**Intent**

At King Edwin Primary School, the teaching of Science:

* Enables children to make sense of the world around them.
* Explores the importance of Science and how scientists have led to huge developments in our country and the rest of the world.
* Encourages children to ask and seek answers to questions about how and why things work.
* Provides rich experiences within the classroom, the local community and beyond.
* Embeds a secure knowledge of science alongside the skills of working scientifically.

Our curriculum incorporates a diverse range of scientific enquiries, such as investigating the effect of light on the rate of photosynthesis and exploring how different materials conduct heat, which places emphasis on the scientific method. These activities encourage critical thinking, provide hands-on activities, use models such as the solar system to explain abstract concepts, and foster reflection and discussion.

Pupils ‘are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future’. Our curriculum links scientific concepts to real-world applications, fosters discussions on the ethical and societal impacts of scientific developments, and encourages pupils to think critically about how science influences the future in fields like sustainability and health.

**Implementation**

We follow the National Curriculum for Science, which sets out the statutory programmes of study for each year group from Year 1 to Year 6. It is progressive and learning builds throughout the years. Please follow the link below for further information.

[National Curriculum Science](https://www.gov.uk/government/publications/national-curriculum-in-england-science-programmes-of-study/national-curriculum-in-england-science-programmes-of-study)

Throughout the curriculum, there are three main threads: Physics, Biology and Chemistry. The threads are informed by the big ideas in science, framed as accessible 'big questions'. These big ideas revisit and develop scientific knowledge and understanding with increasing complexity over time.

| **Biology** | **Physics** | **Chemistry** |
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| What are living things and what are they made of?  How do living things grow and reproduce?  How do living things live together in their environments?  Why are there similarities and differences between living things?  How do living things stay healthy? | How do we explain how substances behave?  What are things made of?  How can substances be made and changed?  How can we explain changes in the air, land, and oceans? | Why do materials have different properties?  How do forces make things happen?  How do we see, hear, and communicate?  How do electricity and magnetism work?  How does the Earth fit into the Universe? |

In our lessons, practical work is purposeful and clearly linked to curriculum content. Video clips and GIFs help pupils visualise techniques before they engage in the activities, ensuring they understand the procedures. If hands-on practicals aren’t possible, lessons include videos that demonstrate equipment use.

At King Edwin Primary School, we support children’s learning by exploring the outdoors through our beach school visits. We encourage curiosity through science investigations in and around school as well as focusing on ‘Working Scientifically’. We work with outside agencies to enhance our science curriculum, such as Kielder Observatory, the Ogden Trust and The British Ecological Society. Pupils are encouraged to see science everywhere and to understand its importance in the world.

**Impact**

It is our aim that children will retain knowledge and skills taught within each unit of work, remember these and understand how to use and apply these in their own science, whilst beginning to understand what being a scientist means.

At King Edwin Primary School, we are able to measure the impact that Science has had for all children by:

* Determining the extent to which objectives are met within each lesson and overall, at the end of each unit.
* Reviewing images of the children’s practical learning.
* Talking to the pupils about their learning (pupil voice).
* Holding moderation staff meetings where pupil’s books are discussed and there is the opportunity for a dialogue between teachers to understand their pupils’ work.
* Annual reporting of standards across the curriculum.

By the time children leave King Edwin Primary School, we want them to have developed a keen interest in Science, working both independently and collaboratively. They will have grown in confidence when using a range of scientific skills, becoming a scientist who can apply these skills and knowledge that they have developed throughout the years, making conclusions and finding answers.

**Science Whole School Overview**

| **Year Group** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS** | **Throughout the year children cover the key knowledge and understanding of the world statements. Children will:**  Explore the natural world around them.  Understand the effect of changing seasons on the natural world around them.  Describe what they see, hear and feel whilst outside  Recognise some environments that are different to the one in which they live.  *Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices (PSED)*  *Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps (KUW)*  *Explore the natural world around them, making observations and drawing pictures of animals and plants (KUW)*  *Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter (KUW)* | | | **Children will cover these statements through a combination of adult led and child initiated activities throughout a range of topics over the year.**  **Children will have the opportunity to:**  Discover the properties of different materials through exploration and play i.e. floating and sinking, waterproof materials etc  Look in depth at the season of Winter and how the environment around them changes - weather, plants and animals.  Talk about how to stay warm and the importance of staying warm in winter  Discuss how to stay healthy and why this is important for our body.  Learn about foods which are healthy and unhealthy and why this is important  Find out what happens to our teeth if we do not care for them properly.  Explore the arctic and antarctic, particularly the animals that live theri discussing how they adapt to their environment in different ways.  Discuss how the world around us changes in summer time  Learn about plants and what they need to grow  Find out about the life cycle of hens, butterflies and frogs.  Talk about the different parts of their body, beginning to explore more specific vocabulary. | | |
| **1** | Everyday Materials (7 lessons)  ***Threads***  *BQ06 Chemistry: How do we explain how substances behave?*  *BQ07 Chemistry: What are things made of?*  *BQ10 Physics: Why do materials have different properties?*  Pupils will draw upon prior exploration of different materials in EYFS and their own everyday experiences. In this unit, pupils will build on this knowledge to identify and name everyday materials and describe their simple physical properties | Seasonal Changes - Autumn and Winter (5 lessons)  ***Threads***  *BQ03 Biology: How do living things live together in their environments?*  *BQ12 Physics: How do we see, hear and communicate?*  *BQ14 Physics: How does the Earth fit into the Universe?*  Pupils will draw upon prior exploration of seasons and weather in EYFS and their own everyday experiences. In this unit Seasonal changes: autumn and winter unit, pupils will build on this knowledge to observe changes across the four seasons and describe associated weather | Naming and Grouping Animals (6 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ04 Biology: Why are there similarities and differences between living things?*  Pupils will draw upon prior learning about animals in EYFS and their own everyday experiences. In this Naming and grouping animals unit, pupils will build on this knowledge to identify and name a variety of common animals and learn about different ways animals can be grouped | Human Body Parts (6 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ04 Biology: Why are there similarities and differences between living things?*  *BQ12 Physics: How do we see, hear and communicate?*  Pupils will draw upon prior learning about the human body in EYFS and their own everyday experiences of using their senses. In this Human body parts unit, pupils will build on this knowledge to identify and name a greater range of basic body parts, including those associated with their senses | Seasonal Changes - Spring and Summer (5 lessons)  ***Threads***  *BQ03 Biology: How do living things live together in their environments?*  *BQ12 Physics: How do we see, hear and communicate?*  *BQ14 Physics: How does the Earth fit into the Universe?*  Pupils will draw upon prior exploration of seasons and weather in EYFS and their own everyday experiences. In this unit Seasonal changes: spring and summer unit, pupils will build on this knowledge to observe changes across the four seasons and describe associated weather | Plants (7 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ04 Biology: Why are there similarities and differences between living things?*  Pupils will draw upon exploration of growing and caring for plants in EYFS and their own everyday experiences. In this Identifying plants and their basic parts unit, pupils will build on this knowledge to identify and name a variety of common plants and describe their basic structure |
| **2** | Everyday Materials (8 lessons)  ***Threads***  *BQ07 Chemistry: What are things made of?*  *BQ08 Chemistry: How can substances be made and changed?*  *BQ10 Physics: Why do materials have different properties?*  In the Everyday materials unit, pupils learnt to identify and name a variety of everyday materials. In this Uses of everyday materials unit, pupils will build on this knowledge to compare the suitability of everyday materials for particular uses | Living things and where they live (7 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ03 Biology: How do living things live together in their environments?*  In the Naming and grouping animals and Identifying plants and their parts units, pupils learnt to identify and name a variety of common plants and animals. In this unit, pupils will build on this knowledge to identify and name plants and animals in their habitats, including micro-habitats | New Life (5 lessons)  ***Threads***  *BQ02 Biology: How do living things grow and reproduce?*  *BQ05 Biology: How do living things stay healthy?*  In the Naming and grouping animals unit, pupils learnt to identify and name a variety of common animals. In this New life unit. pupils will build on this knowledge to learn that animals have basic needs for survival (water, food and air) | Healthy Me (6 lessons)  ***Threads***  *BQ05 Biology: How do living things stay healthy?*  In the Human body parts unit, pupils learnt to identify, name, draw and label the basic parts of the human body. In this Healthy me unit, pupils will build on this knowledge to describe ways in which we can look after our bodies and explain why it is important to do so. | Introduction to Food Chains (4 lessons)  ***Threads***  *BQ03 Biology: How do living things live together in their environments?*  In the naming and grouping animals and Identifying plants and their basic parts units, pupils learnt to identify and name a variety of common plants and animals. In this Introduction to food chains unit, pupils will build on this knowledge to identify and name plants and animals as sources of food in a food chain | Growing Plants (7 lessons)  ***Threads***  *BQ02 Biology: How do living things grow and reproduce?*  *BQ05 Biology: How do living things stay healthy?*  In the Identifying plants and their basic parts unit, pupils learnt to identify and name a variety of common wild and garden plants. In this Growing plants unit, pupils will build on this knowledge to observe and describe how seeds and bulbs grow into mature plants |
| **3** | Rocks and Soils (8 lessons)  ***Threads***  *BQ07 Chemistry: What are things made of?*  *BQ09 Chemistry: How can we explain changes in the air, land and oceans?*  *BQ10 Physics: Why do materials have different properties?*  In the Uses of everyday materials unit, pupils learnt to identify and compare the suitability of materials, including rock. In this Rocks and soils unit, pupils will build on this knowledge to compare and group different kinds of rocks on the basis of their appearance and simple physical properties. | Introduction to the human skeleton and muscles (7 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  In the Human body parts unit, pupils learnt to describe and compare the structure of common animals and identify and name the basic parts of the human body. In this The human skeleton and muscles unit, pupils will build on this knowledge to identify and name some common bones in the human skeleton | Simple Forces including Magnets (6 lessons)  ***Threads***  *BQ11 Physics: How do forces make things happen?*  *BQ13 Physics: How do electricity and magnetism work?*  In the Everyday materials unit, pupils learnt to compare and group together materials on the basis of their simple physical properties. In this Simple forces including magnets unit, pupils will build on this knowledge to compare and group materials on the basis of whether they are attracted to a magnet or not | Light and Shadows (6 lessons)  ***Threads***  *BQ10 Physics: Why do materials have different properties?*  *BQ12 Physics: How do we see, hear and communicate?*  In the Everyday materials unit, pupils became familiar with the names of common materials and properties such as opaque and transparent. In this Introduction to light and shadows unit, pupils will build on this knowledge to recognise that shadows are formed when light is blocked by an opaque object | Healthy Eating (5 lessons)  ***Threads***  *BQ02 Biology: How do living things grow and reproduce?*  *BQ03 Biology: How do living things live together in their environments?*  *BQ05 Biology: How do living things stay healthy?*  In the Healthy me unit, pupils learnt about the importance for animals, including humans, to eat the right amounts of different types of food. In this Healthy eating unit, pupils will build on this knowledge to learn that animals, including humans, need the right types and amounts of nutrition from food | What Plants Need (7 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ02 Biology: How do living things grow and reproduce?*  In the Growing plants unit, pupils learnt that plants need water, light and a suitable temperature to grow and stay healthy. In this What plants do and what they need unit, pupils will build on this knowledge to explore a greater number of requirements of plants for life and growth and how they vary from plant to plant |
| **4** | Introduction to states of matter and changing states (8 lessons)  ***Threads***  *BQ07 Chemistry: What are things made of?*  *BQ08 Chemistry: How can substances be made and changed?*  *BQ10 Physics: Why do materials have different properties?*  In the Everyday materials unit, pupils learnt to compare and group together a variety of everyday materials on the basis of their simple physical properties. In this Introduction to states of matter and changing states unit, pupils will build on this knowledge to compare and group materials together according to whether they are solids, liquids or gases | Simple Electrical Circuits (7 lessons)  ***Threads***  *BQ12 Physics: How do we see, hear and communicate?*  *BQ13 Physics: How do electricity and magnetism work?*  In the Everyday materials unit, pupils learnt to identify and name a variety of everyday materials, including wood, plastic, glass and metal. In this Simple electrical circuits unit, pupils will build on this knowledge to recognise some common conductors and insulators, and associate metals with being good conductors | Introduction to the Human Digestive System (6 lessons)  ***Threads***  *BQ05 Biology: How do living things stay healthy?*  In the Human body parts units, pupils learnt to identify and name the basic parts of the human body. In this The human digestive system unit, pupils will build on this knowledge to identify different types of teeth and the basic parts of the digestive system in humans | Living Things and Their Environments (6 lessons)  ***Threads***  *BQ03 Biology: How do living things live together in their environments?*  *BQ04 Biology: Why are there similarities and differences between living things?*  In the Living things and where they live unit, pupils learnt that things can be grouped into: alive, dead and never alive. In this Living things in the environment unit, pupils will build on this knowledge to recognsie that living things can be grouped in a wider variety of ways | More About Food Chains (5 lessons)  ***Threads***  *BQ03 Biology: How do living things live together in their environments?*  In the Introduction to food chains unit, pupils learnt to use the idea of a simple food chain to identify and name different sources of food. In this More about food chains unit, pupils will build on this knowledge to construct and interpret a variety of food chains | Introduction to Sound (7 lessons)  ***Threads***  *BQ10 Physics: Why do materials have different properties?*  *BQ12 Physics: How do we see, hear and communicate?*  Pupils will draw upon exploration of making and listening to different sounds in EYFS and their own everyday experiences. In this Introduction to sound unit, pupils will build on this knowledge to identify how sounds are made, associating some of them with something vibrating |
| **5** | Properties and Changes in Materials (8 lessons)  ***Threads***  *BQ06 Chemistry: How do we explain how substances behave?*  *BQ07 Chemistry: What are things made of?*  *BQ10 Physics: Why do materials have different properties?*  In the Everyday materials unit, pupils learnt to compare and group together a variety of everyday materials on the basis of their simple physical properties. In this Properties, changes and separating materials, pupils will build on this knowledge to compare an group together everyday materials on the basis of a wider variety of properties | Forces including Simple Machines (7 lessons)  ***Threads***  *BQ11 Physics: How do forces make things happen?*  In the Simple forces including magnets unit, pupils learnt to compare how things move on different surfaces. In this Forces including simple machines unit, pupils will build on this knowledge to identify the effects of air resistance, water resistance and friction, that act between moving surfaces | Earth, Sun and Moon (6 lessons)  ***Threads***  *BQ14 Physics: How does the Earth fit into the Universe?*  In the Seasonal changes units, pupils learn that day length varies throughout the year. In this Earth, Sun and Moon unit, pupils will build on this knowledge to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky | Reproduction and Life Cycles - Animals (6 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ02 Biology: How do living things grow and reproduce?*  *BQ04 Biology: Why are there similarities and differences between living things?*  In the New life unit, pupils learnt that animals, including humans, have offspring which grow into adults. In this Reproduction and life cycles: animals unit, pupils will build on this knowledge to describe the differences in life cycles of different animal groups | Reproduction and Life Cycles - Plants (5 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ02 Biology: How do living things grow and reproduce?*  *BQ04 Biology: Why are there similarities and differences between living things?*  In the What plants do and what they need unit, pupils learnt to explore the part that flowers play in the life cycle of flowering plants. In this Reproduction and life cycles: plants unit, pupils will build on this knowledge to describe the life processes of reproduction in some plants | Human Development (7 lessons)  ***Threads***  *BQ02 Biology: How do living things grow and reproduce?*  In the New life unit, pupils learnt that animals, including humans, have offspring which grow into adults. In this Human development unit, they will build on this knowledge to describe the changes as humans develop to old age |
| **6** | Keeping Healthy (8 lessons)  ***Threads***  *BQ05 Biology: How do living things stay healthy?*  In the Healthy me unit, pupils learnt to describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. In this Keeping healthy unit, pupils will build on this knowledge to recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function | Human Circulatory System (7 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ05 Biology: How do living things stay healthy?*  In the Healthy eating unit, pupils learnt that animals, including humans, cannot make their own food; they get nutrition from what they eat. In this The human circulatory system unit, pupils will build on this knowledge to recognise ways in which nutrients and water are transported within animals including humans | Why We Group and Classify Living Things (6 lessons)  ***Threads***  *BQ01 Biology: What are living things and what are they made of?*  *BQ02 Biology: How do living things grow and reproduce?*  *BQ04 Biology: Why are there similarities and differences between living things?*  In the Living things and the environment unit, pupils learnt to recognise that living things can be grouped in a variety of ways. In this Why we group and classify living things unit, pupils will build on this knowledge to give reasons for classifying plants and animals based on specific characteristics | Evolution and Inheritance (6 lessons)  ***Threads***  *BQ02 Biology: How do living things grow and reproduce?*  *BQ03 Biology: How do living things live together in their environments?*  *BQ04 Biology: Why are there similarities and differences between living things?*  In the New life unit, pupils learnt that animals, including humans have offspring which grow into adults. In this Evolution and Inheritance unit, pupils will build on this knowledge to recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to parents | Light and How it Travels (5 lessons)  ***Threads***  *BQ10 Physics: Why do materials have different properties?*  *BQ12 Physics: How do we see, hear and communicate?*  In the Introduction to Light and shadows unit, pupils learnt that shadows are formed when the light from a light source is blocked by an opaque object. In this Light and how it travels unit, pupils will build on this knowledge to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | Changing Circuits (7 lessons)  ***Threads***  *BQ12 Physics: How do we see, hear and communicate?*  *BQ13 Physics: How do electricity and magnetism work?*  In the Simple electrical circuits units, pupils learnt to construct a simple series electrical circuit, identifying and naming its basic parts. In this Changing circuits unit, pupils will build on this knowledge to compare and give reasons for variations in how components in a circuit function |