Opportunities

Resilience

Wellbeing

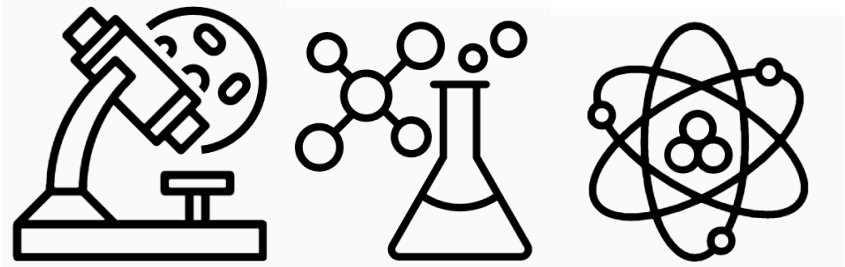
Challenge

kNowledge

Underpinned by our Christian Values

CROWN CURRICULUM

Science



#everythingispossible

Our School Vision

For with God, everything is possible

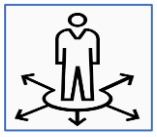
(Matthew 19:26)

#everythingispossible

Through our continued service to our community and rooted in our Christian Values, the opportunities we provide, inspire our children and adults at our school to learn, to grow and to flourish. We are committed to developing our children into confident individuals who make a positive difference through developing a respect for themselves, each other and the world around them. For with God, everything is possible. (Matthew 19:26)

Our Five Crown Principles





Challenge Resilience Opportunities Wellbeing kNowledge

Our five Crown Principles drive our Science curriculum.

Rationale for our Science Curriculum

Challenge

Our ambitious curriculum is the challenge for our children Through the 'challenge' curriculum driver we want our children relish challenges that being a scientist can bring. We want to ensure that the children have a secure understanding of the subject disciplines: Biology, Chemistry and Physics.

Resilience

Through the 'resilience' curriculum driver, we promote optimism and determination in Science. The Working Scientifically Cycle promotes resilience as children are encouraged to consider variables, value their mistakes. Children are encouraged to be resilient when working through the difference stages of scientific investigations.

Opportunities

Through 'opportunities', we raise aspirations to broaden our children's horizons – opening their eyes to the myriad careers they might pursue. Through careful planning, we have chosen key scientists, including women in STEM for the children to aspire to be. We invite scientists into school to provide tangible role models to raise our pupils' aspirations. We have a celebration of science once a year, hosting a science fair for all stakeholders to enjoy. We want our pupils to have a clear understanding of the link between achieving well and having goals for the future.

Wellbeing

At Queen's Park, we understand that happiness is linked to personal growth, health and development. We ensure our children are happy, healthy individuals. In biology, a huge focus is on wellbeing and looking after your body – physically and mentally. With 'wellbeing' as a curriculum driver, we give children the confidence to thrive in

a diverse, global society and be respectful citizens with British and Christian Values at the core.

kNowledge

Through the 'kNowledge' curriculum driver, we encourage our children to be resourceful learners. It is uniquely challenging and coherent to our children. The knowledge imparted in science is crafted by our curriculum leader and science subject leader to ensure that all pupils achieve secure substantive and disciplinary knowledge in science. All our teachers teach with the aim to ensure pupils have sufficient knowledge to progress through primary school and beyond, using our science road maps, the knowledge is carefully mapped out across each year group in biology, chemistry and physics.

Being a Scientist means that disciplinary and substantive knowledge complement each other harmoniously. Before every unit of work, we ensure all children are aware of what 'being a biologist', 'chemist' and 'physicist' entails.

Through disciplinary literacy, all children read like scientists: reading graphs, tables, research, texts linked to science. Reading is the 'beating heart' of our science curriculum.

Science Long Term Plan

Queen's Park 'Crown Curriculum' - all our planning is based on our key principles and intent for our curriculum *Challenge Resilience Opportunities Wellbeing kNowledge*						
Year Group	Topics and skills can be taught in any order to enable creative planning of our 'Crown Curriculum'					
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
EYFS	Throughout the year, children in EYFS will explore and learn to understand the world around them. They will explore the natural world, mak observations and drawing pictures of animals and plants; and learn to understand some important processes and changes in the natural world arou them, including the seasons and changing states of matter. We also explore and expose the children to Everyday Materials (and some of their properti Living Things and Their Habitats, Animals including humans, Light and Forces. These are explored through literacy, during provision or by follow children's interests.					
Year 1	Seasonal changes (Revisited throughout the year)	Everyday materials	Plants		Animals including humans	
Year 2	Living things and their habitats	Uses of everyday materials		Plants	Animals including humans	
Year 3	Rocks	Forces and magnets		Plants	Animals including habitats	Light
Year 4	Sound	States of Matter	Electricity	Living things and their habitats	Animals including habitats	
Year 5	Earth and Space	Properties of materials	Forces	Living things and their habitats	Animals including humans	
Year 6	Living things and their	Electricity			Animals including	Evolution and

Science is taught four to five times throughout the year.

Progression documents

#everythingispossible

Our progression documents have been created by the Curriculum Leader and Science Subject Leader to ensure clear progress in the three disciplines of Science: Biology, Chemistry, Physics.

The progression documents show key knowledge (substantive knowledge), key vocabulary and key skills (disciplinary knowledge) and assessment outcomes from EYFS – Year 6.

Progression of knowledge, vocabulary, skills and suggested assessment outcomes in Biology

	Key knowledge progression to be explicitly taught throughout unit of work (and revised constantly through retrieval practice)	Key vocabulary All vocabulary on Crown Planners (to be explicitly taught)	Key skills progression	Assessment outcome
	EYFS – A foundation of scientific skills and knowledge Pupils should be taught to • Ask questions • Talk about what they see using a wide vocabulary • Use talk to help work out problems and organise thinking and activities • To explain how things work and why they might happen • Articulate their ideas and thoughts in well-formed sentences • Use new vocabulary in different contexts (linked to the vocabulary on the Year One crown planners) • Daily weather discussions • Understanding the effects of changing seasons on the natural world around us • Describe what they can see, hear and feel whilst outside • Explore the natural world around them • Begin to understand the need to care and respect for the natural environment and all living things • Recognise that some environments are different to the one which they live • Know some similarities and differences between the natural world around them and contrasting environments • Plant seeds and care for growing plants • Understand the key features of the life cycle of a plant and an animal • Make observation and drawings of animals and plants • Make healthy choices about food, drink, activity and toothbrushing			

PLANTS	YEAR ONE Pupils should be taught to: • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees.	YEAR ONE Leaf (noun) Stem (noun) Root (noun) Bulb (noun) Deciduous (adjective) Evergreen (adjective)	YEAR ONE • I know the name the roots, trunk, branches and leaves of a tree. • I know the name the petals, stem, leaf and root of a plant. • I know the name a variety of common wild and garden plants	YEAR ONE Name and label plants and trees. Label the parts of a flowering plant
	YEAR TWO Pupils should be taught to: • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	YEAR TWO Seedlings (noun) Shoot (noun) Suitable (noun) Healthy (adjective) Temperature (noun) Germination (noun) Reproduction (noun)	YEAR TWO • I know and can describe how seeds and bulbs grow into plants. • I know and can describe what plants need in order to grow and stay healthy (water, light & suitable temperature).	YEAR TWO Explain how different conditions effect how plants grow

Vocabulary is V.I.T.A.L in Science

Valued

We value vocabulary in Science and in everything we do.

Identified

Science vocabulary is identified by the science subject leader and is explicitly planned for.

Taught

Vocabulary is explicitly taught in every lesson. Our Crown Planners are used as a teaching tool for key scientific vocabulary and the science medium-term plans include additional vocabulary to be taught.

Applied

Once vocabulary is taught, it is applied. Children apply their vocabulary in their speaking and listening, writing and assessment outcomes in Science.

Learned

Vocabulary is revisited and relearned. Vocabulary sticks in the children's long-term memory. Lesson by lesson, year by year, children revisit and relearn key vocabulary.

#everythingispossible

Early Years Foundation Stage

Through an **'explosion of experiences'**, our youngest scientists are exposed to the foundations of their scientist learning. Carefully planned scientist knowledge, skills and experiences are provided for our children. High quality books, stories and rhymes are the beating heart of our science curriculum in EYFS. Scientific vocabulary is planned for. Staff are role models in demonstrating scientific vocabulary and this is further enhanced in our excellent provision. The foundations of scientific learning in EYFS is linked to Year 1 and beyond.

Year 1 to Year 6

Year on year, children will build upon their scientific knowledge, skills and vocabulary. The curriculum leader and science subject leader have created a meaningful, sequential learning journey through science. Careful curriculum thinking and planning ensures that our children have the subject knowledge and components embedded in their long-term memories.

#everythingispossible

Implementation

Pedagogy

Both our staff and children are enthusiastic about science. Through ongoing CPD, we strive to ensure our teachers have expert knowledge of the science they teach. Our pedagogy is firmly based upon our curriculum intent of embedding concepts into long-term memory so that they are able to be recalled, to ensure substantive and disciplinary knowledge and skills can be applied fluently.

Our 'Queen's Park Quality First Teaching' model ensures that lessons are effectively sequenced so that new knowledge and skills build on what has been taught before and towards defined end points.

We firmly believe that all children should have full access, including those with additional needs, to our science curriculum therefore lessons are scaffolded where appropriate in order to meet the needs of all our children

Lesson Structure

The sequence of lessons across science follows the same structure:

Phase 1 - Revise
- Pre- assessment task
- Prior learning revisited - Spaced Retrieval task
- Key question introduced
- Crown Planner shared
- We are 'biologist', 'chemists' or 'physisists'

Phase 2 - New learning
- Medium term planning to inform lessons
- Knowledge-rich lessons
- Vocabulary explicitly taught
- Reference to Crown Planners throughout
- Queen's Park Quality First Teaching

Phase 3 - Review
- Post-assessment task
- Children know more and remember more

Each lesson, within the sequence, follows the structure so prior knowledge is constantly revisited and transferred to long term memory.

Phase 1 - Revise
- Spaced Retrieval Lesson Starter - key knowledge revision
- Reference to key question
- Vocabulary (some will be tier 3 - subject specific words)
- Crown Planner shared

Phase 2 - New learning
- Queen's Park Quality First Teaching
- New knowledge taught
- New skills taught
- Crown Planners to be used as a point of reference

Phase 3 - Review
- Revise and review - knowledge and vocabulary
- Formative assessment / low-stakes quiz

#everythingispossible

Crown Planners

Our Crown Planners support our children with vocabulary and key knowledge for each unit of work. They enhance children's understanding of key concepts, present information clearly and promote appropriate discussion.

Crown Planner - Year Two **Biology: Animals including humans**

Year group: 2		Subject: Science (Biology)	Term: Summer
WOW/Starting Question – How to be a healthy, happy human!			**Key Knowledge**
Key vocabulary:			
Hygiene (noun)	keeping yourself and your surroundings clean, especially in order to prevent illness or the spread of diseases	**Eatwell Plate** 	**How to wash your hands to stop the spread of germs** 
Nutrition (noun)	taking food into the body and absorbing the nutrients in those foods.		
Reproduce (verb)	When people, animals, or plants reproduce, they produce young.		
Offspring (noun)	a person's children or an animal's young as their offspring.		
Healthy (adjective)	Being well and not suffering from any illness.		
1. food 2.water 3.shelter 4.climate 5.oxygen			

Impact

We understand that we may not see the true impact of our science curriculum on our children as our science curriculum is just the beginning of a lifetime of learning.

Our well-constructed and well-taught science curriculum leads to great outcomes. Our results are a reflection of what our children have learnt. At Queen's Park, our philosophy is that broad and balanced leads to great outcomes and meeting end points at the end of each key stage.

#everythingispossible

National assessments are useful indicators of the outcomes our children achieve.

We ensure all groups of children are given the knowledge and cultural capital they need to succeed in life. We strive to ensure that our children are equipped with the skills (through a growth mindset approach) to fluently be able to retrieve key facts from their semantic memory.

The quality of our children's work, at every stage, is of a high standard. All learning is built towards an end point and at each stage of their education, we prepare our children for the next stage.

We ensure all our children read to a stage appropriate level and fluency. Reading is the beating heart of our science curriculum. Through disciplinary literacy in science lessons, the impact of reading on the children's science learning is paramount.

The impact of Queen's Park science curriculum is measured through the following:

- Assessment at the end of each unit of work
- Vocabulary and knowledge are assessed at the end of each lesson and at the end of each sequence
- Pupil voice
- Progress evident in children's books and record of experiences
- Seeking views of parents where appropriate