

NC Purpose of Study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Intent	Implementation	Impact
At Broadway Junior School we believe that a high quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational 'Big Ideas', pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. Science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills. The staff here ensure that all children are exposed to high quality teaching and learning experiences, which allow children to explore their outdoor environment and locality, thus developing their scientific enquiry and investigative skills. They are immersed in scientific vocabulary, which aids children's knowledge and understanding not only of the topic they are studying, but of the world around them. We intend to provide all children regardless of ethnic origin, gender, class, aptitude or disability, with a broad and balanced science curriculum.	Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following: Science will be taught in planned and arranged blocks by the class teacher, to have a subject specific approach. This is a strategy to enable the achievement of a greater depth of knowledge. Through our planning, we involve problem solving opportunities that allow children to find out for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning, so that all children keep up Teachers build upon the learning and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence. Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.	The impact and measure of this is to ensure children not only acquire the appropriate age related knowledge linked to the science curriculum, but also skills which equip them to progress from their starting points, and within their everyday lives. All children will have: - A wider variety of skills linked to both scientific knowledge and understanding, and scientific enquiry/investigative skills - A richer vocabulary which will enable to articulate their understanding of taught concepts - High aspirations, which will see them through to further study, work and a successful adult life.

Key Vocabulary

Plant Flowering plant Root Stem Trunk Leaf Flower Petal Seed Bulb Nutrients Water Transport Support Pollination Seed dispersal Germination Life cycle Healthy growth

Knowledge	Skills
- Identify and name the different parts of flowering plants. - Understand the function of roots, stems, leaves and flowers. - Know what plants need to grow and stay healthy. - Understand how water is transported through plants. - Recognise the role flowers play in the life cycle of flowering plants. - Explore different methods of seed dispersal. - Observe and describe plant growth over time.	- Observe plants closely using hand lenses. - Identify, classify and compare plants. - Set up simple comparative and fair tests. - Make predictions and record observations over time. - Measure plant growth accurately. - Record findings using tables, labelled diagrams and charts. - Draw conclusions from evidence. - Use scientific vocabulary to explain findings.

Enrichment Opportunities

- Plant bulbs or seeds for long-term observation.
- Wildflower identification walk.
- Create seed dispersal models.
- Gardening club activities.

Learning Objectives/End Points

Pupils will be able to:

- Identify the parts of a flowering plant and explain their functions.
- Explain what plants need to survive and grow well.
- Describe how water moves through a plant.
- Explain the purpose of flowers in plant reproduction.
- Describe different methods of seed dispersal.
- Use observations and investigations to answer questions about plants.

Key Questions/Learning Objectives/End Points

What are the parts of a flowering plant and what are their jobs? Identify and name the roots, stem, leaves and flowers of a flowering plant and explain their functions. Explain how each part of a flowering plant helps it survive and grow.	What is the life cycle of a flowering plant? Explore the stages in the life cycle of a flowering plant from seed to seed-producing adult plant. Describe the life cycle of a flowering plant using scientific vocabulary.	Function of a plant stem TAPS focussed assessment. How does water travel through a plant? Investigate how water is transported through the stem to the leaves and flowers. Explain that water is absorbed by the roots and transported through the stem to support healthy growth.	What do plants need to grow healthily? (TAPS Focused Assessment) Plan and carry out a comparative investigation to identify the conditions plants need for healthy growth. Use observations and evidence to explain the conditions plants need to survive and grow.	How does pollination help plants reproduce? Understand that pollen is transferred between flowers by insects, wind and other animals. Explain the role of pollination in the production of seeds.	How are seeds dispersed? Investigate different methods of seed dispersal and why they are important. Describe and compare methods of seed dispersal, explaining how they help plants reproduce and spread.
Plant Anatomy and Function – Identify the parts of a flowering plant (roots, stem, leaves, and flowers) and explain the function of each part. Observe and dissect flowering plants. Label the different parts and match each structure to its function. Compare a range of plants and discuss similarities and differences.	The Life Cycle of a Flowering Plant – Explore how flowering plants grow, reproduce and produce seeds. (Sequence the life cycle of a flowering plant from seed to mature plant. Observe flowers closely to identify where seeds develop and discuss germination.	Water Transport in Plants – TAPS Focussed Assessment Investigate how water moves through the stem to the rest of the plant. Place white flowers or celery in coloured water and observe changes over several days. Record observations using labelled diagrams and explain how water travels through the stem.	Children plan and carry out a comparative investigation to answer the question TAPS Focussed Assessment - "What do plants need to grow healthily?" They make predictions, identify variables, observe changes over time, record results, identify patterns and draw evidence-based conclusions.	Pollination Methods – Explore how pollen is transferred between flowers by insects, wind and other animals, leading to seed production. Investigate flower structures and model pollination. Compare insect-pollinated and wind-pollinated flowers.	Seed Dispersal – Investigate how seeds are dispersed by wind, water, animals and explosive mechanisms. Examine a variety of real seeds and fruits. Classify them according to their method of dispersal.

Substantive Knowledge

- Flowering plants have different parts, including roots, stems, leaves and flowers.
- Roots anchor the plant and absorb water and nutrients from the soil.
- Stems support the plant and transport water and nutrients.
- Leaves make food for the plant using sunlight.
- Flowers help plants reproduce by producing seeds.

- Plants need water, light, air, nutrients, space and a suitable temperature to grow well.
- Water is transported through the stem to the leaves and flowers.
- Seeds grow into new plants through germination.
- Seeds are dispersed in different ways, including by wind, animals, water and explosion.

Careers

Linking Curriculum Learning to Careers

Discuss how the skills developed in this unit are used in a range of careers, including:

- Gardener
- Farmer
- Horticulturist
- Botanist
- Florist
- Environmental scientist
- Conservationist
- Landscape gardener or designer
- Food scientist
- Park ranger
- Ecologist
- Agricultural scientist

Transferable skills such as Observation Curiosity Problem solving Teamwork Communication Recording and organisation Measuring Resilience Creativity Environmental responsibility

Learning from Career and Labour Market Information

- Children explore jobs connected to plants and nature, such as gardener, farmer, horticulturist, botanist, environmental scientist, florist, landscape designer and conservationist. They begin to understand that plants are important to industries including farming, food production, gardening and environmental protection.

Addressing the Needs of Each Pupil

- Children are encouraged to recognise their own interests and strengths. Practical investigations provide opportunities for all children to succeed and explore different roles, including observing, measuring, recording, designing and explaining.

Linking Curriculum Learning to Careers

Children learn how scientific knowledge about plants is used in real-life jobs. For example, farmers use knowledge about what plants need to grow, gardeners care for plants, scientists investigate plant life and conservationists protect habitats.

Encounters with Employers and Employees

- Where possible, children could meet or hear from a gardener, farmer, florist, horticulturist or environmental worker. Visitors can explain how scientific knowledge about plants is used in their daily work.

Experiences of Workplaces

- Enrichment opportunities such as visiting a garden centre, farm, allotment, park or community garden allow children to see plant-related careers in action and understand how different workplaces depend on scientific knowledge.

Suggested Careers Learning Activities

- Meet the Expert: Invite a gardener, farmer or horticulturist to talk about their job.
- Grower for the Day: Children take responsibility for planting and caring for seeds, discussing the skills needed by professional growers.
- Garden Centre Visit: Explore the different jobs involved in growing, selling and caring for plants.
- Plant Scientist Investigation: Children take on the role of scientists and investigate what plants need to grow healthily.
- Seed Dispersal Engineer: Children design and test their own seed dispersal models.
- Career Spotlight: Introduce one plant-related career during each lesson and discuss how the scientific knowledge being learned could be used in that job.

Careers Questions

- Who works with plants and why are their jobs important?
- How does a farmer use science to grow food?
- What does a botanist or plant scientist do?
- How do gardeners help plants grow and stay healthy?
- Who helps to protect plants and wildlife?
- Which skills am I using when I investigate plants?
- Could my science skills be useful in a future job?