ones as children will be collecting their own in the lesson.		