

ACET Junior Academies'

Scheme of Work for Science

Big Idea – Living Things

Year 2 – Plants



About this unit:

PoS – Plants

Students will have already looked at plants, germination, and growth from seeds earlier in the year. In this unit, we will be looking at plants as a whole, and what they need to stay alive and healthy. We will build on what students know about plants, using lots of information from the 'life cycles' unit, and using it to reinforce what plants need at different stages of their lives. We will review the 'life cycle' aspect from the previous unit, making sure that students understand that plants have different stages in their lives, too. The concepts learnt in the life cycle unit can be reinforced by comparing the life cycle of plants to that of humans.

We will look again at germination, this time using it as an opportunity for scientific investigation. Students will also carry out investigations into how plants grow. The focus here is as much on their investigative skills as it is on learning new information. It is an opportunity to remind students that scientists know things by investigating, and finding things out.

In discussing plants and their properties, we also have an opportunity to review all the work we have done with 'properties' and 'features' in previous units. Plants have specific features, which the students should be able to describe. When doing this, they should be encouraged to remember how they allocated features and properties to living things and to materials.

Unit structure

This unit is structured around seven science enquiries:

1. What is a plant?
2. What are the best conditions for germination?
3. How are your plants doing?
4. How do we know what a plant likes?
5. How have plants changed over the year?
6. What do plants need to be healthy?
7. How are plants different?

Links to previous and future National Curriculum units

Y1 – Plants, identifying animals and everyday materials

- Y3 – Plants
- Y5 - Life cycles

Enquiry 1: What is a plant?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 - plants	EA – Identifying, grouping & classifying	Can your children: <ul style="list-style-type: none">- Identify the key features of plants- State the function of different parts of plants – showing an understanding that the flowers are not present all year round	Horizontal: Vertical: Y3 - Plants
	Asking questions		
	Making predictions		
	Key concepts: Plants have roots, a stem/trunk, leaves and flowers. They are green. Their leaves are thin. Different parts of plants have different functions. <i>GD – say what makes each part of the plant good at its function.</i>		
Key terms		Common misconceptions	
Plant, root, stem, trunk, leaf, flower, tall, anchor, water, nutrient, air, green, thin, tough, strong, bendy		<i>Plants do NOT get food from the soil. They use their leaves to make food, and get 'extra' nutrients from the soil – like humans taking vitamin tablets.</i>	
Suggested activities		Resources	Useful links
What is a plant – see what answers the students come up with. Revisit the structure of a basic plant from Y1. Use what you learnt in the materials to try and describe parts of the plant – think about its features as 'properties'. Try and use as many terms as possible from Y1 – including deciduous and evergreen. Collect facts about plants and see how many the class can come up with – and use this to address any misconceptions, or to flag up and questions that you need to find answers for. Do you remember what each part is used for?			

Enquiry 2: What are the best conditions for germination?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 - Plants	EA – Comparative/fair testing	Can your children: - State that seeds need water and warmth to germinate/sprout - Describe why they are doing this investigation – what will they find out?	Horizontal: Vertical: Y3 – Plants Y5 - Life cycles
	Asking questions Making predictions Setting up tests Observing and measuring		
	Key concepts:		
	Seeds like water and warmth to germinate. To find out how much water and warmth they need to germinate fastest, we need to investigate.		
Key terms		Common misconceptions	
Germination, fast, slow, root, shoot			
Suggested activities		Resources	Useful links
<p>Cress seeds – discuss how germinating the seeds went in spring 2. What do you think the best conditions for germinating seeds?</p> <p>Grow them on cotton wool. Students to choose whether to investigate temperature, amount of water, or light/dark. Whichever they choose to investigate, they should plan to keep everything else the same to make the test fair.</p> <p>Keep the question they are investigating simple – ‘do plants germinate faster with more water?’ They could investigate speed of germination (how quickly the first shoots appear), or how tall the seedlings grow in a set number of days.</p> <p>Describe seeds as a ‘spaceship’. The seed has been ‘sent out’ from the parent plant, sealed up with everything it needs. When it gets water & warmth, the root & shoot will burst out, using up the food store in the seed until it has grown leaves and can start feeding itself.</p> <p>Students should be aware of what they are investigating, and why – but the focus should be on making the tests fair. What will they keep the same each time they do it? They should be aware that the investigating is being carried out more than once (once in lots of water, once in less) – and ONLY ONE thing should be different each time.</p>		Cress seeds Cotton wool Different conditions available for growth over the next few days	

Enquiry 3: How are your plants doing?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – Seasons Y1 - Plants	EA – Comparative/fair testing Asking questions Making predictions Setting up tests	Can your children: - Tell you conditions a plant likes to grow in - Tell you what they will keep the same in this investigation	Horizontal: Vertical: Y3 – Plants Y5 - Life cycles
	Key concepts:		
	What a plant needs when it is growing is different to what it needed to germinate. We're trying to find out how much light a plant wants. We need to keep the amount of water it gets the same.		
Key terms		Common misconceptions	
Fair test, the same, constant, germination, water, warmth, light			
Suggested activities		Resources	Useful links
Look at plants that you planted earlier this year (not the cress seeds from last week). Allow the students to make as many observations as possible. Have they all grown? Have some grown better than others? Can you think of reasons why they may have grown differently? If your plant growing was unsuccessful, then look around the school grounds to find where the plants grow the best. Which areas do you think the plants like the best? Compare an area where there are lots of plants with one where there are few. What is different about them? Comparing growth to germination. Plant some more cress seeds, and put them in different places - one set on the classroom windowsill – hopefully warm and light, one in the dark and one somewhere light but cold. Allow them to germinate, and then KEEP THEM THERE for a week, making sure they are all watered. The students should be aware that they are now investigating what a growing plant needs – which is different to what it needed to germinate. The focus of this lesson should be on the students' predictions of what conditions plants grow best in. Their predictions should be based on prior knowledge, experience or observations – e.g. not many plants were growing the shady area of the playground. The students will be able to review their prediction in the following lesson.		Cress seeds, kitchen towel and some shallow dishes to prepare 3 sets of seeds for germination in different places by next week. Keep the plants watered – students will be looking at them in the next lesson.	

Enquiry 4: How do we know what a plant likes?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – Seasons Y1 - Plants	EA – Observation over time	Can your children: - Identify a conclusion from their investigation - Measure accurately and discuss the units used	Horizontal: Maths - measuring Vertical: Y3 - Plants Y5 - Life cycles
	Asking questions Observing and measuring Interpreting and communicating data		
	Key concepts:		
	Plants growing in the light are greener and stronger than those in the dark. Scientists need to measure accurately, especially when we use small units like mm.		
Key terms		Common misconceptions	
Fair test, the same, constant, germination, water, warmth, light		Longer is not best! Plants may grow longer in the dark – but students need to be aware that they are long and weak. The plants grown in light should be healthier and stronger.	
Suggested activities		Resources	Useful links
You need to have planted some cress, and kept them in different places for a week or so. Which plants look happiest? They can start growing in the dark, but they need light once they have leaves, to keep them happy. This should be a measuring opportunity. Students get to be like real life scientists – they have to make the decision about how to measure the seedlings. They need to measure them the same way each time. Students should consider how they are going to present the data in the clearest way. Table, pictogram? They should write or present a short conclusion of what they found out. Review their prediction from last lesson. Were they right? If not – was the method not reliable? Did something go wrong? Or is there some more science they need to know in order to explain the result? <i>It's ok to leave it at that – 'I didn't get the result I expected, and I'm not sure why. To find out why, I would need to Look in a book/on the internet/ask a scientist/do another investigation)</i>		3 sets of seeds that were prepared so that they have germinated and begun to grow by this lesson. Rulers	

Enquiry 5: How have plants changed over the year?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – Seasons Y1 – Plants	EA – Observation over time	Can your children: - Describe 3 changes in local plants since the autumn - Measure plants accurately <i>GD – discuss the best units for measuring different plants</i>	Horizontal: Measuring Vertical: Y3 - Plants Y5 - Life cycles
	Asking questions		
	Observing and measuring		
	Key concepts: Plants change in a number of different ways over a year. Before we measure something, we should decide whether we will use mm, cm, m, or km.		
Key terms		Common misconceptions	
Life cycle, bigger, more, measuring, accurate, cm, mm, leaves, flowers			
Suggested activities		Resources	Useful links
Look back at your class year book. What are the changes that you notice in the plants? Have new ones grown? Have any grown bigger? What has happened to their leaves? If new plants grew – how did they get there? Can you spot any flowers – particularly on the trees? You could supplement this with considering stories, and how they show changes in plants over time. Stick man's leaf on his head changes, along with all the plants around. Link this with Y1 work on seasons, and the work on Life cycles from Spring 2 Y2. Opportunities for measuring on a larger scale than the previous lesson. Measure the plants that were measured and recorded in your year book in the autumn. Discuss – will you use mm for these plants? cm? m?		Go outside – observations of habitats Rulers -30cm and 1m	

Enquiry 6: What do plants need to be healthy?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – Seasons Y1 - Plants	EA – Research Asking questions Interpreting and communicating data	Can your children: - Identify that all plants need water, light and space - Pick out information from a label – diagrammatic or written	Horizontal: Vertical: Y3 – Plants Y5 – Life cycles
	Key concepts:		
	Plants need water, light and some space around them so they can get air. Different plants need different amounts of these things, and we can use written information to find out how much.		
Key terms		Common misconceptions	
Water, light, air, space, information, diagram			
Suggested activities		Resources	Useful links
You may have plants in your classroom. What will happen to them over the summer holidays? What do plants need to keep them healthy? Look at some instructions for caring for different plants – e.g. a cactus compared to a leafy green pot plant. Write (or draw, or arrange some pictures) a plan for someone to take home over the summer holidays to show them what a plant of your choice likes to be healthy. Many plant care labels have diagrams to help show how to care for the plant (see example in links). Students could come up with their own – they will need a key. <i>Most students can produce a generic guide for what plants need to stay healthy; Greater Depth students consider that different plants have different needs.</i>		Plant labels – see link	https://www.pinterest.co.uk/pin/588916088743253931/

Enquiry 7: What makes plants different?			
Links to previous learning	Scientific skills	Assessment criteria	Curricular links
Y1 – Seasons Y1 – Plants	EA – Problem solving	Can your children: <ul style="list-style-type: none">- Describe the difference between a deciduous and evergreen tree- Identify the basic features of a plant in one that is unusual	Horizontal: Art Vertical: Y3 – Plants Y5 - Life cycles
	Asking questions Observing and measuring		
	Key concepts:		
	All plants have roots, a stem/trunk, leaves and flowers. Just the same as animals are different, plants can have differences too.		
Key terms		Common misconceptions	
Deciduous, evergreen, cactus, leaves, green		The grass on the school field DOES have flowers – but the grass keeps getting cut before the flowers form. If grass is left uncut, it will get flowers on the top.	
Suggested activities		Resources	Useful links
Compare a daisy plant with a deciduous tree and an evergreen. They are both plants – do they have the same features? <i>Preferably trees from the school grounds – particularly the deciduous one.</i> Common misconception – a daisy is not just a flower, it's part of a plant, with leaves etc. Dig one up, so that you can compare it to a tree. You won't be able to see the tree's roots, but you know that they are there, because the tree does not fall over. Look at the 'basic structure' of a plant as seen in lesson 1. Do both these plants have these things? <i>It can be difficult to envisage flowers on a tree. Try and get examples/pictures of the flowers on the tree that you are studying – they can be obscure, and students don't realise that they are actually flowers. See resource for examples of flowers on trees that many people don't realise are flowers.</i> See misconception – can the students find areas of grass where flowers have been able to develop? Look at pictures of really unusual plants. Give students two pictures side by side. Can they spot similarities and differences? Students can design their own plants – they just need to remember the basic		Pictures of flowers that the students may not realise are flowers Pictures of unusual plants	

rules (including that leaves must be green), but otherwise can be as inventive as they like.		
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