



Stage 3: Growing our own ingredients

Learning objectives:

- To grow vegetables from seeds
- To plot a line graph

Stage overview:

In this stage, the children revise their learning on the requirements of plants for life and growth and plant their own vegetable seeds. The remaining activities in this section are completed over a series of weeks to allow the plants time to grow. As the plants grow, Maths with meaning opportunities are planned in when the children measure the height of their plants at regular intervals and use the data to plot a line graph. Giving the children the responsibility for caring for their own crops provides opportunities for them to experience the challenges of farmers and business owners in a very simple way. For example, if the crops do not grow, they will not have enough ingredients to make their products which will leave them with nothing to sell.

Materials needed:

- Small plant pots/ yoghurt pots/ containers x30 (labelled for each child)
- Vegetable seeds e.g. tomato
- Compost
- Measuring cylinders
- Rulers
- Graph paper or line graph template

Presentation guidance:

Slide 2 & 3: What do plants need?	- Use questioning to revise the requirements of plants for life and growth (previously taught in Year 3).
Slide 4: Carrot farm	- Share the Science Farm Carrot Diary video from https://education.nfuonline.com/ScienceFarm to demonstrate the conditions needed for carrots to grow in the UK.
Slide 5: Applying learning	- Model how to plant seeds and explain that within each one there is a new plant waiting to sprout. - Using today's revision, discuss the best place in the classroom to keep the plants to help them grow.
Slide 6: Maths with meaning	- Decide on a standard measurement of water that the children should have the responsibility of giving to their plant each day. - Model how to measure water accurately.

<p>Practical activity: Planting seeds</p>	<ul style="list-style-type: none"> - Ask children to plant their seeds in small, labelled pots. - Lead a discussion about choice of pot material and which would be better for the environment.
<p>Slide 7: Nurturing our crops</p>	<ul style="list-style-type: none"> - Lead a discussion about how we will monitor the health and growth of our plants and the importance of farmers, as business owners, doing this. - You could create a time lapse of the children's seeds completing their lifecycles using the 'iMotion HD' iPad application. The device (connected to power) could be set up to take photographs at regular intervals e.g. every hour and made into a time lapse video.
<p>Practical activity: Measuring plant height</p>	<ul style="list-style-type: none"> - Once the seeds have sprouted, model how to measure accurately using a ruler to measure the height of their plants. - As their plants grow, ask the children to measure the height of their plants at regular intervals and record the data in a table. - Remind the children to decide whether to measure in cm or mm and to consistently use one unit of measure.
<p>Slide 8: Line graph revision</p>	<ul style="list-style-type: none"> - Revise prior learning by asking the children to write a list of top tips for drawing line graphs. This could be completed as a chocolate box activity: each child has a plain piece of paper which they fold into 6 segments. They fill one of the segments with an idea of their own and then walk around the room to collect answers from their peers until the remaining segments are full and they have 6 different top tips for drawing line graphs.
<p>Slides 9- 11: Drawing a line graph</p>	<ul style="list-style-type: none"> - Use the power point to revise how to draw line graphs and address any misconceptions. - Once enough data points have been collected, ask the children to plot a line graph to display their plant's height growth over time. - Alternatively, the children could collect their plant height data using a Microsoft or Google form. This will automatically feed into a spreadsheet from which a line graph can be created.
<p>Slide 12: Read a line graph</p>	<ul style="list-style-type: none"> - Practice reading line graphs by asking the children to swap graphs with a partner and answer a series of questions displayed on power point (green questions have been designed to encourage reasoning). - You could extend this task by asking the children to make up additional questions for their peers to answer.
<p>Slide 13: Conversion revision</p>	<ul style="list-style-type: none"> - Revise converting between centimetres, millimetres and metres by asking the questions on the power point.

Extension:

You could challenge different groups of children to grow different seasonal vegetables. This would enable the children to plot line graphs to compare the height of different plant varieties at agreed intervals. If time allows, you may like to end this stage of the project by reading 'How Groundhog's Garden Grew' by Lynne Cherry to the class.

Links to the National Curriculum:

Science	Living things and their habitats Notes and guidance	<ul style="list-style-type: none">- Describe the life process of reproduction in some plants and animals.- Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants
Maths	Measurement	<ul style="list-style-type: none">- Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]- Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
	Statistics	<ul style="list-style-type: none">- Solve comparison, sum and difference problems using information presented in a line graph
Computing		<ul style="list-style-type: none">- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.