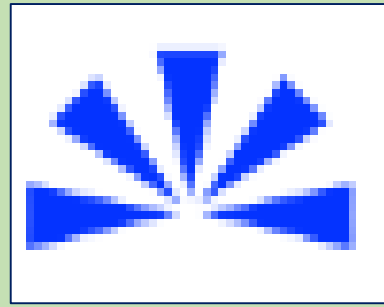




Belvedere Junior School PSQM



March 2024

"Science knows no country because knowledge belongs to humanity and is the torch which illuminates the world." Louis Pasteur



SLA: Subject Leadership is strengthened and developed through the creation and implementation of a clear vision for Science

Intent: Our vision at Belvedere Junior School is to raise the Science capital, to enable children to see themselves as scientists and understand that science is all around us through a shared investment and commitment to improve outcomes for all.

here-bexley.secure-dbprimary.com/bexley/primary/belvedere/site/pages/learning/subjects/science

Belvedere Junior School

Home Our School Wellbeing Learning Year Groups

SCIENCE VISION AT BELVEDERE JUNIOR SCHOOL

At Belvedere Junior School, we believe in growing children's science capital through enquiry-based opportunities and experiences. We believe that every child has the right to that 'science is possible for me' feeling. Our drive is to foster children's natural curiosity, to develop their ideas and critical thinking skills in order to give them a deeper understanding of the world and universe we live in. We aim to empower and motivate children to develop a lifelong love for science and engineering.

Science is all around us. A scientist observes, experiments, records and analyses data in order to make sense of findings and construct new knowledge.

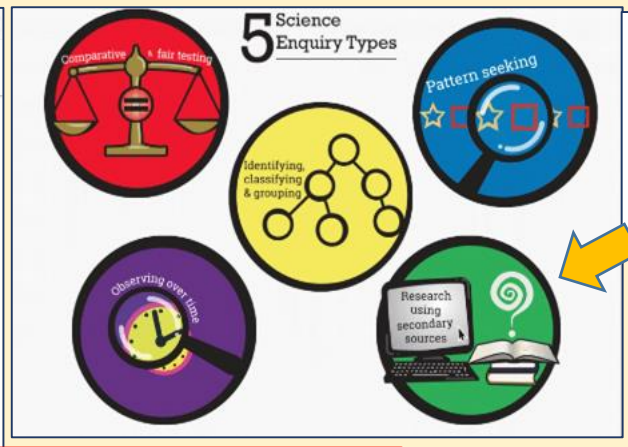
The world is driven by artificial intelligence and algorithms. STEM industries are vital for our futures. Our mission is to enable children to be successful global citizens.

We aim to develop scientific knowledge and understanding by designing and carrying out our own experiments.

We nurture children to enable them to flourish and fulfil their potential regardless of their backgrounds and circumstances.

We aspire to provide children with opportunities to make meaningful links between classroom learning and the real world.

At Belvedere Junior School we believe that it is vital that children are given the opportunity to explore young scientists to understand, through investigations and knowledge, how science has changed our world.



Our vision is to grow children's Science capital through enquiry-based opportunities and experiences. Teachers promote the five types of Scientific enquiry across the curriculum and enquiries are evident in every subject.

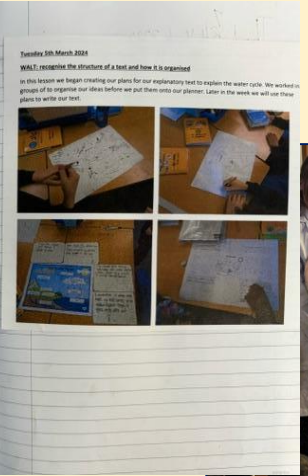
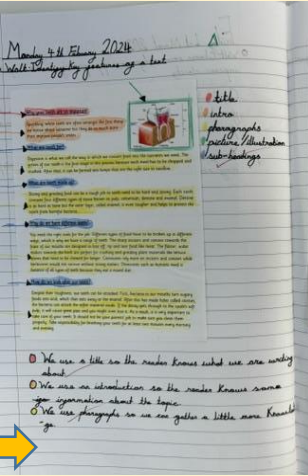
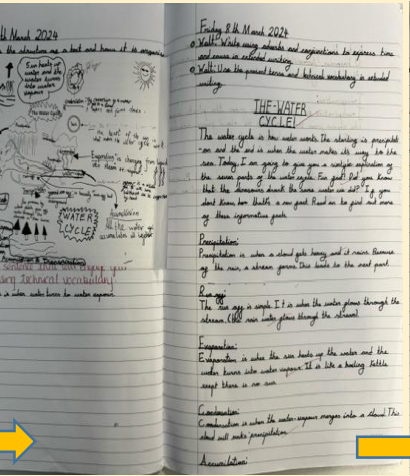
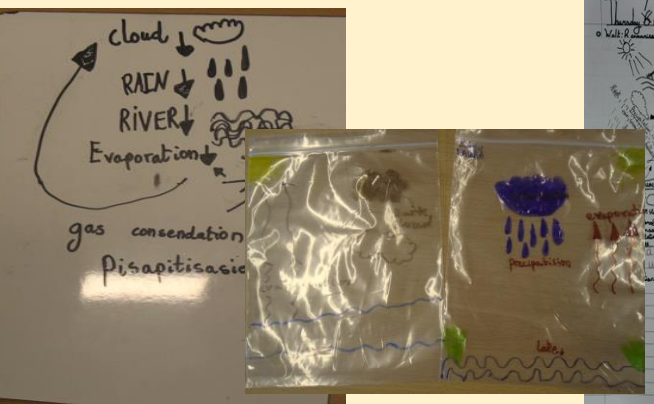


J25 Science Curriculum					
Year & Topic	Learning questions	Vocabulary	Knowledge	Skills	Enrichment
Year 3					
Aut. 16.2	What are the physical similarities and differences between me and other people? What are the roles of different nutrients in the body?	Nutrients - Healthy - Baby - Elderly	- To be able to identify how humans change as they get older - To be able to identify that animals, including humans, need the right types and amount of nutrients.	- To use own observations and ideas to suggest answers to questions	Diversity – (differences between me and other people)
Aut. 16.2	How many things should change when planning a scientific investigation? What is important in a good prediction? What types of teeth do I have and why are they important? What are the key parts of the digestion process? What conclusions can I share about the digestion process? What is important when taking or observing scientific measurements? What is the function of the skeleton and the bones within it? What are the functions of key muscles within the body? What are the functions of key muscles within the body? What are the roles of different nutrients in the body? What are the roles of vitamins and minerals within the body?	Fair test Comparative test Prediction Mouth Motor Tongue Teeth Oesophagus Stomach Movement Muscles Bones Skull Nutrition Skeletons Vitamins Minerals Circulatory Heart Blood	- To be able to identify that animals, including humans, need the right types and amount of nutrition. - To be able to identify that humans and some other animals have skeletons and muscles. - To be able to describe the simple functions of the basic parts of the digestive system in humans. - To be able to identify the different types of teeth in humans and their simple functions. - To be able to identify and name the main parts	- To ask simple questions and recognising that they can be answered in different ways. - To set up simple practical enquiries, comparative and fair tests. - To make scientific predictions. - To record findings using simple scientific language.	Write a doctor or dentist into school (could use a STEM ambassador) Diversity – (differences between me and other people)

Our golden thread: Global citizenship runs through our Science Curriculum. We celebrate diversity, innovation, pioneering and networking.

Impact: Science is at the forefront of everyone's mind. There is a shared understanding of the importance of Science and Scientific advancement in the world around us in the 21st Century. We provide children with opportunities to make meaningful links between classroom learning and the real world.

Science is regularly celebrated in class presentations and assemblies, in cross-curricular learning (also see slide 14) and independent Scientific enquiry embedded across the curriculum.



Next steps: Possible changes in curriculum from September will require the Vision to be revisited.

Promoting scientific learning in English.

SLB: Science subject leadership is strengthened and developed through strategic support enabling improvement to take place

Intent: Strategic support enables the subject leader and teaching staff to drive the vision forward and implement changes that will improve science teaching and learning. Ongoing strategic support will lead to sustained improvement which will be evident in pupil outcomes.

Pupils’ representations of solids, liquids and gases in an outside learning activity.



-Statement of intent the beginning of the SEF
-The SEF
-EYF5 to Y6 progression
-Resources - ensure that we have everything
-Record / film best practice using TPA
Subject leaders questions for ofsted
-Half term : Science wk 2023 quest to apply for grants of £300/£500/£700
-Risk assessments for all science investigations
-Attainment /coverage tracker
Next meeting 7th Jan

CPD notes supporting development.

Regular SL release time provided to ensure that subject leadership is effective and has a positive impact on professional development for all staff. Subject leader action plan is updated regularly and areas for development are identified. SL attends regular professional development training and works in collaboration with other Science subject leaders within the trust.

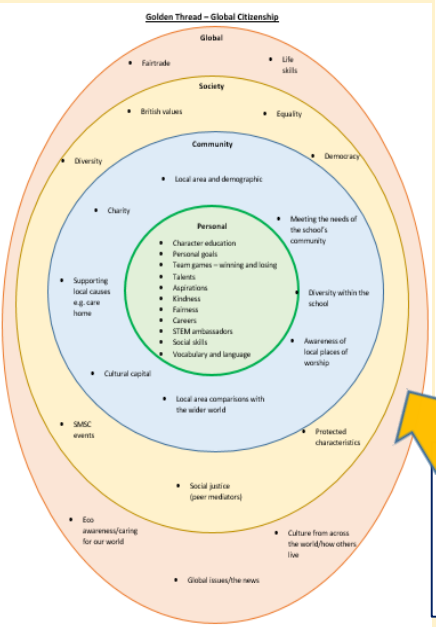
Impact: Strategic support enables the SL to carry out their duties and support the development of the subject as well as the professional development of staff. Ongoing CPD improves teachers’ subject knowledge and teachers feel confident in delivering lessons in which children are building on their skills working scientifically and that challenge their thinking.



Assembly Timetable – Spring

Week commencing	Monday – SLT, Middle leaders and subject leaders 10:35 am in the hall	Tuesday 10:35 am	Wednesday – Teacher led 10:35 am in class	Thursday 10:35 am	Friday 2:45 pm
8 th January	Community Welcome back Behaviour rules, triangle, dogs, consequences – LL	Singing assembly	Community What would our community be like without rules?	Global First News	RU
15 th January	Society British Values – RU	Singing assembly	Society Which British Value is most important? Why?	Global First News	LL
22 nd January	Global Energy Saving week with the Eco Council – AT	Singing assembly	First News (in class with teacher)	Personal 5 Hawking	PA
29 th January	Society LGBTQ+ History month – PA	Singing assembly	Society What are the protected characteristics and why do we have them?	Personal 4 Asher-Smith/Bergamin	KS
5 th February	Personal Children's mental health week – Miriam P2B	Music performance	Global First News (in class with teacher) Or Personal What does it mean to have a healthy mind?	Personal 3 Singh	RU
Half Term Spring 2					

Objectives	Actions to be taken	Success Criteria	Time Scale	Lead Person	Resources/ Funding	Monitoring and Evaluating (what and when)
Map out the progression across the school to ensure children are making progress.	<ul style="list-style-type: none">Speak to coordinator at the infant schoolLook at pacer documentsCreate progression map of scienceUse this to inform monitoring and resources	Clear progression route from EYFS to UKS2, units are well-sequenced and skills are embedded throughout the curriculum. LO-s are mapped so that unit are not repeated and/or overlap.	Email w/c 14 th Nov Look at pacer documents and create a progression map (RU – April 2023) then ongoing in 23-24	KH Subject Lead		SLT KH Ongoing



TPA Working Scientifically Progression Map
Science, NC requirements- met in 1FC units per YG.

Explore the world around them and raise their own simple questions	Raise their own relevant questions about the world around them	Use their science experiences to explore ideas and raise different kinds of questions
Ask simple questions and recognising that they can be answered in different ways <i>Green Fingers (1), Time Travellers (1), The Earth Our Home (1)</i> <i>Super Humans (2), Buildings (2), Live and Let Live (2), Look and Listen (2), The Magic Toyshop (2)</i>	Should be given a range of scientific experiences including different types of science enquiries to answer questions <i>How Humans Work (3) Making waves (4), Shake # (3)</i> <i>How Humans Work (3) Making waves (4) Shake # (3)</i>	Talk about how scientific ideas have developed over time <i>Being human (1)</i>
Perform simple tests <i>Green Fingers (1)</i> <i>From A to B, Super Humans (2), Buildings (2)</i>	Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions <i>How Humans Work (3) Making waves (4) Shake # (3)</i>	Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions <i>Bake # (4) Fairgrounds (4) roots shoots and fruits (5) Being human (5)</i>
Use simple features to identify and classify <i>Green Fingers (1), Time Travellers (1), The Earth Our Home (1)</i> <i>Super Humans (2), Buildings (2), Live and Let Live (2), Look and Listen (2), The Magic Toyshop (2)</i>	Set up simple practical enquiries, comparative and fair tests and explain which variables need to be controlled and why <i>How Humans Work (3) Making waves (4) Shake # (3) Bright sparks (3)</i>	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why <i>Roots, shoots and fruits (5) Space scientists (5) Fairgrounds (4) Bake # (4)</i>
Observe closely using simple equipment <i>Green Fingers (1), Time Travellers (1), The Earth Our Home (1)</i> <i>A to B (2), Super Humans (2), Buildings (2), Live and Let Live (2), Look and Listen (2), The Magic Toyshop (2)</i>	Talk about criteria for grouping, sorting and classifying, and use simple keys <i>How Humans Work (3) Making waves (4) Land Sea and Sky (4) Bright sparks (3)</i>	Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment <i>Being human (5) Space scientists (5) Fairgrounds (4) Endangered, Extinct (4)</i>

Strategic support is built around a clear progression map of scientific skills, knowledge and understanding with Global Citizenship at the centre of our curriculum.

Yearly overview of assemblies link to whole school development plan, staff development and curriculum planning.

Next steps: Implementation of higher order thinking skills (particularly analysis, synthesis and evaluation) form part of teaching and learning across the curriculum and are evident in lessons.

SLC: Subject Leadership is strengthened and developed through an effective monitoring and improvement cycle that informs development in Science

Intent: Monitoring strategies foster a positive culture where teachers feel supported, respond to and act on feedback in a way that enables sustained improvements to take place.

Before PSQM – Spring 2 2023

Science CPD Questionnaire - Rob

Please indicate in the table how confident you feel in the teaching of these areas.

	Very confident	Moderately confident	Somewhat confident
Exploring and observing skills		x	
Grouping and classifying skills	x		
Questioning skills		x	
Research skills			x
Modelling skills		x	
Collaborating skills			x
Planning and testing skills			x
Using equipment and measures	x		
Communicating skills			x
Describing results	x		
Explaining results	x		
Year group appropriate scientific vocabulary	x		
Fair test investigations			x
Observation over time investigations	x		
Pattern seeking investigations			x
Applying different writing genres to WS skills		x	
Applying maths skills to WS skills		x	

A year on – Spring 2 2024

	Very confident	Moderately confident	Somewhat confident
Exploring and observing skills		x	
Grouping and classifying skills	x		
Questioning skills		x	
Research skills		x	
Modelling skills		x	
Collaborating skills		x	
Planning and testing skills			x
Using equipment and measures	x		
Communicating skills			x
Describing results	x		
Explaining results	x		
Year group appropriate scientific vocabulary	x		
Fair test investigations		x	
Observation over time investigations	x		
Pattern seeking investigations		x	
Applying different writing genres to WS skills		x	
Applying maths skills to WS skills		x	

Staff questionnaire before PSQM and currently.

Impact: Teaching and learning in Science is almost always consistent within year groups and across the school. Pupils are able to articulate their knowledge and discuss their learning using scientific terminology. There is a clear progression of skills and knowledge and experiments are enriching learning. Monitoring feedback supports staff development and improves pupil outcomes.

What is going well in science at our school?
"Cross curricular links made."
Online staff questionnaire

Science Leader Action Plan 2023-24

Books and pupil voice ensure progression	<ul style="list-style-type: none">Use TPA format to look through all year groups booksEnsure coverage is correctMonitor presentation is correctCheck that lessons are correctly pitched and that there is variationSpeak to pupils about their learning in science to create next steps.	Pupils' feedback will be positive and will show enthusiasm and enjoyment of learning. Books will all be of the same format and will show consistency and good progression throughout the years.	20 th Nov	KH	Subject Lead	SLT	KH	Ongoing
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Science Leadership Action Plan monitoring focus.

Educational visits evident in pupil voice, children can specifically and passionately speak about their learning and experiences.

Experiments are evident in the monitoring cycle.

Book monitoring and discussion with pupils:

Pupil	6 Chaplin
AAR Katya	WWW
AR Luke	<ul style="list-style-type: none">Link learning to previous units from other year groupsTrip was spoken about at length, very strong link to their learningAR/AAR can recall learning in depth
BAR Evy	

WWW

Engaging entry point – working in groups, drawing around each other, labelling body parts they know and then carrying out an investigation

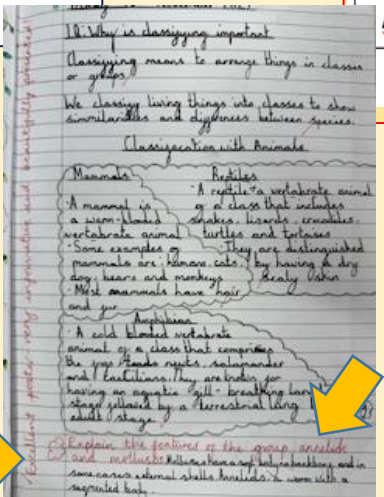
Children have already carried out two scientific experiments – using comparative and fair testing. Children are already thinking scientifically as a result, not just knowledge retrieval.

Pupil	3 Mercury
AAR Theshmita	WWW
AR Aleisha	<ul style="list-style-type: none">Children can recall their learning in ScienceThey enjoy Science – can talk confidently about the investigationsResources are available to help the children, inc. word banks
BAR Jacob	

Written feedback from book scrutiny shows evidence of cross-curricular coverage, clear adaptation and variation and suggestions for further improvements.

Work Scrutiny

	Evidence of progress	Evidence of variation and adaptation	Marking and feedback	Presentation
BAR	Progression of knowledge is clear, coverage in Geography (3.11.23 and 5.11.23) supplements coverage in Science (7.11.23 onwards).	Pupils create/draw their own diagrams showing various representations of knowledge	Selection of books monitored – SEND/ BAR, AR, AAR	Presentation is neat and clear across the sample of books.
SEND		Adaptation is clear through the use of diagrams	All work marked (except most recent), evidence of bubble marking. Bubble marking is evident for clarifying pupils' understanding i.e. What does this tell us?	Presentation is of high quality for AR and AAR children.
General comments	All books are fully marked and presentation is clear. Quantity and quality of work produced is high level. Bubble questions give pupils the opportunity to clarify understanding.	Word banks, words and sentences to scaffold		
Actions	-Ensure that content is consistent within the year group (photo evidence, entry point/exit point evidence)			
Date of next scrutiny	11.12.23			



Teacher's response to monitoring feedback evident in the books: bubble marking provide opportunities to deepen understanding.

Next steps: Whole school and year group moderation to enable consistency in marking and feedback in order to ensure all pupils achieve well in Science.

TA: Subject teaching is strengthened and developed through engagement with professional development

Intent: Professional development for all staff improves science pedagogy by enabling teachers to use effective teaching strategies.

PDM Summer 2 → Science capital, developed science vision as a school team, introduction to scientific enquiry types and discussion of Science curriculum map ensuring an all-year around coverage, (also see slide 10 – embedding scientific learning in all areas of the curriculum).

PDM Autumn 2 → Confirming the science vision and refresher on scientific enquiry types, assessment and preparation for Ofsted inspection (possible Deep Dive).

PDM Spring 2 → Focus is on curriculum map - showing cross curricular links and teaching scientific skills in all areas of the curriculum.

Science is **EVERYWHERE.**
Science is for **EVERYONE.**

Vision (Policy inc. Intent, Implementation and impact)

The 5 types of scientific enquiry

Scientific skills

Curriculum map (progression of knowledge and skills) – cross-curricular links

PSQM Action plan and Science development plan

Website

Imperial College London
ReachOut CPD

Congratulations to:
Georgia Riches
from
Belvedere Junior School

for completing the following primary school science CPD courses:

- Environments and Habitats
- Changing Materials
- Evolution and Extinction
- Plants and Growth
- Classification
- Sound
- Earth and Space
- Electricity
- Working Scientifically
- Outdoor Science
- Science Classroom Management
- Science Across the Curriculum
- Assessment and Progression
- Future Scientists

Planet Earth and Space
Light and Sound
Humans and Other Animals
Energy
Living Things and Food
Seasonal Changes
Food and Feeding
Body Systems
Rocks and Soils
Forces and Magnets
Life Cycle
Future of Energy

totalling 40 hours of continuing professional development.

Professor Maggie Dalton
Associate Principal (Academic Partnerships)
Imperial College London

Catherine Cahn
CEO
Tigtag Education Ltd

Blago Jelicic

Arhan

STEM Learning

Past CPD activities (5)

Primary science subject leaders' network
25 Apr 2023 | Remote Delivered CPD

Primary science subject leaders' network RM121861
20 Jun 2023

Facilitating effective professional development 1st in series FD101CHB3 | Booking Reference: APP1257771
07 Aug 2023 | Cambridge

Facilitating with STEM Learning - 2nd in series FD102CHB3 | Booking Reference: APP1257772
08 Aug 2023 | Cambridge

FD104 Facilitating effective professional development in science FD104BC08 | Booking Reference: APP1257774
21 Sep 2023

PSQM
Primary Science Quality Mark

Introducing Science Capital

Clare Warren
Senior Regional Hub Leader

Introducing Science Capital
PSQM

SL support professional development by delivering regular PDMs, sourcing self-study opportunities. Regular release time is provided for SL to attend PSQM training sessions, Science networking meetings by Bexley borough and Science subject forums run by The Pioneer Academy Trust.

Impact: Staff feel confident using scientific pedagogy that enables all pupils to engage in scientific activities, which equip pupils with transferable enquiry skills and builds on their science capital. Science progression is clear within the school; pupils are able to articulate their learning using appropriate scientific vocabulary.

Space - Free teaching primary science CPD

Karmen Harrison
Mon 27/11/2023, 12:02
Andrew Thompson; Caroline Bingley; Georgia Riches; Rebecca Umney

Report As Spam

Hi all,

Please find a link for a free, self-paced, online CPD teaching many areas of the primary curriculum through the theme of space. Hope it's still relevant, no worries if not.

[Teaching primary science: human spaceflight | STEM](#)

Thank you,
Karmen

Belvedere Junior School Science Curriculum Map 23-24

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Competitive and Fair Testing Measuring, classifying, pattern-making, research using secondary resources, observing over time						
Year 3	HOW HUMAN WORK What are the physical similarities and differences between us and other people? What are the roles of different resources in the built environment? What are the physical features of the built environment? What are the roles of different resources in the built environment? What are the physical features of the built environment?	HOW HUMAN WORK What are the physical similarities and differences between us and other people? What are the roles of different resources in the built environment? What are the physical features of the built environment? What are the roles of different resources in the built environment? What are the physical features of the built environment?	WHY? What are the physical similarities and differences between us and other people? What are the roles of different resources in the built environment? What are the physical features of the built environment? What are the roles of different resources in the built environment? What are the physical features of the built environment?	Competitive What are the physical similarities and differences between us and other people? What are the roles of different resources in the built environment? What are the physical features of the built environment? What are the roles of different resources in the built environment? What are the physical features of the built environment?	Competitive What are the physical similarities and differences between us and other people? What are the roles of different resources in the built environment? What are the physical features of the built environment? What are the roles of different resources in the built environment? What are the physical features of the built environment?	Competitive What are the physical similarities and differences between us and other people? What are the roles of different resources in the built environment? What are the physical features of the built environment? What are the roles of different resources in the built environment? What are the physical features of the built environment?

Example: How can I evidence Scientific skills, knowledge and understanding in Art?

Year 3 Spring 2 LO: How are colour and colour shading used to create a specific effect?

Key vocabulary: colour, form, line, shape, space, texture

Knowledge: To understand warm and cold colours in drawing

Skills: To create hard and soft lines

To be able to select materials and techniques to communicate an idea

To be able to experiment with and combine a variety of materials and techniques (extension in Summer 1)

To be able to manipulate malleable materials in a variety of ways)

colour and colour shading used to create a specific effect?

line, shape, space, texture

warm and cold colours in drawing

background and foreground

lines

To be able to select materials and techniques to communicate an idea

To be able to experiment with and combine a variety of materials and techniques (extension in Summer 1)

To be able to manipulate malleable materials in a variety of ways)

Teachers' reflections.

Annotate children's work with pupil voice.

Progress photos of the art piece/experiments with pupil's reflection, observation and findings.

Cross-curricular professional development meetings enable teachers to look at the "big picture" of 'Science is all around us'.

Exemplifications of evidencing scientific learning across the curriculum. In this Professional Development Session, teachers considered areas of the curriculum that lend themselves well to scientific investigations and enquiries. This is an important part of our staff development as incorporating scientific learning into other subjects is fundamental to moving science forward as a core subject in the school, particularly due to the current blocked structure of science as part of IPC (International Primary Curriculum).

Next steps: Staff routinely take part in optional science CPD with the view to drive improvements forward and sustain improvements achieved in the teaching of Science.

Art and D.T Progression Document

Focus on Art- thread of learning - Printing

Collaborative Teacher Task:
Find your printing unit in progression document and plan it

Design print piece

Make print

Evaluate final piece

Polystyrene Printing Video
<https://www.youtube.com/watch?v=p9f0yKfBpY>

Line and Clay Printing
<https://www.youtube.com/watch?v=a8ZGL5Ab6ic>

TB: Subject teaching is strengthened and developed through use of a range of effective teaching and learning strategies

Intent: A wide range of effective teaching strategies make Science learning inspiring, immersive and effective. Children make good or accelerated progress, high levels of motivation and pupil engagement.

How do the moon, Earth and Sun work together?

Orbits

The Moon revolves around the Earth (anti clockwise, taking **27 days**) and both the Earth and Moon revolve around the Sun together - anti clockwise, taking revolution.



Link learning and build.

TASK 2: draw a diagram of how the 3 bodies work together

- Label the diagram
- How long does the moon take to orbit the earth?
- How long does the Earth take to orbit the Sun?
- Are they all rotating?



Feedback and adapt.

Plenary

- What do you think the earth would be like without the sun?

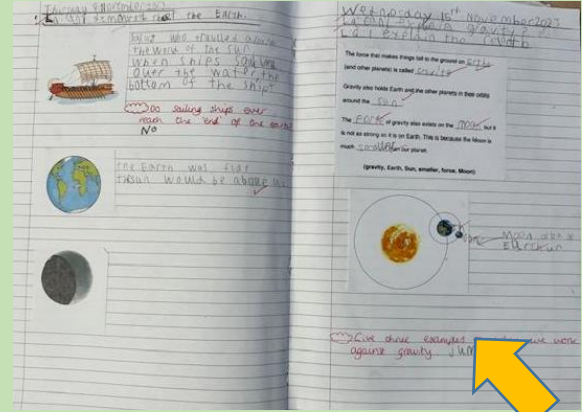
Deepen and secure.

Lesson structure follows the Pioneer Academy Trust teaching model.



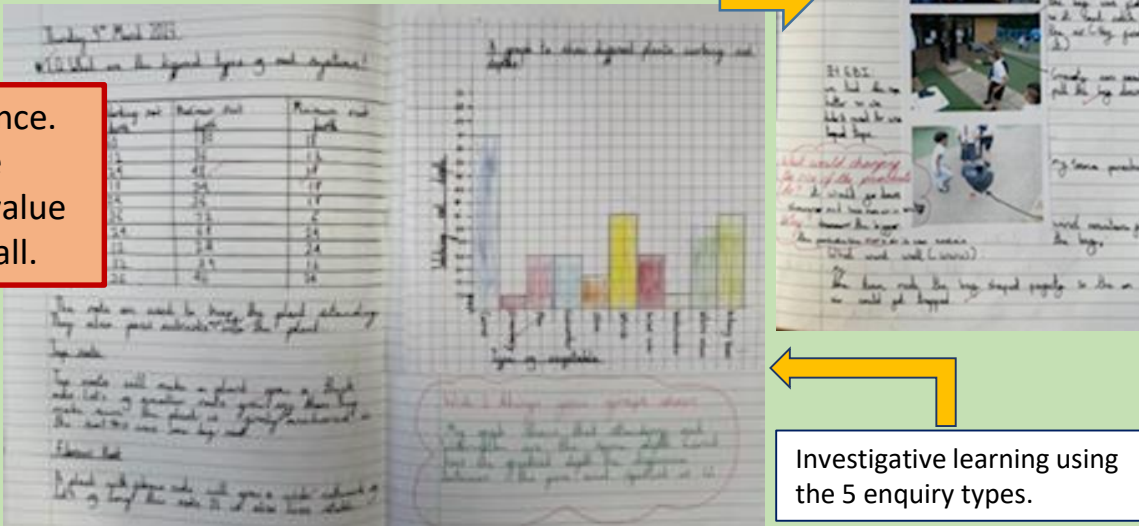
Engaging learning environment and display is used as supporting resource in lessons. Carefully selected texts are available for pupils to build on their science capital.

Impact: All children make good progress in science. Children understand and are able to discuss the purposes of enquiry types. Children enjoy and value their science education, which is accessible for all.



Adaptation and variation shows scaffolding for pupil with SEND.

Outdoor practical learning is evident in books where children revisit and reflect on their learning activities, and apply their skills in subsequent lessons.



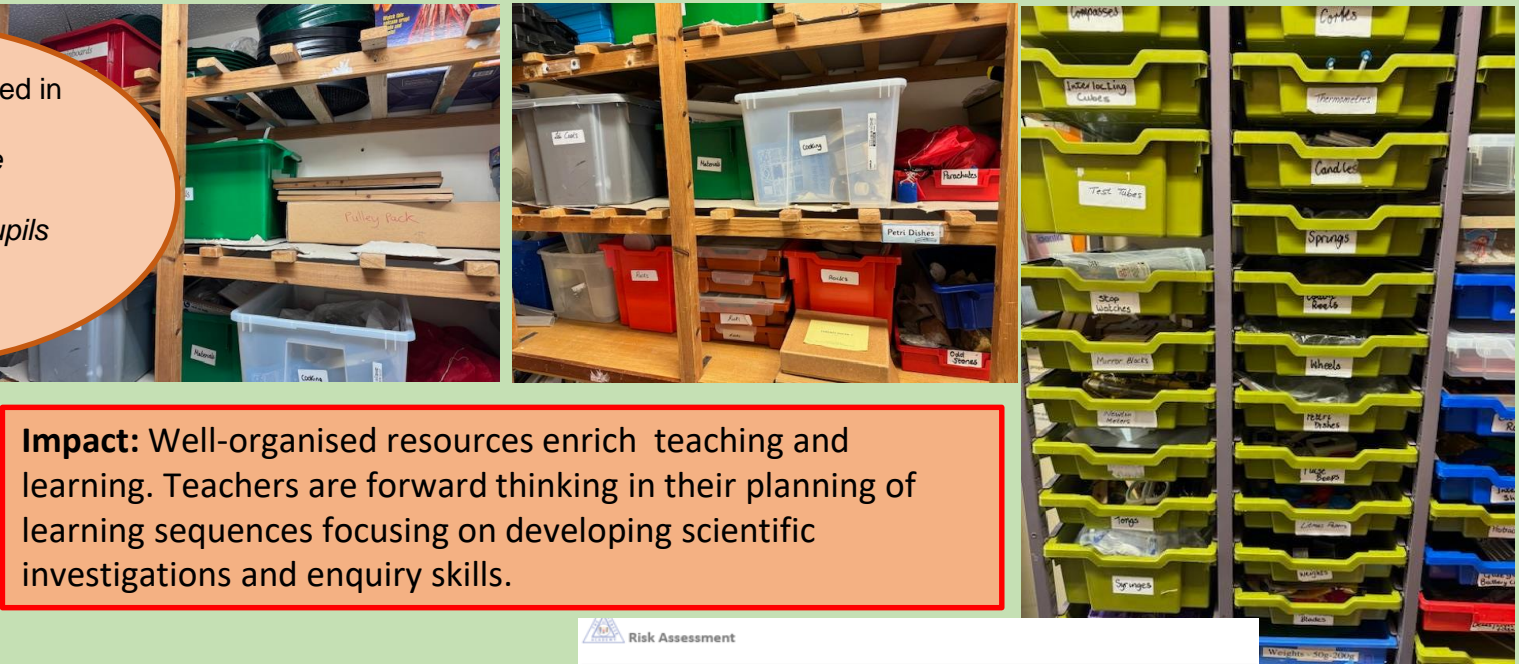
Investigative learning using the 5 enquiry types.

Next steps: Sustain implemented improvements and achieve consistency across year groups and across the school in the teaching and learning of Science.

TC: Subject teaching is strengthened and developed through regular and safe use of up-to-date quality resources

Intent: Teaching and learning are enriched by the use of quality resources that are well-organised and replenished regularly ready to be used. High quality fiction and non-fiction reading resources in a range of science topics support teaching and learning across the curriculum.

What could be improved in Science at school?
"A lot of resources are needed for the best opportunities for all pupils to be provided."
(Autumn 1, 2023)



- Resources25.09.23
- Anemometers
- Battery and wire sets for circuit
- Battery holders
- Bug viewer
- Building bridges sets
- Candles and candle holders
- Cardboard and wooden wheels
- Compasses
- Corks
- Cotton wool
- Fertiliser
- Gardening gloves
- Gardening tools (child friendly)
- Hot water bottles
- Human body (box set x 1)
- Human skeleton (very tired)
- Magnets
- Materials (textiles)
- Mirrors and mirror blocks
- Nets
- Newton forces meter
- Paper planting pots
- Plant labels

Responding to teachers' needs: high quality resources - both practical and paper based have resulted in enhanced engagement, more creative, curious learning by all pupils. Resources are organized and clearly labelled. Up-to-date resources are regularly monitored and replenished as part of the monitoring cycle.

Impact: Well-organised resources enrich teaching and learning. Teachers are forward thinking in their planning of learning sequences focusing on developing scientific investigations and enquiry skills.

A risk assessment is in place in order to keep children safe during science learning. This includes educational visits and the safe use of equipment..

Risk Assessment

Title	Reference	Assessment Date	Completed By	Review Due		
Science Risk Assessment	PRA19					
Work Locations	Risk Rating					
	Likelihood	Impact				
	5. Almost Certain	1. Minor	2. Moderate	3. Significant	4. Serious	5. Major
	4. More Likely than Not	1	10	12	15	20
	3. Fairly Likely	1	6	12	15	15
	2. Unlikely	1	4	6	8	10
	1. Extremely Unlikely	1	2	3	4	5
Equipment and Substances						
Persons Affected						
Staff, pupils						
Date	Reviewed by	Date	Reviewed by	Date	Reviewed by	Date

Next steps:

Add to our stock of resources which will further develop scientific thinking. Continuously improve our Science provision.

Supplier Amazon + TTS		Telephone Order		
Address		Date		
Tel No		Ref		
Catalogue Reference	Description	Quantity	Unit	Price excl VAT
Amazon	Grow Your Own Vegetable Seeds - 20 Packet Variety by Garden Pack - Garden <small>Grow Your Own Vegetable Seeds - 20 Packet Variety by Garden Pack - High Yield Seeds for Cereals, Vegetables & Herbs - 1000 Garden Seeds Garden Set Amazon.co.uk Garden</small>	3	7.95	23.85
Amazon	Pronto Seed Flower Seeds for Planting Now Bumper Pack Containing 24 Amazon.co.uk: Garden <small>Pronto Seed Flower Seeds for Planting Now Bumper Pack Containing 24 Different Varieties of Flowers, Over 1100 Flower Seeds to Attract Butterflies & Bees, Unleashing Gifts for Women and Men Amazon.co.uk Garden</small>	3	8.99	26.97
Amazon	Vegetable Seeds 60+ (Runner Bean Enorma Approx. 15 Seeds) : Amazon.co.uk: Garden <small>Vegetable Seeds 60+ Varieties Large Packets of Runner Bean Enorma Approx. 15 Seeds Amazon.co.uk: Garden</small>	6	1.50	9.00
Amazon	Vegetable Seeds (Broadbean Aquadulce 20) <small>Vegetable Seeds 60+ Varieties Large Packets of Broadbean Aquadulce 20 Amazon.co.uk: Garden</small>	6	1.50	9.00
Amazon	18 x Collection Pastel Tulips - Flower Bulbs <small>18 x Collection Pastel Tulips - Flower Bulbs - Spring Flowering Bulbs - Claret Perennials - Green Spring Season in Style - Excellent Cut Flowers - for Your Beautiful Garden Amazon.co.uk Garden</small>	1	8.99	8.99
Amazon	Pronto Seed Muscari Armeniacum, Grape Hyacinth	1	9.99	9.99



"I like having these new books in our library as it makes us think bigger about science" Y4 pupil

LA: Subject learning is strengthened and developed through a shared understanding of the purposes and process of science enquiry.

Intent: Support teachers to build on their subject knowledge. Introduce new strategies involving the five scientific enquiry types.

"I liked this lesson because it got us thinking about light and sound"
Y4 Pupil



Year 3 children experimented with food and tights to recreate the digestive system.



"This lesson was fun as it showed us how food turns to faeces"
Y3 pupils



Practical and outdoor learning experiences ignite children's natural curiosity and enable teachers to motivate and engage all pupils.

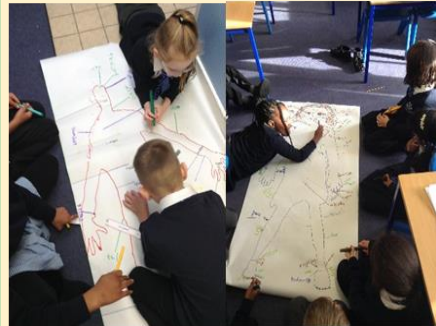


Impact: Teachers teach inclusive lessons where adaptation and variation is clear and support the learning of scientific skills and knowledge at all levels. Lessons are accessible to all. Pupil motivation and engagement is high and as a result, pupil outcomes are continuously improving.

UKS2 planting a range of vegetables. Outdoor practical activities have encouraged our most reluctant learners. Science has helped children overcome barriers and enabled pupils to work as part of a team.



For our entry point to our new topic. 'How Humans Work', we started by drawing around each other and then labelling and describing the parts of the body we already know including organs, limbs and bones.



For the second part, we predicted how our body would react to exercise. We went outside and completed 15 minutes of exercise and then discussed our results.

Creative, collaborative learning forms part of science lessons across the school.



Next steps: Ongoing continuous development to improve teachers' subject knowledge teaching scientific skills, which in turn lead to increased levels of self-confidence and creative, engaging and motivating lessons.

LB: Subject learning is strengthened and developed through a shared understanding of the purposes of science assessment and current best practice.

Intent: A variety of assessment strategies provide opportunities for recalling and recapping prior learning. All children will progress in Science from their starting points.

Vocabulary

oil

later

ill

SFC

is

re

Xenon

Neon

Halogen

Stann

Air

Oxygen

Carbon

Remember each molecule is not invisible, just too small to see with our eyes.

dioxide

Feedback addresses misconceptions for all levels.

Recall and Recap

Fact from last lesson	Fact from last week
Fact from last month/previous unit	What have I learnt before? <small>Another year group/outside of school</small>

Recall and recap prior learning is part of the TPA teaching model and is used for AfL throughout the lesson. .

WALT: demonstrate your knowledge of a topic.

What questions do you have?

Who created electricity?
What is an insulator?
What is a mains?
What was electricity created by?
Why was electricity invented?
What does a conductor produce?
What was the first country with electricity?

What do you already know?

Electricity is one of the greatest inventions in the world.
A bulb is a glass globe.
A battery produces power.
Electricity flows through wires.
A switch turns things on such as a light bulb.
Power is the energy of something or someone.
Electricity can turn things off.
A switch can also turn things off.

Knowledge harvest enable teachers to assess what children know.

Impact: Children know more and remember more. All children make significant progress from their starting point.

Happy Day of Name: Who is the most fit?

Each species shows variation. Variation is a good thing in a species. Some animals may also die because of a variation. There is a survival of the fittest. Some animals may die because they cannot survive in the same way as others.

Explain why adaptation is important for survival.
Because if you are in an environment that doesn't suit you, you might not be good enough to survive.

Thursday 30th November 2023
What is a competition?

Evolution is when a living thing gradually changes over time. They adapt to their environment.

What happens to the size of a grass population when there is plenty of water, sunlight and space, and no grass eaters (like cows)?

The population will grow. The grass will be eaten. The population will stay the same. The population will decrease.

Do you think you might need more than one feature? Why?
No because some grass grows longer or shorter than others.

Concept cartoons enable pupils and teachers to address misconceptions.

Wednesday 1st December 2023

What is a primary consumer? It is an animal that eats plants.

What is a secondary consumer? It is an animal that eats a primary consumer.

The eating of an organism by another organism is called predation.

Challenge: To see how a predator can catch its prey, the predator has to be faster than the prey. The prey has to be able to run faster than the predator.

Flowchart:

Plants → Primary consumer → Secondary consumer → Tertiary consumer

Plants → Primary consumer → Secondary consumer → Tertiary consumer

Under water: good, cheap

Under water: good, cheap

Flowchart accompanies text.

Tuesday 6 June 2023

LB: How does my heart rate change throughout the day?

Time of day	Pulse (BPM)
Morning (7:30am)	68 BPM
Before keep test	69 BPM
After keep test	132 BPM
Before lunch	72 BPM
After lunch	92 BPM

In the morning my heart rate was 68 BPM. My pulse was highest after the keep test. The other heart rate was lower. I had just finished the keep test.

Explain how to take a pulse.
Place your middle finger and index and place them on your wrist. Push down. You may have to push a little more than the other to see your BPM.

Quizzes are used routinely at the start and end of lessons. They are also used as end of unit assessment for learning.

Bubble marking questions are used to clarify and extend learning, and to deepen understanding,

What are the names of Earth's main layers?

What is the name of the layer of air over the earth?

What is the sun? Rock Star Planet

What causes tides?

How do we know the Earth is round?

What is human impact on the atmosphere?

Next steps: Implement a tracking system that enables teachers to track groups within Science.

LC: Subject learning is strengthened and developed through a shared understanding of the importance of and strategies for developing all children’s science capital.

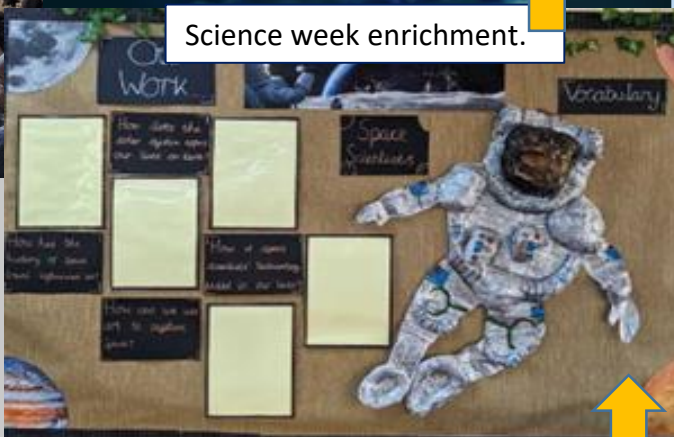
Intent: Children are immersed in the world of Science and demonstrate scientific literacy. Children are exposed to a wide range of curricular and extra-curricular opportunities, and creating a culture of collaboration is a focus.



Science Week
STEM Ambassadors
Craig – Environmental Scientist Air pollution (Tuesday)
Ian – Introduction to Magnetism (Wednesday, possibly Thursday)
Trevor – Engineers change the world (Friday)

Resources from Dr Gali Musa, performance engineer for Rolls Royce

Science week enrichment.



Impact: Children are excited about Science. They look forward to opportunities that are available to them; collaboration, participation, engagement and motivation is high. Children feel that they can be successful when learning about Science.

A range of fiction and non-fiction Science texts in the school library.



Interactive displays with key questions and subject-specific vocabulary.



Science-related assemblies and educational visits are now routinely part of teaching and learning. The importance of collaboration is recognized by all.



LC: Subject learning is strengthened and developed through a shared understanding of the importance of and strategies for developing all children’s science capital.

Intent: Collaborative projects build on children’s natural curiosity while creating a sense of togetherness and promote critical thinking. Creating opportunities for articulating ideas.



Whole-school competition building a Time-machine following the theme of the 2024 British Science Week: ‘Time’.



Children planned, designed and built a house with a functioning electric circuit in Year 3.



Wednesday 7th February 2024

LQ: How can I use my knowledge of circuits to plan a model of a house?

LQ: What materials and techniques do I need to produce my plan?

Planning



Impact: Children are able to articulate their learning in scientific terms. Peer support is evident and children are challenged regardless of their attainment levels.



Year 6 group worked collaboratively to build their time machine.

WOA: Science is enriched by a cross-curricular planning that links Science to other areas of learning.

Intent: To grow children’s science capital through enquiry-based opportunities and experiences in every subject inside and outside the classroom.



Investigating soil and testing rocks in Geography during an educational visit.



Children observed evaporation overtime as part of their scientific enquiry in cross-curricular learning in English and Geography.

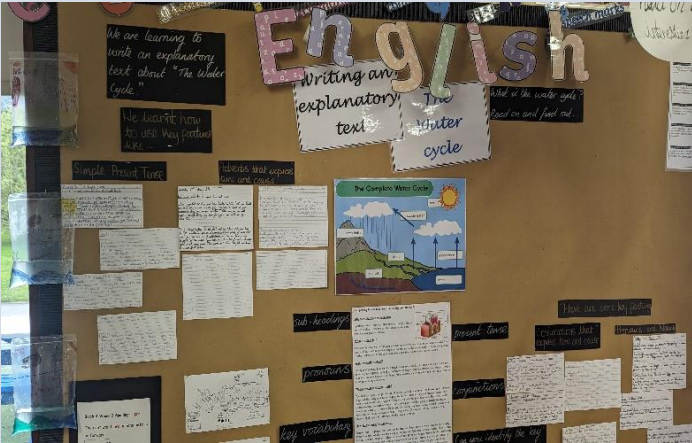
Curriculum map shows explicit Science teaching.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Comparative and Fair Testing Identifying, classifying & Grouping Pattern seeking Research using secondary resources Observing over time	Year 3 HOW HUMANS WORK What things humans do LEARNING QUESTIONS What are the physical similarities and differences between me and other people? What are the roles of different nutrients in the body? VOCABULARY - Nutrients - Healthy - Baby - Elderly EXPLANATORY Identify how humans change as they get older -Identify that animals, including humans, need the right types and amount of nutrition. PE Using their observations and ideas to suggest	HOW HUMANS WORK What things humans do LEARNING QUESTIONS Electricity and energy EXPLANATORY How many things should change when planning a scientific investigation? What is important in a good prediction? What are the key parts of the digestion process? What conclusions can I share about the digestion process? What is important when taking or observing scientific measurements? What is the function of the skeleton and the	SHAKE IT What things humans do LEARNING QUESTIONS What are the different types of milk and how are they produced? How else is milk used? How can I compare results and draw conclusions? How can I turn butter into a liquid? Why do bubbles stay for longer in milk rather than water? What substances will dissolve in milk? What key vocabulary have I learnt so far? What processes or forces change an object? What affects texture and how can I adjust it?	Computing How do texts allow images communicate information? Can I identify real world uses of desktop publishing? PE To recognise how text and images convey information To consider how different layouts can suit different purposes Art How are colour and colour shading used to create a specific effect? PE To understand warm and cold colours To understand background and	Computing Which blocks allow you to use to set up your programme? PE To adapt a programme to a new context Art How has tourism advertising changed over time? Geography What is a carbon footprint? In what way can carbon footprint be reduced? Emissions and environmental impact. PE To understand how to generate power.	Art What are the features of prehistoric cave art throughout the world? PE How to dark and light lines Creating repeated patterns History What are the differences between primary and secondary sources? What are the differences between fossils and artefacts? How have humans changed over time? PE To be able to hit a moving ball – control

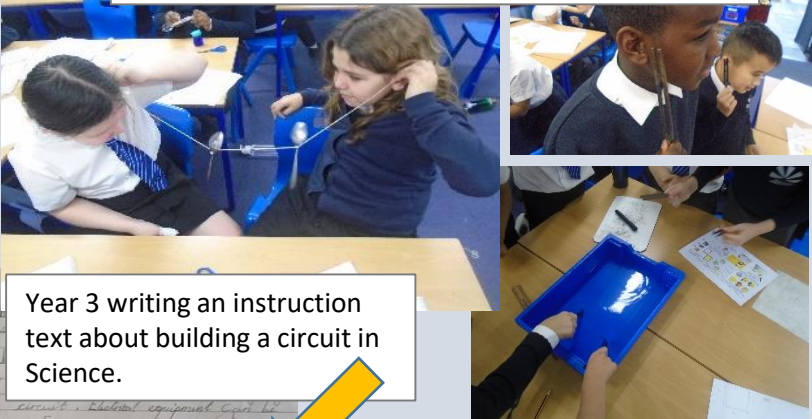
Science is embedded across the curriculum and opportunities are clearly marked.

Impact: Children are able to articulate their learning in scientific terms and are able to identify the type of scientific enquiry they are applying in the lesson. Cross curricular opportunities foster children’s natural curiosity and wanting to find out more about our world. Staff are confident in planning scientific enquiries in other areas of learning.

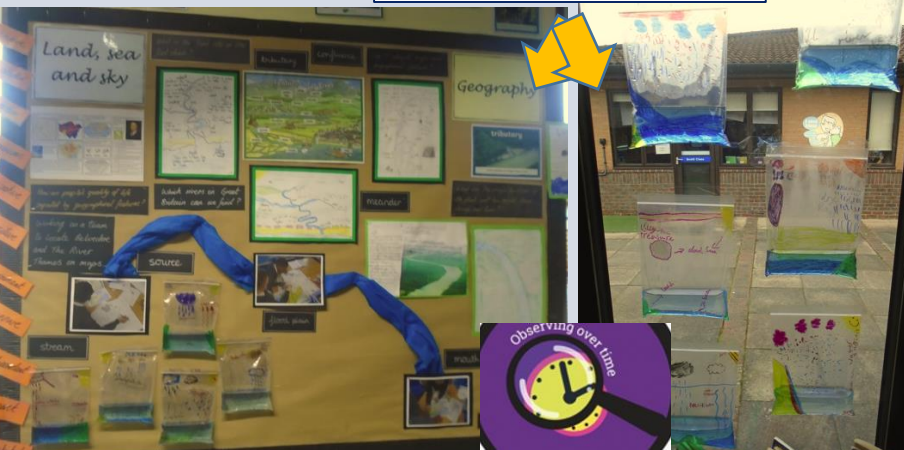
At Belvedere Juniors, we follow the International Primary Curriculum. We identified enquiry-based scientific learning opportunities in all other subjects and created a curriculum map that shows how science is embedded across the curriculum. We used the five types of scientific enquiry type symbols to clearly signpost these opportunities.



Explanatory text in English about the water cycle and the experiment children carried out.



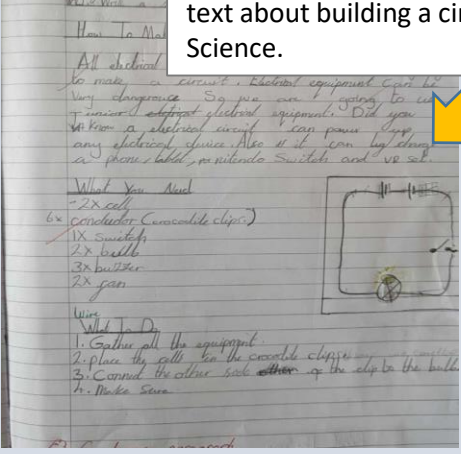
Year 3 writing an instruction text about building a circuit in Science.



Children are learning about waves in Geography.



Building towers in Design Technology, Children were testing materials and their properties.



Next steps: Involve and immerse other members of our school community in scientific learning and enquiry.

WOB: Science is enriched by a provision of a variety of opportunities that deepen and extend learning.

Intent: Children are immersed in the world of Science through internal and external opportunities. Children see themselves as scientists and believe that Science is possible for them.

Footprints found at the scene

From prints recovered at the scene, perpetrators most likely wore shoes with the following patterns:

Sample 1	Sample 2	Sample 3	Sample 4

Shoeprints can be analysed to determine the suspects' type, size, and brand of shoe, as well as individual characteristics such as wear patterns (patterns that form on a shoe, depending on how the wearer walks) or specific damage (nicks and cuts, etc.)

Hair and fibre found at the scene

Sample 1	Sample 2	Sample 3	Sample 4

Hair and fibre are two of the most important resources in Forensic Science and are often responsible for providing valuable clues as to the identity of an assailant or attacker. The discovery of hair can often be used to determine race and gender.

Whole-school participation: During a Forensic Investigation themed Science Week.



Children learn about the application of scientific investigation to solving crimes.



Staff voice survey:
What could be improved in Science at school?

"Having specialists come in and talk about their role and how science has helped them by learning it at school."



How many people helped you on the Vodafone electronics?

"The talk made me realize that engineers have done so much for science." Year 6 pupil

Have you ever invented something?
You tend to now make a part of something. so for example a phone - I was one of 80 .

STEM Ambassadors visit the children all year around including during Science and Careers Week.

Ian Head <ian@smiles.me.uk>
Sun 17/03/2024 14:32
To: Karmen Harrison

Report As Spam

Hi Karmen,
I have also sent this message via the STEM portal.

1. Just confirming that I am coming to your school on Tuesday 26th Mar
2. You requested that I convert this session from "Magnetism" to "My Life is fine - although I could revert to "Magnets" if you wish, so long as yc
3. I will need a PC with PowerPoint. I will bring my presentation on a USI
4. For the demos, I will also need 2 normal classroom tables. I will bring 5. Your school address is:

Belvedere Junior School
Mitchell Close
Belvedere
DA17 6AA

This week I delivered "My life as an engineer" to 7-8 year olds and it was for the audience to include 7 - 11 year olds.
Just so you know, when I present, I bring 4 or 5 students up to help with I'm happy to give the session up to 3 times in the one day with the first

Craig Anderson
Thu 07/03, 19:07

Hi Karmen,
That's great, I have scheduled four separate Zoom calls, one for each session, and included details below.

Thanks,
Craig

Session 1 Year 6: 10-10-30
<https://us01lsgov.zoom.us/j/85605127925?pwd=VWdNbnBhd3VOUEdZ0xIdStwbHVhVEU09>
Meeting ID: 856 0512 7925
Passcode: 242759

Session 2 Year 5: 10-10-31
<https://us01lsgov.zoom.us/j/84662263196?pwd=VWdNbnBhd3VOUEdZ0xIdStwbHVhVEU09>



WOB: Science is enriched by a provision of a variety of opportunities that deepen and extend learning.

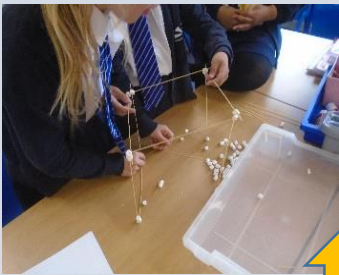


Educational visits to the Royal Observatory linked to our space topic in Science (Year 5) and the National History Museum to learn about adaptation and evolution (Year 6).

Interactive lecture ‘It Takes Guts’ at the Science Museum.



Following the workshop on the digestive system during the educational visit to the Science Museum, children recreated the digestive system using food and tights. Children observed how food turns into faeces over time.



Interactive learning: building structures. Children enjoy experiments and experiential learning, which was evident in the pupil voice survey.

Children had the opportunity to watch and engage with LIVE online lessons and assemblies during Science Week 2024.

The Live Assembly (British Science Week 2024)

The Live Assembly (British Science Week 2024)

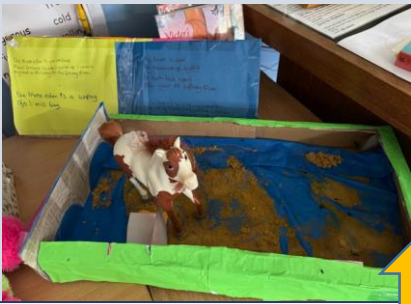
- 1 x Ticket
Order total: Free
- Friday, March 8, 2024 from 9:30 AM to 10:00 AM (United Kingdom Time)



Impact: Pupils across the school see the value of Science learning through an improved understanding of how scientific knowledge and skills can be applied in real life. Children’s science capital supports critical thinking and promotes global citizenship. Children experience Science as a fun, inquisitive subject that is available to all regardless of background.



Children made prosthetic limbs in a cross-curricular lesson of Science and DT and thought about the wider context of how scientific innovations can improve people’s lives (also for slide 10, cross curricular links and slide 5, effective teaching strategies).



Cross-curricular home learning opportunities involving scientific investigations and enquiries about rivers in Geography.



Next steps 1: Continue to build links with secondary schools in our region, which will enable our pupils to access advanced science education and work in bespoke science facilities.
2: Build family links, which will enable parents and families to participate in science activities with children in the school and at home.