

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

Nutrition, nutrients, balanced diet, carbohydrates, proteins, fats, vitamins, minerals, fibre, skeleton, bones, muscles, support, protection, movement, vertebrate, invertebrate, skull, rib cage, spine, joints, contract, relax, energy.

Knowledge	Skills
Children will know: - Animals need nutrition to survive and grow. - Different food groups provide different nutrients. - A balanced diet is important for health. - Humans and some animals have skeletons for support and protection. - Skeletons allow movement with the help of muscles. - Muscles work by contracting and relaxing. - Not all animals have skeletons (invertebrates). - Skeletons can be compared between animals	By the end of the unit, pupils will be able to: - Identify food groups and explain their importance. - Describe what a balanced diet is. - Identify animals with and without skeletons. - Compare skeletons of different animals. - Explain how muscles work. - Carry out simple investigations. - Record observations and data. - Use scientific vocabulary accurately. Draw conclusions from evidence

Enrichment Opportunities	Learning Objectives/End Points
- Plan and design a healthy meal - Visit a local supermarket to explore food labels - Model skeletons using pasta or craft materials - PE link: investigate how muscles work during exercise - Cookery activity focusing on balanced diets - Outdoor movement investigations (jumping, running, stretching)	- Pupils will be able to: - Identify food groups and explain why we need a balanced diet - Describe the role of skeletons and muscles - Compare skeletons of different animals - Explain how muscles support movement - Record and interpret simple scientific evidence - Carry out a structured scientific investigation

Key Questions/Learning Objectives/End Points					
To identify food groups and understand nutrition. Sort foods into groups and design a balanced meal.	To explain what a balanced diet is. Analyse food labels and build a "healthy plate".	To identify animals with and without skeletons. Sort animals into vertebrates and invertebrates.	To investigate and compare skeletons. Skeleton Investigation (TAPS): compare animal skeletons and identify patterns.	To explain how muscles help movement. Model muscle movement using elastic bands/cardboard models.	To apply knowledge of nutrition, skeletons and muscles. Create a "Healthy Human Body Guide"
Lesson 1 – Food Groups Learning Objective: To identify food groups and understand nutrition. Starter (10 mins) Show a variety of foods. Ask: Why do we eat food? Main (40 mins) Teach main food groups. Children sort foods into groups. Discuss why each group is important. Plenary (10 mins) Which food group gives us energy?	Lesson 2 – Balanced Diet Learning Objective: To explain what a balanced diet is. Starter (10 mins) Ask: Can we just eat sweets and chocolate? Why not? Main (40 mins) Explore food labels. Build a balanced plate using food images. Discuss moderation. Plenary (10 mins) What makes a diet "balanced"?	Lesson 3 – Skeletons in Animals Learning Objective: To identify animals with and without skeletons. Starter (10 mins) Show different animals. Ask: What do they have inside their bodies? Main (40 mins) Introduce vertebrates and invertebrates. Sort animals into groups. Discuss skeleton functions. Plenary (10 mins) Why do some animals not need skeletons?	Lesson 4 – TAPS Focused Assessment: Investigating Skeletons Learning Objective: To investigate and compare skeletons. Starter (10 mins) Show skeleton images of different animals. Ask: What is similar and different? Main (40 mins) Children investigate skeletons of animals (human, bird, fish, frog, etc.). Compare: size shape function Record findings in tables or diagrams. Identify patterns (e.g. movement adaptations). Plenary (10 mins) What patterns did you notice between skeletons and movement?	Lesson 5 – Muscles and Movement Learning Objective: To explain how muscles help movement. Starter (10 mins) Flex arm and feel muscle movement. Ask: What is happening under your skin? Main (40 mins) Teach that muscles contract and relax. Model movement using simple models (e.g. elastic bands). Link muscles to bones. Plenary (10 mins) Why do we need both muscles and skeletons?	Lesson 6 – Applying Learning Learning Objective: To apply knowledge of nutrition, skeletons and muscles. Starter (10 mins) Quick quiz on key vocabulary. Main (40 mins) Create a "Healthy Human Body Guide" including: balanced diet skeleton function muscle movement Or complete assessment task. Plenary (10 mins) Exit ticket: One food group I understand One function of the skeleton One fact about muscles

Substantive Knowledge

- Living things need nutrition to survive.
- Food provides energy and essential nutrients.
- Skeletons support, protect and enable movement.
- Muscles work in pairs to move bones.
- Not all animals have internal skeletons.
- Skeletons vary across species but share common functions.
- Scientific investigations can compare biological structures

Careers

Linking Curriculum Learning to Careers

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

- Doctor
- Nurse
- Dentist
- Physiotherapist
- Occupational therapist
- Dietitian
- Nutritionist
- Sports scientist
- Personal trainer
- PE teacher
- Vet
- Veterinary nurse
- Zoologist
- Animal behaviourist
- Wildlife worker
- Conservationist
- Animal care worker
- Biologist
- Biomedical scientist
- Scientist
- Laboratory technician

Transferable skills such as Curiosity Observation Investigation Problem solving Teamwork Communication
Research Organisation Attention to detail Classification Data handling Critical thinking Decision making
Creativity Resilience Responsibility Confidence

Learning from Career and Labour Market Information

- Children will explore the wide range of jobs linked to health, animals, food, sport and science, helping them understand that these areas offer many different career opportunities.

Addressing the Needs of Each Pupil

- Children will be introduced to a wide range of careers and encouraged to think about their own interests and strengths. Activities allow children to learn about careers through practical, visual and discussion-based activities.

Linking Curriculum Learning to Careers

Children will make direct links between Science and careers such as doctor, dietitian, physiotherapist, vet, zoologist, sports scientist and biomedical scientist.

Encounters with Employers and Employees

- Where possible, children could hear from people working in health, sport, animal care, nutrition or science through visitors, videos, interviews or virtual encounters.

Experiences of Workplaces

- Children can explore different workplaces such as hospitals, veterinary surgeries, laboratories, gyms, sports centres, farms and food businesses.