

Previous Step: Measuring and estimating

Previous step: From grounds to gardens

By the end of this month, pupils will have:

1. **Understood the process of ‘growth’;**
2. **Researched different varieties of vegetables;**
3. **Learned about the different factors affecting growth (genetics; water, soil, light, temperature, and air);**
4. **Observed healthy growing;**
5. **Learned about the nutritional qualities of different vegetables.**
6. **Planned what vegetables they will grow in the garden.**

D/E. The Mystery of Growth

What is growth?

1. **Growth** is not a homogenous process but there are both quantitative and qualitative aspects of ‘growth’. We want to know how things grow in the garden.

Activity 1a: children may be encouraged to share their ideas of ‘growth’. They may be referring to a one dimension (e.g. length), or they may use common words to talk about relative sizes (bigger; smaller than; medium).

2. **Core ideas** include **variety** of shapes and sizes for growing; **difference** amongst different types of plants and sometimes within the same group of plants; and **change** across the stages of development of each individual plant. So a plant can grow taller, wider, or in a wonky shape!

Activity 2a: children can research different types of plants on the Internet and select examples of different shapes. Children can categorize and sort the different shapes (Math and English) or discuss how the different shapes can help the different plants to survive (biology).



Activity 2b: Children may be encouraged to discuss the difference between ‘veggies’, ‘tubers’ ‘herbs’ and ‘plants’; compare their anatomical and structural differences as well as their different uses.

3. Growth is affected by environmental conditions. Plants have preferred environments to grow but they can adjust to changes. Even the same plant can grow very differently in different places.

Activity 3a: children can compare the times when plants can come to fruit in different countries. When are cherries ready to pick in Madrid? When are they ready in Aberdeen?

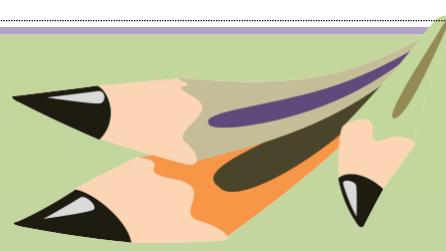
Activity 3b: outside, children can make use of their senses to find out more about environmental conditions in the places where plants, herbs and vegetables can grow. Using symbols they can map areas of hot & cold; windy & sheltered; dark & light and record what types of plants are found.

4. Healthy growth is affected by light, water and soil. Plants adopt different strategies to make the most of light, to store water or to get the nutrients from the soil. Rapid stem growth and large surfaces may give leaves an advantage for obtaining light. Rapid growth however may also result in weakness and need for support. Pliable stems can recover from trampling and buffeting by wind. Stems that break cannot recover and the part of plant separated from water supplies then dies.

Activity 4a: Children may be encouraged to look for relationships between stem structures (hollow, solid; wooden, green; long, short) and height or pliability of the plant.

Activity 4b: Discuss why some plants tolerate a wide range of environmental conditions and so are widely distributed. Why others, instead, need specific conditions and are limited to the places where these conditions exist?

Activity 4c: Discuss what conditions do we have in Scotland, in Aberdeen, in our school grounds? How much sunlight do we have? What are the highest and the lowest temperature over the course of the year?



Activity 4d: in the school grounds, children can look for dead plants and discuss what might cause death (lack of water; lack of light; frost; excessive heat); they can discuss what it means for a plant to be 'dormant'.

5. Nutritional qualities depend on the content of different vegetables (biology; home economics).

Activity 5a: Children may look for differences between contents of different vegetables by **tasting samples** in class: watery cucumber; sweet apple; sturdy carrots to find out about water content; sugars and fibre. A discussion may follow about the importance of introducing those contents into our own diet to grow healthy. What happens to our skins when we do not drink or get enough fibre?

6. Space for growth: vegetables can grow to different sizes. Find out **how much** and **how big** a plant can grow and will it fit into the space allocated in the garden? When will the plant be ready to harvest?



The Mystery of Growth across the Curriculum for Excellence

Health and Wellbeing

- encourages children and young people to act as **positive role models** for others within the educational community
- leads to a lasting commitment in children and young people to follow a **healthy lifestyle** by participation in experiences which are **varied, relevant, realistic, and enjoyable**

Sciences

- develop **curiosity** and understanding of the environment and **my place in the living, material and physical world**
- demonstrate a secure knowledge and understanding of the **big ideas** and concepts of the sciences
- develop the skills of **scientific inquiry** and investigation using **practical techniques**

Literacy and English

- communicate, collaborate and build relationships
- explore the richness and diversity of language and how it can affect me, and the wide range of ways in which I and others can be creative

Religious and moral education

- investigate and understand the responses which religious and non-religious views can offer to questions about the nature and meaning of life
- develop the skills of reflection, discernment, critical thinking make a positive difference to the world by putting my beliefs and values into action

Numeracy and Mathematics

- develop a secure understanding of the concepts, principles and processes of mathematics and apply these in different contexts, including the world of work
- interpret numerical information appropriately and use it to draw conclusions, assess risk, and make reasoned evaluations and informed decisions
- apply skills and understanding creatively and logically to solve problems, within a variety of contexts