

THE APPRENTICE GARDENER

INTRODUCTION

This module builds on Year 1, Module 1, Plant Detectives and Year 1, OCW: Plants, where children identified plants, named their parts, tended a garden and observed seasonal change. Children should already be aware that plants need water and sunlight; this module revisits and extends that understanding. They are also introduced to growing plants from bulbs and from seeds, learning the sequence of germination, and comparing and contrasting the requirements of germinating seeds with those of mature plants to maintain healthy growth. In Year 3 (Module 1 and OCW) children revisit in more detail the requirements of plants for life and growth, and learn about the functions of plant parts and the life cycle of a flowering plant, including seed production. In Year 5 they cover bulbs in more detail, along with tubers and cuttings.

This module should be taught early in the year, before the OCW lessons where children grow vegetables to eat. The OCW lessons provide an opportunity for children to apply what they have learned from classroom investigations in a real context, to learn more about plants' need for a suitable temperature and to observe plants growing to maturity. By creating a floor book to track their learning you will provide them with their own reference book that they can add to and use when planning and planting their vegetable garden.

National Curriculum:

Observe and describe how seeds and bulbs grow into mature plant, and find out and describe how plants need water, light and a suitable temperature to grow and to stay healthy

Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

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Working Scientifically:

Observing closely, using simple equipment

Asking simple questions and recognising that they can be answered in different ways

Performing simple tests

Gathering and recording data to help in answering questions

Scientific Enquiry:

Grouping and classifying

Observing changes over time

Carrying out simple comparative and fair tests

Noticing patterns

Key vocabulary:

seeds, plant (verb and noun), apprentice, gardener, bulb, grow, observe, observations, describe, identify, expert, question, predict, prediction, water, compare, answer, investigate, bean, soil, surface, test, bury, light, dark, water, germinate, fair, same, plan, suitable, radicle, root, shoot, leaves, change, evidence, height, tallest, shortest, bar chart, scale, pattern, question, connection, measure, seedling, mature plant, wilting, healthy, unhealthy, warmth, care, die, block, agree, disagree, alive, food store, first, next, later, after...days, order, conclusion, because

FACT FILE:

Seeds need water and a suitable temperature to germinate. The required temperature varies from plant to plant; some seeds only germinate after a period of low temperatures. Most seeds do not need light to germinate. The seed provides a store of food for the growing plant until the first leaves are above the soil and it can start to make its own food by photosynthesis. Children learn about plant nutrition in Year 3. Seeds do not need soil for germination to occur; any medium that holds water is suitable, although as the seedlings develop they need anchorage for their developing roots.

Growing plants need water, light and a suitable temperature. Temperature is also considered in OCW when children consider when to plant their seeds. Other requirements such as air and nutrients are introduced in Year 3.

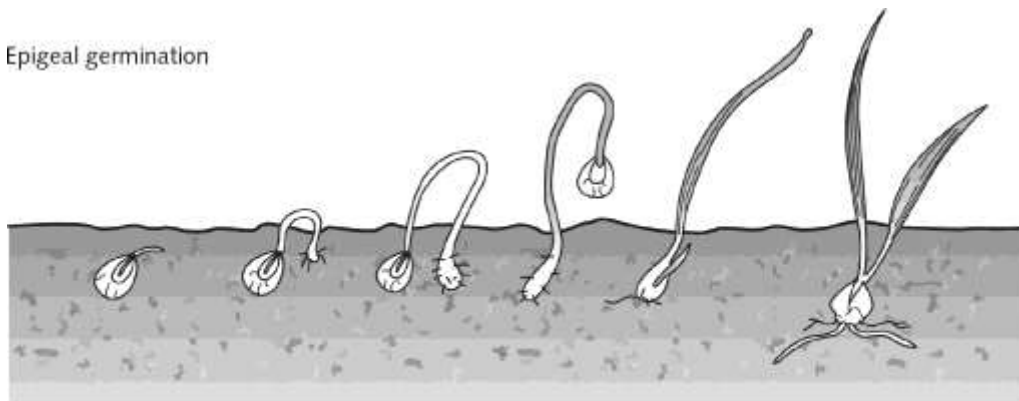
Children need to recognise some causes of changes seen in unhealthy plants. Plants deprived of water wilt and eventually die. Plants deprived of light continue to grow at first, becoming etiolated (pale and drawn out), but they eventually die.

Seeds are the result of sexual reproduction and grow into new, unique plants. A bulb is an underground structure produced by perennial plants, which becomes dormant in the soil after the

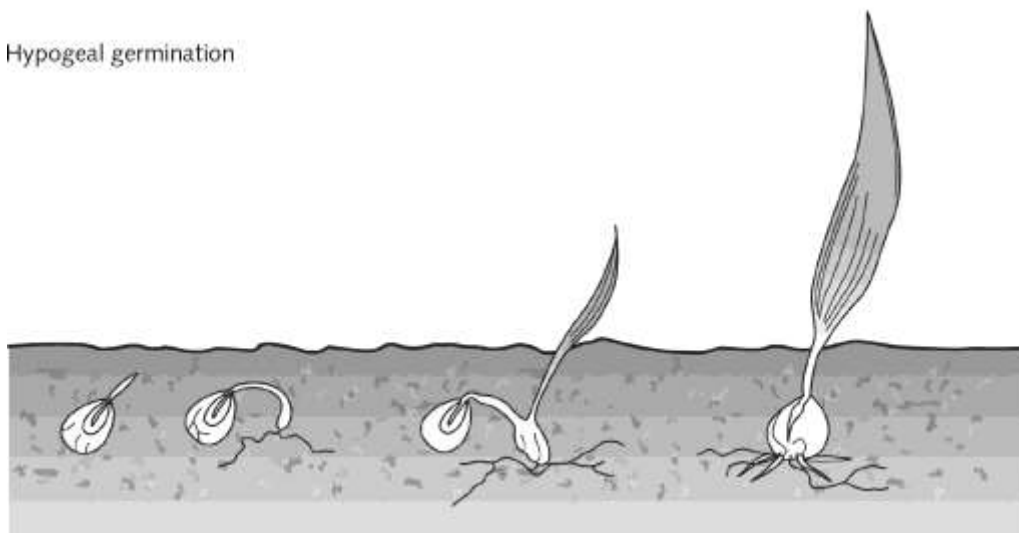
plant has flowered. The plant grows again, the following year, from the bulb. At this stage children need to know that a bulb is similar to a seed because it needs water to begin to grow, and it grows roots and then a shoot. A bulb is different from a seed because it can be left in the ground and the same plant will grow back again the following year.

Seed germination happens in a predictable sequence. There are two main types of germination: epigeal and hypogeal. In epigeal germination the cotyledons are pushed above ground and the seed leaves emerge from them, followed later by the first true leaves. This contrasts with hypogeal germination where the cotyledons stay below ground and the first leaves emerge from the plumule.

Epigeal germination



Hypogeal germination



Children will observe that seeds do not all germinate in exactly the same way, but at this stage in their learning focus only on the common features of a radicle emerging first and growing into root, followed by the shoot which grows the first leaves.

Roots and shoots are sensitive to gravity so, no matter what orientation the seed is planted in, the root always grows downwards and the shoot upwards.