

SL Aim: Science subject leadership is strengthened and developed through:

A. The creation and implementation of a clear vision for science

Impact: Clear visibility of the science vision, especially through displays, captured the attention of our pupils. It made science more engaging and relevant to their learning experiences. Pupils talk about it during lessons and discuss how the vision links to a particular activity or lesson in science.

Before: The current science policy is comprehensive, covering intention, implementation, and outcomes. Although it is well-documented on the website, its presence within the school, particularly in displays, is lacking. Additionally, the vision and principles of science have not been clearly communicated to both staff and students. There is a lack of examples demonstrating the vision in practice, making it challenging for staff and students to understand.

Science Vision at Egerton Primary School...
 In our primary school, "SCIENCE IS" is the guiding principle that shapes our curriculum, teaching methods, and the way we nurture young minds to become scientifically literate, inquisitive, and responsible global citizens.



- S** **Scientists and Careers:** We provide children with opportunities to interact with real-world scientists, learn about their work, and explore various career paths.
- C** **Curiosity Ignited:** We ignite the spark for passion, that drives children to question, explore, and seek answers to the wonders around them.
- I** **Inclusive Education:** We ensure inclusivity by tailoring lessons to different learning styles and abilities, making science accessible and engaging to all.
- E** **Enquiries:** Children explore a range of enquiries to foster a deeper understanding of scientific phenomena inside and outside the classroom.
- N** **Natural Connections:** Recognising the intricate web that links all branches of science, emphasising that biology, chemistry, physics, and more are interdependent.
- C** **Critical Thinking:** Empowering children with the ability to analyse, evaluate, and make informed decisions based on evidence, a cornerstone of scientific enquiry.
- E** **Enrichment:** Wider opportunities for children to participate in science-related activities beyond the classroom, including field trips and guest speakers.
- I** **Innovation:** We encourage creative thinking and problem-solving, cultivating a spirit of ingenuity and a willingness to explore new frontiers in science.
- S** **Sustainability:** We teach our children about the delicate balance of ecosystems, inspiring a commitment to sustainable practices for the betterment of our planet.



Vision



Action: Science Ambassadors working on our science principles.

What is your vision for the science curriculum?



PSQM Spotlight
Ed Walsh, SRHL

Action: Science leads watched video:

Action: To address lack of clear vision, science leads organised a staff meeting to discuss the science vision, encouraging staff members to articulate their perspectives on what the vision of science at Egerton Primary School should entail.

Action: The vision and principles have been shared on our website and included in our newsletter for parents and the wider community to see.

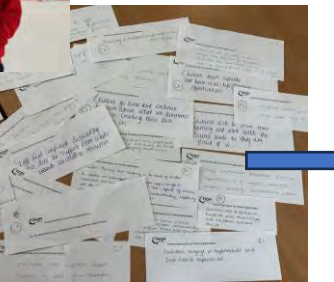
A well - defined science vision serves as a beacon for continuous improvement. It allows us to evaluate our current practices against our desired outcomes, identifying areas for growth and innovation. Through regular review and refinement of our vision, we can adapt to the evolving needs of our learners. Our aim is so our science vision inspires and motivates both staff and children. By articulating our aspirations and values regarding science education, we can ignite passion and curiosity for the subject, fostering a culture of enquiry and exploration.

Science Lead



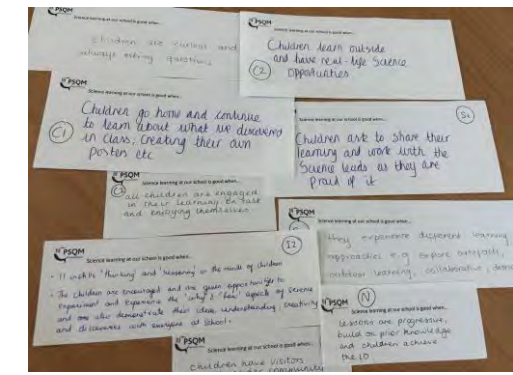
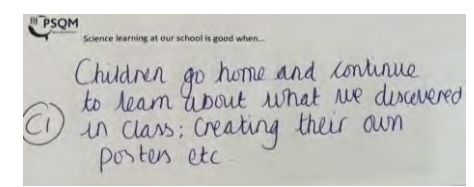
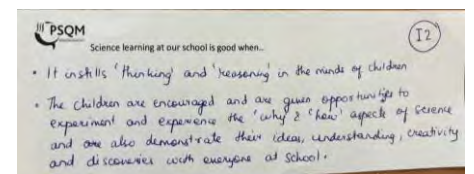
Action: New appointed Science ambassadors

When our teachers let us think for ourselves, come up with ideas, and figure things out, it makes us feel smart and capable.
 Year 6 pupil



Action: Science lead conducted whole school science voice: Science is good when... this has been used to feed into the vision and principles.

Next Step: Review principles, based on staff and pupil feedback/voice and monitoring of planning.



Science Subject Leadership: PSQM Gilt

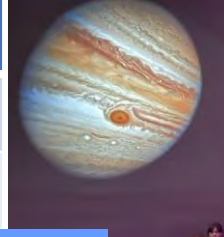
SL Aim: Science subject leadership is strengthened and developed through:

A. Science vision and principles in action within the school.

Action: Year 6 workshop with STEM Ambassador, Tom, who is teaching the children how to program and fly indoor drones.



Impact: As the children worked collaboratively to create the vision they feel included in their learning and are more enthusiastic about Science lessons.



Evidence pre PSQM: Whole school workshop on Stars and Planets with DOME EXPLORES.

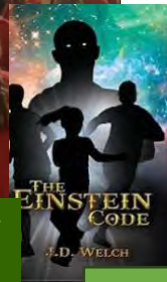


Impact: Interactions with guest speakers provided real-world applications of scientific concepts. Pupils enthusiastically complete optional homework activities related to Science.

VISION: Enrichment: Wider opportunities for children to participate in science-related activities beyond the classroom, including field trips and guest speakers.



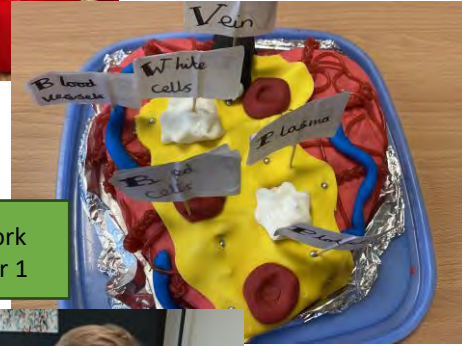
Evidence pre PSQM: Author JD Welch visit and assembly.



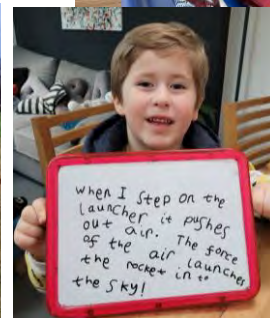
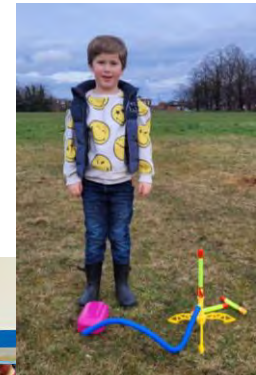
Action: Parent, geologist, workshop for Year 3 pupils



Action: Creative homework projects – Year 6 and Year 1



VISION: Curiosity Ignited: We ignite the spark for passion, that drives children to question, explore, and seek answers to the wonders around them.



Action: Secondary school Science teacher demonstrated an eye dissection to Year 6

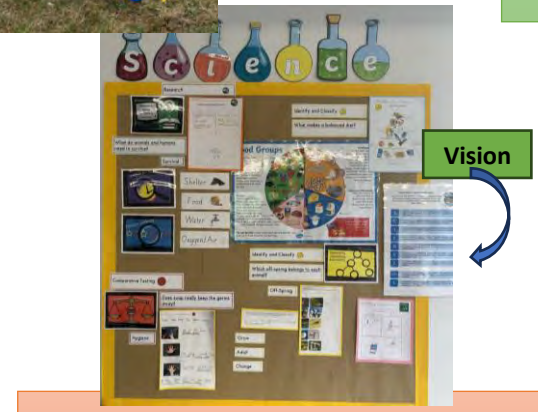
Impact: Children have the opportunity to develop their communication skills by asking questions and actively participating in discussions with guest speakers. This helps them to articulate scientific ideas.

VISION: Scientists and Careers: We provide children with opportunities to interact with real-world scientists, learn about their work, and explore various career paths.



Evidence pre PSQM: : STEM Career Day – staff and children dressed up

Action: Year 5 Display on Careers in Science



Vision

Next Step: Review principles, based on staff and pupil feedback/voice and monitoring of planning.

Science Subject Leadership: PSQM Gilt

SL Aim: Science subject leadership is strengthened and developed through:

A. Science vision and principles in action within the school. SL A

Before: Staff engaged in sustainability-related activities; however, these activities lacked a sequential structure and connection to Sustainable Development Goals. The selection of PLANT units did not prioritise the most impactful contributions to learning and the school environment.



Action: Year 2 children planting bulbs around the school

Action: A structured plan and sequence have been developed for the delivery of lessons on PLANTS for each class

Year 2

- End of October (before half term) Plant bulbs (tulips and daffodils, snowdrops and crocuses), in front of the school, around the fence. MS to support EARLY POLLINATORS FRIENDLY FLOWERS
- End of March (MS to support or plant with the children) Before Easter break. Plant meadow mix seeds; prepare extra bed with the children (group at a time). Classify different meadow seeds. As the plants grow, observe and match the seeds to the adult plant. **SPRING VEGETABLES**
- April, after Easter holidays. Plant vegetables so children can grow and harvest in June/July: lettuce different varieties (grow in container in the greenhouse, replant outside to a bigger container by end of May) **VEGETABLES**

Plants

- 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.

Living things and their habitats

- Identify and name a variety of plants and animals in their habitats, including microhabitats.

- Year 2 pupils should grow a range of bulbs and seeds, not just one type. It is recommended that these are predominantly grown in beds outside, although they may be started in the classroom or a greenhouse and then be replanted in the ground. If growing space in the school is limited, Year 2 should have priority for growing plants in the space available.
- Growing plants should be planned carefully as bulbs and seeds need to be planted at specific times of the year. Generally, bulbs will need to be planted in the autumn term and seeds in the spring term. When deciding what to grow, it is important to think not only about the diversity of plants but also the time when the plants will reach maturity. There is nothing more disappointing than pupils coming back in September to find dead tomato plants.
- Where possible, pupils should be responsible for deciding what to plant and researching how and when to plant it. They can look at the seed/bulb packets and decide which need to be planted in full or partial sunlight, at the front or back of the bed (according to their height), and how to space them. They will then need to tend and nurture their plants for them to reach maturity.

Actions

- encourage wildlife - birdie bug hotel
- leave for nature - display
- Tower of London School Superbloom Project

PLANTS AND ANIMALS SURVEY

Action: Each year group has integrated Sustainable Development Goals into their curriculum, aligning them with relevant Science units and utilizing Explorify resources.

Action: Pupils use SDGs and Explorify resources when learning about sustainability

What do humans need to survive?

Things that make me Happy: Toys, bed, Computer, car, Scooter

Things that I need: good Shelter, oxygen, sleep, water

Wednesday 19th October 2023

20th to write a paragraph and describe understanding in explaining simple enough related to electricity.

What if all transport was electric?

- Electric transport could greatly reduce the pollution going into our air. Electric vehicles and transport would help because it wouldn't produce harmful substances and reduce the air, like carbon dioxide and other pollutants. However, it is important to remember that even electricity is produced somewhat because as well as being made cleanly like solar, geothermal, hydro, it can be made with non-renewable resources like fossil fuels. Even all though I think electric transport will help however to reduce pollution.
- Electricity can be generated in many ways some clean and some non-renewable. It can be generated by wind, water turbines and solar panels you can also generate electricity by using fossil fuels.

VISION: Sustainability: We teach our children about the delicate balance of ecosystems, inspiring a commitment to sustainable practices for the betterment of our planet.

Evidence pre PSQM: Pupils from Eco Ambassador group took part in a project together with The Tower of London – Superbloom. They created a meadow at the back of the school field to support biodiversity.

Impact: Linking science to SDGs encourages pupils to actively participate in addressing global challenges. It instils a sense of agency, empowering them to contribute positively to the world. Pupil Voice

Action: MTP developed; enquiries LOGOS added

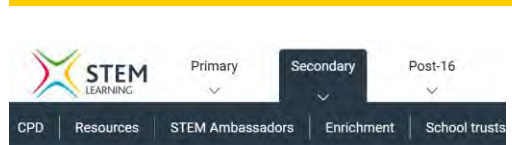
Year 5 South America					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Anglo-Saxons	Vikings	Extreme Environments	Natural Resources	The Ancient Mayans	Earth and Space
Properties and changes of materials	Living things and their habitats	Animals including humans	Animals including humans	Forces	Earth and Space
<p>Lesson 1</p> <p>L.O: Compare and contrast the properties of materials based on their properties</p> <p>W: Answering questions</p> <p>W: Support, ask pertinent questions</p> <p>W: Explain ideas and raise different kinds of questions about scientific phenomena</p> <p>Enquiry: How can different materials be classified?</p>	<p>Lesson 1</p> <p>L.O: Explain how to measure a substance from a solution</p> <p>W: Observe tables</p> <p>W: Support, make decisions about what observations to make, what measurements to use and how to use them to make them, and whether to repeat them</p> <p>Enquiry: How can we use measurements to separate salt from water?</p>	<p>Lesson 1 DE</p> <p>L.O: Explain the life cycle of mammals</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>	<p>Lesson 1 DE</p> <p>L.O: Explain how to measure a substance from a solution</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>	<p>Lesson 1</p> <p>L.O: Identify forces acting on objects</p> <p>W: Record observations e.g. using annotated photographs, videos, diagrams, labelled scientific drawings, or writing</p> <p>Enquiry: Can you label and name all the forces acting on the objects in this situation?</p>	<p>Lesson 1 DE</p> <p>L.O: Explain what a Solar System is</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>
<p>Lesson 2</p> <p>L.O: Compare and contrast the properties of materials based on their properties</p> <p>W: Taking measurements, using a range of scientific equipment</p> <p>W: Recording data and results of increasing complexity using bar charts</p> <p>Enquiry: What material should your model use to keep them warm?</p>	<p>Lesson 2</p> <p>L.O: Explain how to measure a substance from a solution</p> <p>W: Observe tables</p> <p>W: Support, make decisions about what observations to make, what measurements to use and how to use them to make them, and whether to repeat them</p> <p>Enquiry: How can we use measurements to separate salt from water?</p>	<p>Lesson 2 DE</p> <p>L.O: Explain the life cycle of mammals</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>	<p>Lesson 2 DE</p> <p>L.O: Explain how to measure a substance from a solution</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>	<p>Lesson 2 DE</p> <p>L.O: Identify forces acting on objects</p> <p>W: Record observations e.g. using annotated photographs, videos, diagrams, labelled scientific drawings, or writing</p> <p>Enquiry: Can you label and name all the forces acting on the objects in this situation?</p>	<p>Lesson 2</p> <p>L.O: Understand the difference between a Solar System and a galaxy</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>
<p>Lesson 3</p> <p>L.O: Explain and understand a range of forces in which interactions can be used</p> <p>W: Support, make decisions</p>	<p>Lesson 3</p> <p>L.O: Explain how to measure a substance from a solution</p> <p>W: Observe tables</p> <p>W: Support, make decisions about what observations to make, what measurements to use and how to use them to make them, and whether to repeat them</p> <p>Enquiry: How can we use measurements to separate salt from water?</p>	<p>Lesson 3 DE</p> <p>L.O: Explain the life cycle of mammals</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>	<p>Lesson 3 DE</p> <p>L.O: Explain how to measure a substance from a solution</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>	<p>Lesson 3 DE</p> <p>L.O: Identify forces acting on objects</p> <p>W: Record observations e.g. using annotated photographs, videos, diagrams, labelled scientific drawings, or writing</p> <p>Enquiry: Can you label and name all the forces acting on the objects in this situation?</p>	<p>Lesson 3 DE</p> <p>L.O: Explain what a Solar System is</p> <p>W: Reporting and presenting findings</p> <p>W: Support, including conclusions, causal relationships and explanations of a degree of trust in results. In oral and written forms such as displays and other presentations</p>

Science Subject Leadership: PSQM Gilt

SL Aim: Science subject leadership is strengthened and developed through:

B. Strategic support enabling improvement to take place SL B

Before: No specific CPD on moderation was access by SL and the staff. Moderation of science work did not take place before PSQM journey.



Evidence pre PSQM: Science Lead registered on STEM ambassador program

Request a STEM Ambassador

Connecting young people with STEM industry experts

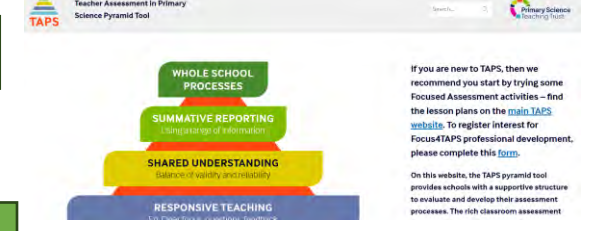
Action: Science leader took part in various webinars/training on the PSQM repository

Impact: Exposure to diverse webinars and information sources contributes to continuous professional development. The subject leaders stay informed about current trends, best practices, and emerging research in the field of science education.

ACTION PLAN: Science		
<ul style="list-style-type: none"> Key Improvement Priority Outcomes for Children. Review and develop the science curriculum to ensure it meets the needs of our children. Strengthen the school's approach to teaching Science. 5 enquiry types, assessment Strengthen children's aspirations and enjoyment of Science Ensure that working scientifically objectives are embedded across the school - review skills and knowledge progression documents Ensure resources support teaching and learning of science Ofsted research report and guidance embedded in the curriculum: substantive and disciplinary knowledge Handbook and self-evaluation of science embedded Science curriculum from Year 1 closely linked to EYF5 	Year: 2023-24	Finance Plan: Budgetary Implications <ul style="list-style-type: none"> Leadership time, IPMA, Learning walks during directed teaching time
Science subject leader <p>The PLAN primary science resources include a range of resources that are designed to support science subject leaders to implement effective and robust planning and assessment systems. The resources for science subject leaders are set out below.</p> <p>If you are not familiar with the PLAN primary science resources and how they support planning and assessment, you may want to read our Introduction to PLAN</p>		
Focus on outcomes, specific, measurable impact on pupil <ol style="list-style-type: none"> Children's prior knowledge and focused vocabulary will be identified and met and they will make progress with their learning. Medium and Short Planning will be developed so it supports delivering Science lessons. All teaching staff will be involved in CPD in order to support themselves, colleagues and children in teaching effective Science lessons. Teaching staff will have an increased subject knowledge, pedagogical approaches and knowledge of their discipline. This will lead to more children meeting and exceeding expected attainment based on the last academic year. Through feedback, learning walks, observations and general monitoring activities, children will demonstrate an increased level of enjoyment for science. The science curriculum will have been reviewed and developed as needed for the children's needs. The changes will impact positively on learning and assessment for most children. Curriculum planned and assessed to ensure progression. Science applied in each classroom. Half of displays in STEM AREA of the school in Spring Term 7 reviewed books which fit for purpose and objectives are aware of implications and the implications of these. 11. Organizational Inset and Outdoor learning opportunities will be identified - Ensure involvement of Science. 		
PDM focus on formative assessment <p>PDM is used regularly to ensure progression within topics and across schools, strategy is formed to ensure assessment is meaningful, consistent and robust. AIs to research the best approach for the school to use for this purpose and objectives are aware of implications and the implications of these.</p>		

Evidence pre PSQM: Action plan developed with Science and PSQM on SIP

Evidence pre PSQM: Use of TAPS pyramid to support teachers in assessment



Evidence pre PSQM: Support from PLAN with progression

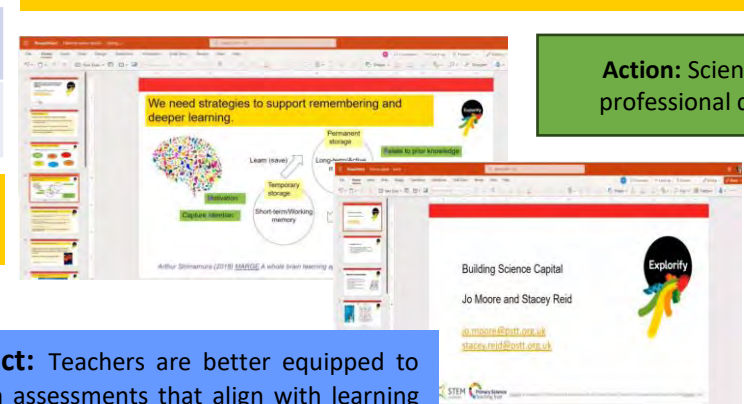


Great Science Ideas & Enquiries

HOME 2023-24 THEME GREAT SCIENCE IDEAS & ENQUIRIES GREAT SCIENCE PEOPLE SHARE SCIENCE

Next Step: To continue attending virtual science subject leader meetings and trust cluster group.

Before: The Science Lead has not been involved in any CPD training until a few years ago and is not part of any local science networks. The strategic development of science became a priority from 2020.



Impact: Teachers are better equipped to design assessments that align with learning objectives, providing more accurate and meaningful insights into pupils' understanding of scientific concepts.

Action: Subject Lead read the document for support with planning Inset and staff meetings

Action: Subject Lead utilise information from Ogden Trust during moderation sessions

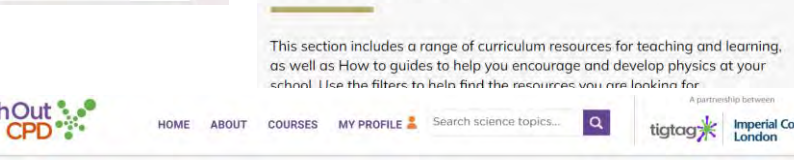
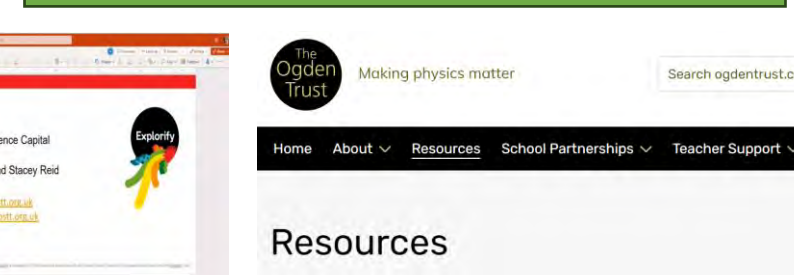
Guidance for Subject Leaders: Whole School Approach



Action: SL attended virtual science leader meetings

Thursday, 30 November 2023 16:00
Virtual Primary Science Subject Leader Meeting
 (2 of 6 for 2023/24)

Action: Science leaders have engaged with a huge array of professional development opportunities in the last 3 years.



Action: SL completed Outdoor learning CPD

I have gained a wealth of knowledge and expertise and I feel confident in supporting the staff to develop Science further. The headteacher provided huge financial support, purchasing memberships, resources and funding CDPs as well as aligning SIP and PSQM priorities. This helped me to lead science in a very effective way. **Subject Lead**

Science Subject Leadership: PSQM Gilt


SL Aim: Science subject leadership is strengthened and developed through:

C. An effective monitoring and improvement cycle that informs development in science

Egerton Primary School, Science Monitoring, 2023/24

Book "LOOK"		
Year 5, Properties and changes of materials, Autumn 1, 21.10.23		
Questions	Notes	Actions
Evidence of scientific enquiries: Is there evidence of wide range of learning experiences? Different types of enquiry and enquiry methods?	<ul style="list-style-type: none"> Different types of enquiries in books Fair test – investigating how absorbent different brands of kitchen roll are Compare and group – test the physical properties of the following materials (iron, jelly, wood – 30.09.21) Comparative test – Which type of material is best for keeping tea warm? 	<ul style="list-style-type: none"> Update skills progression by issuing document as to far last, investigating how absorbent different brands of kitchen roll are. Consider outdoor learning, treasure hunt outside using for different materials, spot testing, drawing around the school
Activities: Are the activities enabling pupils to embed/understand new knowledge? And recall prior learning?	<ul style="list-style-type: none"> Lessons are assessed so children can use their prior knowledge when answering questions in their books. Firstly, children focused on vocabulary, both, prior and new. Then they compared and grouped materials. After that, they focused on comparative and fair testing. Using real life items, children will study dissolving, separating different materials, reversible and irreversible changes. Enquiries enable children to use prior and new vocabulary. 	<ul style="list-style-type: none"> Consider using Concept Cartoon. They are designed to promote discussion and critical thinking. https://www.ck12.org/reading/Concept-Cartoon-Worksheet-7/888-1466/ This website is free and has some good resources
Clarity of presentation: Labels/diagrams/charts/tables/recorded independently/workbooks used	<ul style="list-style-type: none"> Some worksheets used (tables with subheadings) to support children's presentation skills Work recorded independently Presentation is neat and clear Children collect results in tables clearly labelled 	

Evidence pre PSQM: Book Look in Autumn 1. Staff received feedback. Monitoring – book look, PV and SV – every term to capture impact

Book "LOOK"		
Animals Including humans – Year 3, Autumn 1, 21.10.23		
Questions	Notes	Actions
Evidence of scientific enquiries: Is there evidence of wide range of learning experiences? Different types of enquiry and outdoor learning?	<ul style="list-style-type: none"> Different types of enquiries evident in books Comparative and fair testing: How does the skull of a boy compare to girl? Link to pattern seeking Identifying and Classifying: How would you organise these foods into the different nutrient types? Pattern seeking: Do male humans have larger skulls than females? Link to comparative testing Research: Why do vitamins keep us healthy and which foods can we find them in? 	<ul style="list-style-type: none"> Consider outdoor learning – stick skeleton 
Activities: Are the activities enabling pupils to embed/understand new knowledge? And recall prior learning?	<ul style="list-style-type: none"> Activities planned so the children can embed prior knowledge and understand new knowledge. Firstly, children concentrated on identifying that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food. They get nutrition from what they eat. After that, they identify that humans and some other animals have skeletons and muscles for support, protection and movement Children explored ideas about what would happen if humans did not have skeletons using concept cartoon. Children explore that some animals don't have skeletons using odd one out 	<ul style="list-style-type: none"> Consider different enquiries for example: Identifying and grouping animals with and without skeletons. This enquiry will support children's understanding that there are animals without a skeleton. Which animals does the skeleton belong to? This could be another activity to consider. It will help children see the difference

"It's incredibly valuable to have meetings with the SL. They provide us with a deeper understanding of the school's strategic direction and help us ensure that our governance decisions are well-informed and aligned with the needs of the children."

Governor Voice

Egerton Primary School, Subject Monitoring, 2023-24

MONITORING - Quality Education – 5-a-day Science	
<p>Short in class (at start: Input and In Focus task and end:workbooks, self-assess point)</p> <ul style="list-style-type: none"> Activating and building on prior learning: teacher subject knowledge and retrieval practice Mathematical Vocabulary Questioning/feedback from teacher, addressing misconceptions Scaffolding support by TA, concrete, pictorial, abstract – CPA Pitch and Challenge: What evidence is there for high expectations and learning being challenging enough? Assessment: Are a range of assessment types used? (peer assessment, self-directed assessment, teacher-led assessment, peer assessment) 	<p>Book Look</p> <p>Depth and breadth of coverage</p> <ul style="list-style-type: none"> Do children learn a suitably broad range of concepts/topics within Maths? How many times are they journaling a week? Is the best sections of learning to journal being chosen? Do variety of different journaling styles being used? <p>Clarity of presentation</p> <ul style="list-style-type: none"> How are the children presenting their work? Are labels/diagrams/charts/tables/recorded independently/workbooks used? <p>Assessment/Feedback/Marking</p> <ul style="list-style-type: none"> Does the pupil receive feedback on their work? <p>NOW</p> <p>Summary Whole School Strengths</p> <ul style="list-style-type: none"> Com Res Ref various careers such as architecture, medicine, archaeology, and ecology Enthusiasm for Experiments: Many pupils express a liking for experiments, finding them enjoyable and interesting. This enthusiasm indicates an active and participatory approach to learning Interest in Notable Scientists: Pupils show awareness and interest in the achievements of scientists such as David Attenborough and Stephanie Kwolek. This indicates that exposure to real-world examples fosters a positive attitude toward the subject. Connection to Other Subjects: Pupils appreciate the interdisciplinary nature of science, mentioning enjoyment in combining subjects like making a comic strip about the inside of a flower. <p>Summary of Whole School Areas for Development</p> <ul style="list-style-type: none"> Desire for Outdoor Learning: Children express a desire for more outdoor science lessons, indicating an interest in experiential and contextual learning. Vocabulary Instruction: Pupils identify vocabulary as a challenge, suggesting a need for focused instruction and support in understanding and using scientific terms.
<p>Scrutiny carried out by</p> <p>Rationale</p> <p>Date</p>	<p>M</p> <p>BC</p> <p>AL</p>

Action: Monitoring summary documents developed and shared with SLT during termly meetings.

Impact: Science lead has a good understanding of children's views and opinions of science. Which has enabled several changes to be implemented based on pupil voice data such as implementation of new science books. SL met with governors each term to discuss the action plan, curriculum development, assessment. This fostered collaborative approach to the development of science. This enhances governance oversight and decision-making, as governors are more informed about key educational initiatives and priorities.

OVERALL PICTURE – CURRENT PRACTICE - Quality of Education	
<p>Aims:</p> <p>All Expects, we encourage children to be inquisitive throughout their time at the school and beyond. The Science curriculum fosters a healthy curiosity in children about our universe and provides the platform for learning and discovery. We believe Science encompasses the acquisition of knowledge, concepts, skills and practical enquiry. Throughout the progression of study, the children will acquire and develop their knowledge that has been identified within each year and across each year group – all learning is accessible for all children regardless of their ability or background. The key knowledge identified for each year group is informed by the national curriculum and health research identified phase and written in accordance with NC expectations. Key skills are also taught for each year group and are progressive throughout the school. There are regular systematic progression to identified skills and pupils which are in accordance with the Working Scientifically skills expectations of the national curriculum.</p> <p>The curriculum is designed to ensure that children are able to acquire key scientific knowledge through practical experiences, using equipment, conducting experiments, holding arguments and explaining concepts confidently. The school's approach to Science takes account of the school's own context, meeting access to people with specialist expertise and places of scientific interest as part of the school's commitment to learning outside the classroom. Cross-curricular opportunities are also identified, targeted and planned to ensure contextual relevance. Children are encouraged to ask questions and be curious about their surroundings and a love of Science is nurtured through a whole school ethos and a total Science curriculum.</p>	<p>Objectives:</p> <ul style="list-style-type: none"> to develop the natural curiosity of children about the world around them; to develop confidence and reporting skills through a range of enquiries in learning experiences; to help children develop the skills to make systematic enquiries; to provide opportunities for children to apply theoretical ideas to the solving of practical problems; to enable children to develop an accurate attitude to accuracy; to foster a positive attitude to science and increase pupils' understanding of how science is used in the wider world; to provide a range of relevant experiences allowing pupils to acquire knowledge, skills and understanding in the key areas of Scientific Enquiry, Link Processes and Living Things, Materials and Space Protection, and Personal Processes through a variety of practical and learning strategies; to develop the accurate use of scientific vocabulary; to cover the to expand
<p>More Science in the</p> <p>Thinking and Learning</p> <p>The Science curriculum is designed to support the school's vision of providing a high quality education for all children.</p>	<p>Evidence pre PSQM: Report shared with governors.</p>

Pupil Talk	
Questions	Notes
How often do you have a science lesson?	At least once or twice a week.
What is Science? What is a Scientist?	Is a chance to learn something new and can be used in many jobs. Used to make things – building a house – need to think about materials. Building up your scientific knowledge. David Attenborough – animals and life when he was younger – one of his achievements was he got knighted by the Queen. Stephanie Kwolek – her invention of Kevlar – strong metal – can re-call facts rapidly.
What do you like about science?	Max – Learn new things. Callum – experiments and learn how things are made. Lola – experiments. Freya – experiments. Imogen – Enjoy combining subjects in science – made a comic strip of the inside of a flower.
What are you learning about in science?	Natural Resources – debated whether was Geoparc Materials – what dissolves in water. Life Cycles of different animals. Sexual and asexual reproduction of plants. Dissecting a daffodil. Comparing life cycles. A website including life cycles
What do you find challenging in science? Is there anything that you do not like?	Imogen – Experiments with metals and acids. Predictions can be tricky – not knowing much about Vocabulary for an experiment
How could your teacher/school improve science?	Go outside for more lessons.
Do you work on your own or in groups in science?	Bit of both – posters in small groups. Investigations and enquiries in small groups or with
Enquiries	Discussed the five enquiries Linked basil experiment to observing over time.
What do you think you learn from carrying out an experiment?	To learn new things. Enjoyment and interesting. Help us to remember things and explain our hypothesis Using skills to gather information and research different things
Can you give me an example of an experiment that you've done recently?	The following questions are about connecting scientific learning to the real world: <ul style="list-style-type: none"> If you were to invent something, what would it be? Where does (e.g. electricity) come from? How can science help people?

Action: Pupil Voice Spring Term. Children were able to talk about what they like about science and what they learnt

Next Step: Continue with regular monitoring activities feeding back to staff and governors

ACTION PLAN - Science	
<p>Key Improvement Priority Objectives for Children:</p> <ul style="list-style-type: none"> Review and develop the science curriculum to ensure it meets the needs of our Strengthen the school's approach to teaching Science's enquiry types, assessment Strengthen children's aspirations in and enjoyment of science Ensure that working scientifically objectives are embedded across the school – review skills and knowledge progression documents Ensure resources support teaching and learning of science Obtain research report and guidance embedded in the curriculum, substantive and practical knowledge Handbook and self-evaluation of science embedded Science curriculum from Year 1 closely linked to EYF5 	<p>Year: 2023-24</p> <p>Finance Plan; Budgetary Implications</p> <ul style="list-style-type: none"> Leadership time, PDAs, Learning walks during directed teaching time
<p>3. OVERALL OBJECTIVES:</p> <ol style="list-style-type: none"> Children's prior knowledge and focused vocabulary will be identified and they will make progress with their learning. Medium and Short Term Review will be developed so it supports planning Science lessons. All teaching staff will be involved in CPD in order to support themselves, colleagues and children in teaching effective Science lessons. Teaching staff will have an increased subject knowledge, pedagogical approaches and technology at their disposal. This will lead to more children meeting and exceeding expected attainment based on the national curriculum. Through feedback, learning walks, observations and general monitoring activities, children will demonstrate an increased level of enjoyment for learning. The science curriculum will have been reviewed and developed in line with children's needs. The changes will impact positively on enjoyment and attainment. Curriculum planner will be reviewed to ensure progression Science display in each classroom. 	<p>Focus on outcomes. Specific, measurable impact on pupil</p> <ol style="list-style-type: none"> Children will make progress from their starting points. Staff will be able to articulate the strengths of their teaching and areas for development. Planning will be clear and will have prior knowledge, key questions and vocabulary stated. Child engagement and knowledge will be showcased during STEM Week, work will be recorded in topic books and e-books Displays will promote current scientific vocabulary Science is teachable and taught regularly.
<p>Summative assessment – (BQs) will be used as a school system for summative assessment (KS1 and KS2)</p> <p>Review and share skills and knowledge progression documents, prior knowledge for each topic. Documents will be updated/added/removed to support the national curriculum.</p> <p>Science/Resource – Progression across the school</p> <p>Audit to be carried out of resources in school, organising purchasing spend out if necessary. Teachers across school informed of resources available. Accessible to all</p> <p>Update policy and ensure it is fully revised, shared and displayed by all stakeholders.</p> <p>Moderation of children work in Science</p> <p>Cross-curricular links and Outdoor learning opportunities will be identified – Ensure enrichment of Science – Science Week planned and finalised</p> <p>Science Club Running Half Termly in each KS</p> <p>Learning Walks, Book Look, Spelt word wall, staff voice conducted every term to identify CPD for staff and the impact of undertaken actions</p> <p>Impact: What will the outcomes be?</p> <p>Children will make progress from their starting points.</p>	<p>Evidenced by/ through</p> <ol style="list-style-type: none"> Book Look Deep Dive Learning Walks <p>Evaluation: Have the intended outcomes been achieved?</p>

Before: Initially, during the inception of the PSQM cycle, the monitoring framework was established, incorporating book examinations, pupil feedback, and staff input. Throughout subsequent terms, subject reviews have been consistently conducted by the Subject Leader (SL), with feedback disseminated during staff meetings. Regular monitoring of planning across the school ensures ongoing quality assurance. Staff members are well-informed about both strengths and areas requiring improvement. However, due to changes within the governing body, newly appointed governors possess limited understanding of the advancements in science and their related responsibilities. New headteacher appointed from September 2023.

We love it when our teachers show us how science is all around us, in everyday things. It helps us understand why science matters in our lives.

Year 4 pupil



Science Teaching: PSQM Gilt

T Aim: Science teaching is strengthened and developed through:

A. Staff Engagement with professional development is regular and ongoing

Before: Over the past three years, there have been scheduled opportunities for staff CPD each term. During this time, staff have actively participated in and implemented various actions, including different types of enquiries, formative assessment strategies, summative assessment strategies, and retrieval practice, among others. While these initiatives have been introduced, there remains a need to revisit them to ensure they are fully integrated into our practices and that every staff member feels completely confident in implementing them. This necessity arises from monitoring processes and feedback from staff, indicating that additional support is still required for some staff.

Free Explorify Planning Support

Would you like support finding just the right Explorify activities to enhance your science planning?



Action: Based on staff voice - Time dedicated during staff meetings, staff guided to watch videos to enhance subject knowledge

Animals including

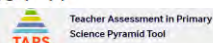
Climate challenge

Electricity for ages

Evolution & inheritance for ages 7-11

Forces for ages 7-11

Human body f



Human body f

Action: Staff meeting for sequencing Plants unit and the use of school grounds. Impact slide 11

Class	Autumn	Spring	Summer
Year 2	<ul style="list-style-type: none"> End of October (before half term) Plant bulbs (tulips and daffodils, snowdrops and crocuses) in front of the school, around the fence. MS to support EARLY POLLINATORS FRIENDLY FLOWERS 	<ul style="list-style-type: none"> End of March (MS to support or plant with the children). Before Easter break. Plant meadow mix seeds, prepare extra bed with the children (group at a time). Classify different meadow seeds. As the plants grow, observe and match the seeds to the adult plant. MS: HONEYBEE FRIENDLY 	<ul style="list-style-type: none"> April, after Easter holidays Plant vegetables so children can grow and harvest in June/July. Let's use different varieties (sow in container in the greenhouse, replant outdoor to a bigger container by end of May) FRESH VEGETABLES

Plants
 • 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.

Living things and their habitats
 • Identify and name a variety of plants and animals in their habitats, including microhabitats.

- Year 2 pupils should grow a range of bulbs and seeds, not just one type. It is recommended that these are predominantly grown in beds outside, although they may be started in the classroom or a greenhouse and then be replanted in the ground, if growing space in the school is limited. Year 2 should have priority for growing plants in the space available.
- Growing plants needs to be planned carefully as bulbs and seeds need to be planted at specific times of the year. Generally, bulbs will need to be planted in the autumn term and seeds in the spring term. When deciding what to grow, it is important to think not only about the diversity of plants but also the time when the plants will reach maturity. There is nothing more disappointing than pupils coming back in September to find dead tomato plants.
- Where possible, pupils should be responsible for deciding what to plant and researching how and when to plant it. They can look at the seed/bulb packets and decide which need to be planted in full or partial sunlight, at the front or back of the bed (according to their height), and how to space them. They will then need to tend and nurture their plants for them to reach maturity.



Action: Moderation meeting Spring Term

Hi All,
 A very big thank you for the moderation session we had yesterday. All science books look amazing with great evidence of knowledge and working scientifically skills. I'll photocopy all your paperwork and return next week.
 We will have another moderation meeting later in the summer term to follow up on the identified next steps.

Action: Regular communication with staff

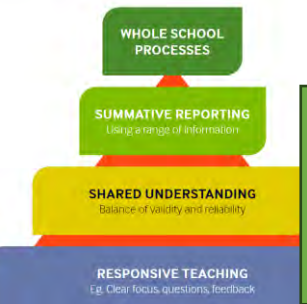
This is the link to TAPS pyramid: <https://taps.pstt.org.uk/>
 You will find different ideas for teaching strategies and assessments



RETRIEVAL PRACTICE:
 Our focus is on retrieval practice and making sure information is stored in long term memories so comfortable when they move classes and need to access more complex context. As we know, quizzes require active participation, prompting learners to recall information from their memory rather than passively reviewing material. This active engagement enhances the encoding and retrieval processes in the brain.

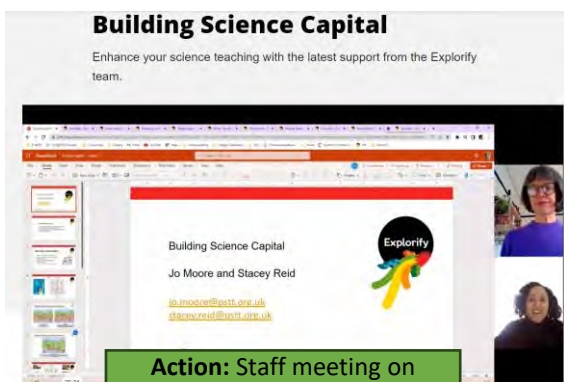
The website for different quizzes is **WORDWALL**, however, you will have to type into **GOOGLE** what you are looking for. Example: Circulatory system ks2 wordwall quiz or seasons ks1 wordwall quiz. **You can find many different topics, not just science related!**
<https://wordwall.net/resource/33979296/history/decline-of-maya-civilisation>

Action: Revisited - Staff CPD around assessment using TAPS; this involved peer-to-peer learning sessions to deepen understanding and implementation of effective assessment practices during science lessons. Impact slide 14, 15.



Impact: Teachers have a solid understanding of the content they are teaching, enabling them to deliver accurate and up-to-date information to their pupils. Through shared experiences and collaboration, staff is able to exchange ideas and discuss activities. Through regular communication, formal (staff meetings, emails), informal chats, SL has a good understanding of the impact of CPDs and is able to act in a timely fashion to address anything that comes up.

As a teacher, I find the planned CPD initiatives for science incredibly valuable and empowering. The regular updates and meetings provide us with dedicated time to collaborate, learn, and reflect on our teaching practices. I use the Explorify planning support videos on a regular basis.
KS2 Teacher



Action: Staff meeting on building science capital. Impact on slide 16, 17.

Teachers incorporate... where students ask questions, investigate, and draw conclusions.
 It is evident that children are beginning to change their opinions of what a scientist is stereotyping is being reduced.
 Invite guest speakers from various scientific fields to share their experiences and demonstrate the real-world impact of science.
 Show the real-life applications of scientific concepts to make them relevant and interesting for students.

Science Capital
 Organise field trips to science museums, nature reserves, botanical gardens, or other relevant places to expose students to diverse scientific environments.
 Establish science clubs or participate in science competitions to provide additional opportunities for students to delve deeper into scientific topics.

Improving Primary Science Summary of recommendations	
01 Develop pupils' scientific vocab	Identify science-specific vocabulary. Explicitly teach new vocabulary and its meaning, creating opportunities for repeated engagement and use over time.
02 Encourage pupils to explain their thinking, whether verbally or in written form	Create a collaborative learning environment. Capitalise on the power of dialogue. Cultivate reasoning and justification.
03 Guide pupils to work scientifically	Explicitly teach the knowledge and skills required to work scientifically, guiding pupils to apply this in practice, with opportunities for discussion and reflection.
04 Relate new learning to relevant, real-world contexts	Consider real-world contexts. Engage with science concepts supported by virtual models.
05 Use assessment to support learning and responsive teaching	Plan teaching that builds on existing knowledge and experiences. Monitor pupils' learning to inform responsive teaching, feedback, and next steps.
06 Strengthen teaching if effective CPD developments implement	

Action: SL shared EEF report. Staff engaged with EEF report and the summary of recommendations

Science Wider Opportunities: PSQM Gilt

T Aim: Science teaching is strengthened and developed through:

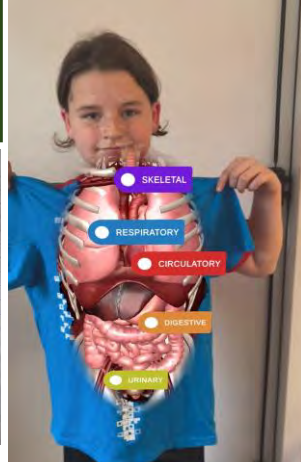
B. Use of a range of effective teaching and learning strategies

Before: Over the past three years, staff have developed and embedded various teaching strategies in science, ensuring that pupils are exposed to a diverse range of instructional approaches tailored to their individual learning needs and preferences. Feedback from pupils, parents and staff confirmed a deeper learning experiences - use of higher order thinking, vocabulary and questioning.

Evidence pre PSQM: Children in Year 6 using T-shirt and an app – Curios to learn about the circulatory system

Object	Material	Suitable or unsuitable? Why?
Cushion	Fabric	Fabric is suitable because it is soft, squishy, comfortable. Also it is very suitable.
House	Wattle and Daub	Wattle and daub is unsuitable because it can easily be on fire.

Evidence pre PSQM: Prediction in Year 1



Evidence pre PSQM: Year 3 display on plants with vocabulary



Evidence pre PSQM: Model building in Year 6

As the subject leader, I am pleased to observe the diverse range of teaching and learning strategies being utilised within our classrooms. The implementation of varied approaches is essential to cater to the diverse learning styles, ensuring that each child has the opportunity to engage effectively with the curriculum. By incorporating a mix of instructional methods, such as practical investigations, play base learning activities, group discussions, we are able to accommodate different learning needs and promote deeper understanding and retention of concepts. **Subject Lead**

Evidence pre PSQM: Dissection of a plant in Year 5



I absolutely love our science lessons, especially when we get to do practical activities and build models! Building periscopes was so cool! I got to work with my friends to assemble the parts and see how light reflects off mirrors. We even took our periscopes outside on the field to practice and see if they work. It was amazing to see how we could use them to look around corners and spy on each other! **KS2 Pupil**



Evidence pre PSQM: Classification in Year 6

@ExplorifySchool #HYE22 Year 6 have been looking into Have you ever found mould growing on bread at home. We mind map our information and watch few videos to deepen our understanding. @EgertonPrimary



15:36 · 17/10/2022 From Earth

Science Teaching: PSQM Gilt

T Aim: Science teaching is strengthened and developed through:

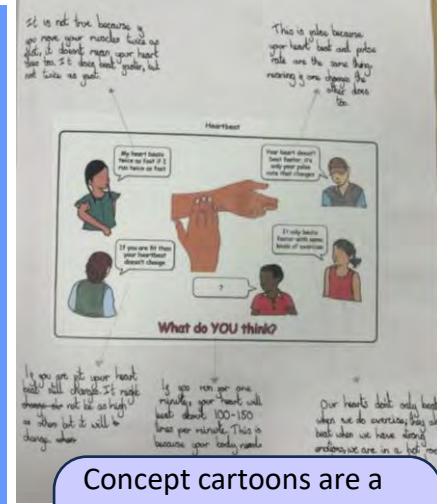
B. Use of a range of effective teaching and learning strategies

Before: Staff received CPD for a range of effective teaching and learning strategies in the last 3 years. Following staff voice and monitoring, many of the strategies are embedded; however, there was lack of recent training on science pedagogies. Some strategies needed to be revisited – concept cartoons, collaborative learning and a range of resources and ideas for EYFS to refresh the planning.

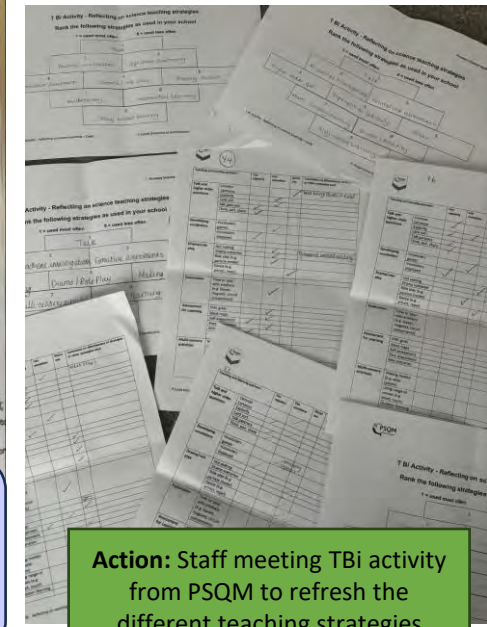


Action: Teachers incorporating Explorify resources in lessons. Y4 investigating melting chocolate through group discussions and hands on investigation

Impact: Teachers have proactively enhanced their teaching practices by further exploring an extended range of teaching strategies and utilising various educational websites such as Outstanding Science, Developing Experts, and Explorify. This has allowed for the development of concept cartoons, new explorify activities, and more collaborative lessons. This broaden pupils` exposure to different learning activities, catering to diverse learning styles and preferences. Children in EYFS enjoy “Zoom In” activities from Explorify. They are eager to talk about what they discussed in class.



Concept cartoons are a great way for the children to critically think about their learning.
Teacher Year 6



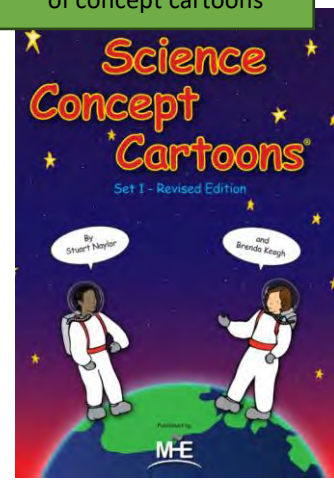
Action: Staff meeting TBi activity from PSQM to refresh the different teaching strategies

The best part of Science is when we get to ask questions and figure out the answers together. We can discuss ideas first and share what we think. **Year 5 pupil**

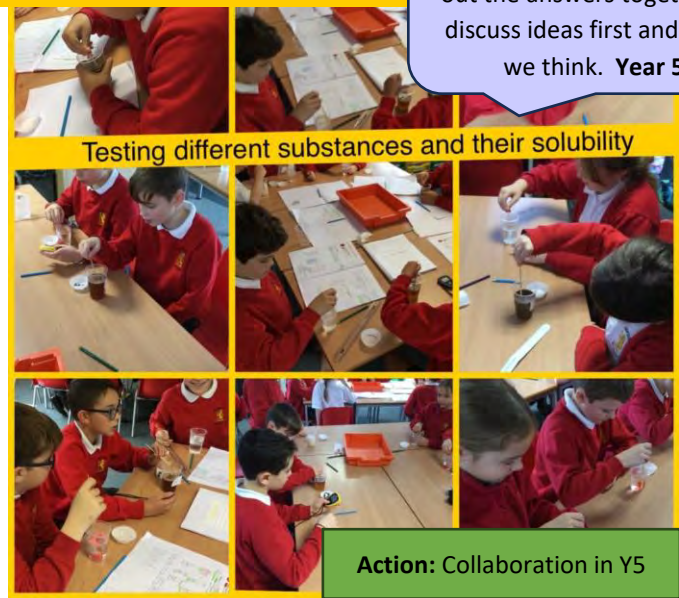
The links with the different explorify activities are very handy. I use the all the time with my Reception class. They love doing Zoom In or watch the short videos when we introducing new ideas.
Teacher EYFS

Action: EYFS exploring dinosaurs` skeletons. A multisensory approach to Science reflects our principle of curiosity and further supports all learners access high quality Science learning opportunities

Action: Purchased a set of concept cartoons



Attending the staff meeting focused on various teaching pedagogies provided me with valuable insights to refresh my approach in the classroom. I found it highly beneficial to engage in ongoing exchanges of ideas and collaborate closely with my colleagues. I particularly enjoy using the concept cartoons as it is a great tool to discuss misconceptions. Children in my class really enjoy using them, even the less confident children.
Teacher Year 4



Testing different substances and their solubility

Action: Collaboration in Y5

Early Years

Explorify planning support



Curriculum statements	Explorify activities	Details
Animals		
Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside.	Have you ever cared for a baby animal?	HYE Get your children chatting about something they have all experienced.
	Black legs	ZIZO Dog
	Stripes and patches	ZIZO Dog
Development Matters - England	Wavy hair	ZIZO Donkey
	Watery horses	ZIZO Frog
I have observed living things in the environment over time and am becoming aware of how they depend on each other.	Spiky scales	ZIZO Hedgehog
	Snowed lines	ZIZO Goat
Scotland	Fluffy and light	ZIZO Horse
	Speckled and soft	ZIZO Horse
I can recognise that plants and animals are living things which grow.	Brown hair	ZIZO Rabbit
Wales	Fluffy and white	ZIZO Rabbit
	Curly locks	ZIZO Sheep
	Green scales	ZIZO Snake
	Small and hairy	ZIZO Spider
	Thin snouts	ZIZO Squirrel
	Laughed at	ZIZO Squirrel
	Shiny sections	ZIZO Worm
	Down to duck	LWCY Birds
	Out and about	LWCY Woodpecker, aeroplane, person walking
	Life in the wild	LWCY Elephant, rattie snake and chimpanzee
	Old Mac Donald	LWCY Cow, sheep and pig



Action: SL shared planning support documents with EYFS staff

Next Step: Facilitate time during staff meeting to discuss different teaching and learning strategies on a regular basis. Develop drama and role play as one of the strategies.

Science Teaching: PSQM Gilt

T Aim: Science teaching is strengthened and developed through:

C. Regular and safe use of up-to-date quality resources TC

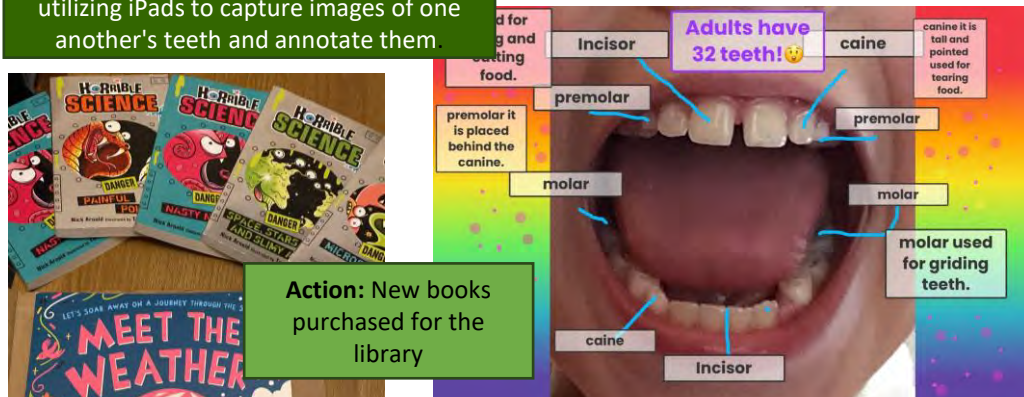
Before: Teachers place orders for resources and books linked to Science topics through the Cheshire Library Service, to which the school holds a membership. It is the responsibility of each teacher to ensure that the orders are placed before the end of the term, facilitating delivery after the half-term break when we commence teaching new topics.



Action: Books and other resources from the Cheshire Library Service in EYFS, Y3 and Y4 on display, accessible for children



Evidence pre PSQM: Children in Year 4 utilizing iPads to capture images of one another's teeth and annotate them.



Action: New books purchased for the library

Impact: Quality equipment encouraged our pupils to explore and ask questions. It stimulated curiosity and a sense of wonder, promoting a proactive approach to learning as children seek to understand the "why" and "how" behind scientific phenomena.



Action: Children in Year 5 testing materials as the best thermal insulators



Evidence pre PSQM: Teachers use CLEAPSS website for advice and risk assessment.



Evidence pre PSQM: Teachers have access to Developing Experts and Outstanding Science websites

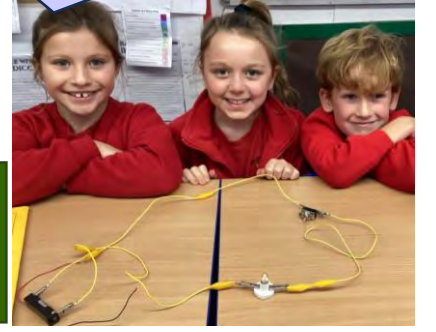
Before: Science resources were audited and organised a year ago. All is clearly labelled and accessible for staff in central place. (2022)



Action: Year 6 use Purple marsh website to design periscopes

"We had so much fun using the science equipment to learn about electricity! It was like being real scientists. The experiment with circuits and wires made it very interesting. **Year 4 Pupil**"

"I'm thrilled to share that our science cupboard is now impeccably organized! We've revamped the resource science cupboard, making it a well-arranged haven for all our teaching materials. This organized space not only enhances accessibility but also streamlines lesson preparations. **Message from SL**"



Impact: With resources neatly arranged and clearly labelled, teachers spend less time searching for materials. This time savings is redirected toward more meaningful instructional activities, improving overall productivity in lesson preparation. Pupil voice evidenced the impact of high quality resources on their learning - staff confident in tackling higher risk activities due to CLEAPSS support resources



Next Step: Continue to monitor and order new resources. Establish sustained partnerships with cluster schools to pool training opportunities and share best practice and resources. Ask staff at the end of each unit, if there is enough resources for their topics.

Science Teaching: PSQM Gilt

T Aim: Science teaching is strengthened and developed through:

C. Quality science texts so children have regular and easy access to texts that are modern, relevant and age appropriate

Before: Several years ago, the school acquired a subscription to Literacy Shed, facilitating access to high-quality reading texts associated with science topics. Subsequently, the Reading Lead implemented a guided reading approach school-wide, ensuring that pupils dedicate time each week to engage with texts that are thematically linked to science, geography, and history subjects. This has been an ongoing focus to improve vocabulary across the school and literacy skills.

The Human Heart

Cells throughout the body take oxygen from the blood for survival, and excrete waste products, such as carbon dioxide, into it.

Blood from around the body low in oxygen and containing waste products such as carbon dioxide, enters the heart via the right atrium.

The oxygenated blood leaves the left ventricle and enters the aorta. The aorta branches into smaller arteries throughout the body.

The oxygen-rich blood re-enters the heart through the left atrium and passes into the left ventricle.

The blood is pumped out of the right ventricle into the pulmonary artery, which carries the deoxygenated blood to the lungs.

Angi gas exchange occurs between the blood in the capillaries and the blood in the lungs. The red oxygen enters the capillary and the carbon dioxide leaves the capillary.

Artery **Capillary** **Vein**

Action: Teachers do cross-curricular reading sessions when they analyse a text linked to science unit.

How Electricity Works

Electricity is a source of energy that is produced in the natural world through lightning bolts and static electricity. It is also produced in a power station. The station's main job is to generate a current of electricity. This current is sent to a transformer which steps up the voltage. The high voltage electricity is then sent to a power station which steps down the voltage. The low voltage electricity is then sent to a power station which steps down the voltage. The low voltage electricity is then sent to a power station which steps down the voltage.

Vocabulary: I think the word abstract means they are concepts because the text says electricity is abstract energy.

Vocabulary: I think balanced means that it is equal weight.

Vocabulary: I think circuit means it is a single battery.

The Eye

The eye is about as big as a ping-pong ball and sits in a little hole between your sockets in the skull.

Your eyes are all work from the moment you wake up to the moment you go to sleep. They take care of information about the world around you - shapes, colors, movement, and more. That's why you see what you see and the brain knows what's going on outside of your body.

Parts of an eye

Cornea: The eye is the colored part of an eye. It's curved like a lens. It's covered by a protective membrane called the cornea. Both have lenses, eyes, but usually get brown eyes.

Iris: The iris is the colored part of an eye. It's curved like a lens. It's covered by a protective membrane called the cornea. Both have lenses, eyes, but usually get brown eyes.

Retina: The retina is the back of the eye. It's covered by a protective membrane called the cornea. Both have lenses, eyes, but usually get brown eyes.

Evidence pre PSQM: Writing linked to Science units in Y6

The Eye

The eye is about as big as a ping-pong ball and sits in a little hole between your sockets in the skull.

Your eyes are all work from the moment you wake up to the moment you go to sleep. They take care of information about the world around you - shapes, colors, movement, and more. That's why you see what you see and the brain knows what's going on outside of your body.

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What Is Gravity?

Gravity is all around us. Everything that has a mass creates a gravitational pull - even the smallest grain of sand. The larger something is, the stronger its gravitational impact. Believe it or not, your gravitational pull is trying to pull things towards you all the time. Because you don't have a very large mass, it is very weak, and so you don't notice it.

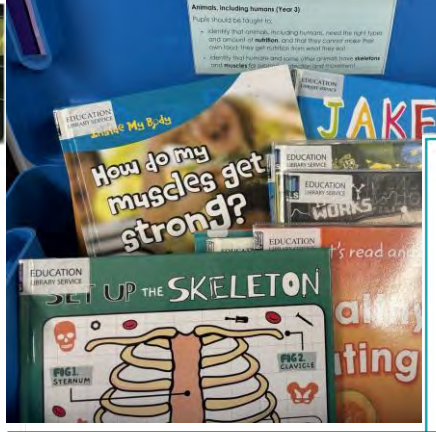
There is an important difference between weight and mass. Weight is the mass of an object in a specific strength of gravity. Mass is how much of something there is. Because most of the things we weigh are on Earth and have the same strength of gravity acting on them, then the difference doesn't matter much. However, if you travelled to a planet with much stronger gravity, you would weigh a lot more. If the gravity was weaker, you would weigh a lot less. However, your mass would be the same no matter which planet you were on.

The gravitational pull of a planet is measured in metres per second, per second (or metres per second squared). This is because it is an acceleration force. Earth's gravity is just over 9m/s². It means that when you are in freefall towards the centre of the Earth (freefall means that there is no air resistance or friction), you speed up by 9 metres per second, every second.

As you move away from the source of gravity, the strength of the force gets weaker. However, with large objects such as planets, you have to get a very long way away to notice an effect. There will be a small difference at the top of the tallest mountains (although not enough to notice), but even when you get into the Earth's orbit, the force isn't that much weaker. Astronauts on the International Space Station are still subject to Earth's gravitational pull. That means it is 90% as strong as it would be on Earth. It isn't enough to allow them to float around in the way that they do, so we

Impact: Access to various books have improved research skills and subject knowledge over the last 2 years. This has been strengthened with cross curricular writing. This increased engagement in boys writing lessons linked to Science. Cross-curricular reading sessions, helped to improve use of scientific vocabulary.

Next Step: Continue to develop the use of scientific language and links to English by regular writing sessions linked to science topics studied.



Evidence pre PSQM: Staff regularly order books from Cheshire Library Service that link to Science Units of work

Action: Year 4 writing based on the digestive system

10. Write a story using interesting vocabulary.

It was a rather boring day for Sammer the boy who lived in a dark, black, cave. As the day passed, he was all bored up in his cave. One day, he was bored and he had found a piece of chocolate. They were all divided by light and then they saw it. It was a mammoth! (or what Sammer thought it was). He was so excited and he was so happy. He was so excited and he was so happy. He was so excited and he was so happy.

Vocabulary: I think the word 'bored' means that he was bored because he was bored.

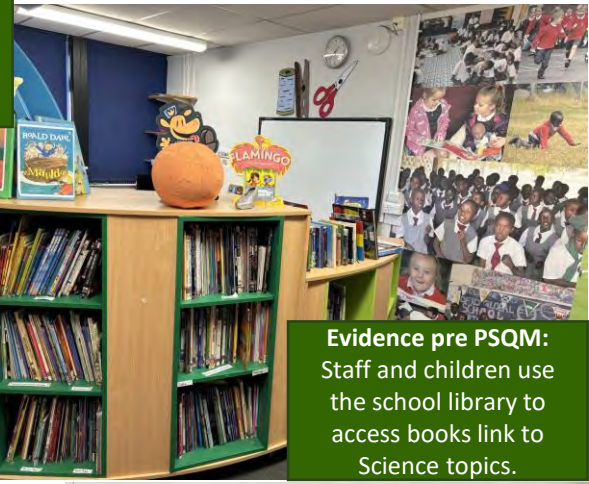
The books help me to get a better understanding of the topics we're studying, and they make learning even more interesting.

Year 5 pupil

Evidence pre PSQM: SL shared a list of books with the staff linked to Science topics

Science & Story Links - Light

Story	Suitable for	Possible Questions to Investigate
The Dark—Lemony Snickett	KS2	Does The Dark really behave like it does in the story?
The Gruffalo's Child—Julia Donaldson	EYFS, KS1, KS2	How could the mouse make his shadow even bigger/smaller?
Can't You Sleep Little Bear?—Martin Waddell	EYFS, KS1	How could the bear change the shape of his shadow?
The Owl Who Was Afraid of the Dark	KS1, KS2	What could little bear use to make it brighter in the cave? Can owls see in the dark? If not, how do they hunt? What is 'dark'? Can you explain why Plop needn't be afraid?
Goodnight Mr Tom—Michelle Morgan	KS2	Which material will be best to blackout our windows?
Blackout—John Rocco	EYFS, KS1	What light can we find at night? What if we didn't have electric lights at school?
The Game in the Dark—Herve Tullet	EYFS, KS1, KS2	How are shadows formed? How can we change the shape/size of shadows? Which materials would be best for a book like this that casts shadows?



ODD ONE OUT

Terrific tree dwellers

I think the forsy is the odd one out because it is the only cold-blooded animal out of the 3 shown. They also have gills when they are young and lungs when they grow up; they are neohelminth creatures which live part of their life in water and part on land.

I think the sloth is the odd one out because they have quite dull and long colours compared to the other animals. It has a really slow metabolic rate; it gives birth to live young. They're also mammals.

I think the crimson sunbird is the odd one out because it lives in S. Africa and East Asia and has a beak. It is a bird that collects nectar and pollinates flowers in its feathers and wings.

T Aim: Science teaching is strengthened and developed through:

C. Outdoor Science - Increased engagement and motivation (also LA and LC).

Before: Outdoor science education was limited, with numerous opportunities for learning science in the open air being overlooked. There was no mention of outdoor learning in our science policy. Staff felt that they need more support with planning outdoor lessons.

"I really liked going on a material hunt today! We walked around the playground, and our teacher gave us a list of things to find. We found different materials like wood, metal, and plastic. I touched them and talked about how they felt."

Action: Year 1 children on a material hunt around the school grounds



Action: Science linked homework in Year 1

LO: Investigate how mould grows
WS: Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
WS: Reporting and presenting findings from enquiries -
Enquiry: What conditions causes mould to grow?

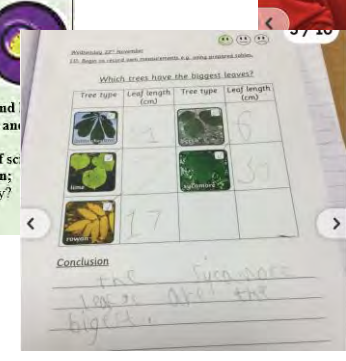


Action: Outdoor lessons highlighted in green on planning documents. Children have more understanding about outdoor learning than last year.

LO: Investigate how light is refracted, how a rainbow is made and what happens when light hits a bubble
WS: Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
WS: Reporting and presenting findings from enquiries -
Enquiry: How is light use other than for us to grow?

Lesson 10
LO: Understand that shadows change length depending on how far away they are from a light source
LO: Understand how to collect data
WS: Recording data and results of increasing complexity using scientific diagrams and classification keys, tables, scatter graphs and bar graphs
WS: Taking measurements and using a range of equipment with increasing accuracy and precision;
Enquiry: How does my shadow change over the day?

Action: Year 1 using equipment to measure leaves



Impact: Outdoor environments provide our children with rich, real-world contexts for learning, where theoretical knowledge can be applied in practical situations. Students enthusiastically engage with lessons conducted outdoors and eagerly share what they have learned. Moreover, identifying specific outdoor locations for learning activities allows teachers to seamlessly integrate outdoor elements into their lesson plans, thereby enriching the curriculum and offering students diverse learning opportunities. In collaboration with staff, the School Leader (SL) developed a Plant unit of work for each year group, resulting in the incorporation of more outdoor activities into the curriculum.



Science Policy, Egerton Primary School, September 2023.

Outdoor Learning
 In addition to the above, Egerton Primary School recognises the immense value of utilising the school grounds for outdoor learning experiences, particularly in the context of Science education. The outdoor environment provides a rich and dynamic setting for students to explore, observe, and engage in hands-on scientific investigations.

Outdoor learning experiences are integrated into the Science curriculum to align with the school's commitment to learning outside the classroom. Teachers are encouraged to take advantage of the school's outdoor spaces, including the pond, garden, and school field, as extensions of the classroom. Practical experiences in these areas involve using equipment, conducting experiments, and building arguments, fostering a deeper understanding of scientific concepts.

The school embraces the philosophy that outdoor learning not only enhances academic achievement but also contributes to the overall well-being of students. Exposure to the natural environment fosters a connection with the world around them, encourages curiosity, and promotes a sense of responsibility for the living and non-living components of their surroundings.

Furthermore, the school actively seeks opportunities for outdoor workshops with experts and visits to places of scientific interest, ensuring that students' classroom setting, cross-curricular connections, and outdoor learning.

By incorporating outdoor learning into the exploration and discovery, nurturing their approach aligns with the school's vision and appreciation for the wonders of the natural world and the scientific principles that govern it.

Action: SL updated Science policy

Action: SL lead PDM on outdoor learning

Outdoor Learning in the National Curriculum



Why take learning outside?
 Evidence shows that healthier pupils have higher educational attainment. There is substantial research that indicates that spending time outside increases levels of physical activity and mental health and wellbeing.

Teachers taking part in the Natural Connections project, funded by Defra, Natural England and Historic England and delivered by Plymouth University, reported that learning in natural environments had a positive impact on their pupils.

- Enjoyment of lessons (95%)
- Engagement with and understanding of nature (94%)
- Social skills (93%)
- Engagement with learning (92%)

Next Step: Conduct Audit on the school grounds. Develop partnership with local environmental organisations and community groups to further enrich outdoor learning



Action: EYFS children sound making

Action: Y3 using the outdoor area and resources when learning about skeletons



Action: Year 3, children carried out an investigation to see whether plants need the same amount of soil nutrients in order to grow well.



Science is all around us - sitting on a chair links with gravity. Things we invent for the world. New inventions to make life easier. Year 4 pupil

Action: Planting bulbs in Y2



tigtag | Imperial College London

Reach Out CPD

Congratulations to:
 Chloe Thorpe
 from
 Egerton Primary School
 completing the following primary school science CPD courses:
 Outdoor Science (16/11/2023)

Action: SL completed Outdoor learning CPD, reviewed planning and together with staff plotted where outdoor learning should take place

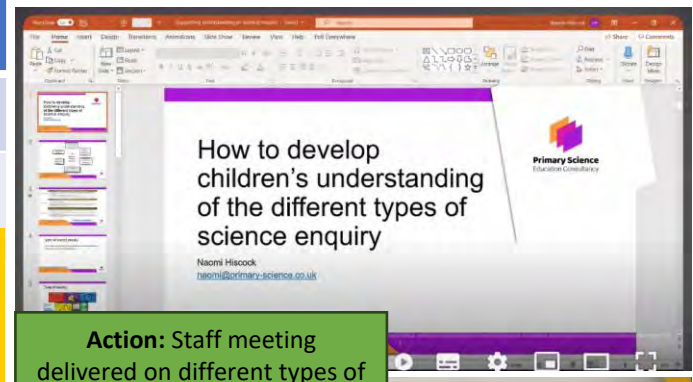
L Aim: Science teaching is strengthened and developed through:

A. The purposes and process of science enquiry

Before: Prior to the implementation of PSQM, five enquiry types were introduced to the staff and CPD delivered around planning and teaching the different enquiries; however, after staff voice, it became clear that not all staff members felt confident in delivering all of them. Consequently, pupils seemed not to have the opportunity to experience a complete range of enquiries in every year group. Before PSQM, we had developed Working Scientifically skills by using PLAN and NC and sequenced all. This has been used in the below document, linked to Los and enquiry. WS skills are sequenced so children develop more independence over time.

Year 5 South America				
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
<p>Anglo-Saxons</p> <p>Properties and changes of materials</p> <p>Lesson 1 1.0. Compare and make secondary materials based on their properties</p> <p>Lesson 2 2.0. Carry out a test and compare materials to see the thermal conductivity properties of materials</p> <p>Lesson 3 3.0. Know and understand a range of ways in which properties of materials can be tested</p>	<p>Vikings</p> <p>Lesson 1 1.0. Explain how to separate a substance into a mixture</p> <p>Lesson 2 2.0. Describe how materials can be separated</p> <p>Lesson 3 3.0. Know that substances that dissolve in water are soluble</p>	<p>Extreme Environments</p> <p>Living things and their habitats</p> <p>Lesson 1 DE 1.0. Understand the life cycle of mammals</p> <p>Lesson 2 DE 2.0. Explain the life cycle in mammals and how it relates to their environment</p> <p>Lesson 3 DE 3.0. Know that substances that dissolve in water are soluble</p>	<p>Natural Resources</p> <p>Animals including humans</p> <p>Lesson 1 DE 1.0. Identify the different types of animals</p> <p>Lesson 2 DE 2.0. Explain the life cycle in mammals and how it relates to their environment</p> <p>Lesson 3 DE 3.0. Know that substances that dissolve in water are soluble</p>	<p>The Ancient Mayans</p> <p>Lesson 1 DE 1.0. Explain the forces that act on objects</p> <p>Lesson 2 DE 2.0. Explain the difference between attractive and repulsive forces</p> <p>Lesson 3 DE 3.0. Know that substances that dissolve in water are soluble</p>

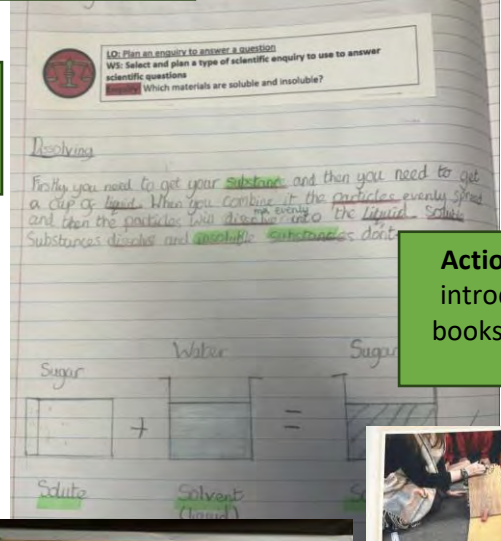
Action: SL and staff used STP to sequence LOs, WS and enquiries. There is a document for each year group outlining all the enquiries and learning objectives.



Action: Staff meeting delivered on different types of enquiries - revisited

	KS1	LKS2	KS2	UKS2	
ASKING QUESTIONS	<p>Ask simple questions and with any that put the answers to them</p> <p>Understand primary, e.g. the result of 'and' or 'but' about the world around them</p> <p>Begin to understand the concept of a question</p> <p>Be able to ask a simple question</p> <p>Begin to suggest one way of finding an answer to a question</p> <p>Begin to understand that some questions can be answered by looking</p> <p>With help identify evidence that gives clues to answer questions</p> <p>With help present evidence</p>	<p>Ask simple questions and recognise that they can be answered in different ways</p> <p>Understand the concept of a question</p> <p>Be able to ask a question</p> <p>Be able to suggest one way of finding an answer to a question</p> <p>Understand that some questions can be answered by looking</p> <p>Identify evidence that can be used to answer questions</p> <p>Present evidence</p>	<p>With guidance, ask more relevant questions and become aware of different types of evidence required to answer them</p> <p>Understand the concept of a question</p> <p>Be able to suggest one way of finding an answer to a question</p> <p>Understand that some questions can be answered by looking</p> <p>Identify evidence that can be used to answer questions</p> <p>Present evidence</p>	<p>Ask relevant questions and use different types of scientific enquiry to answer them</p> <p>Make one question about which aspect of enquiry is best to answer a question</p> <p>With support, make one question about which aspect of enquiry is best to answer a question</p> <p>Understand that some scientific questions cannot be answered by a particular investigation</p> <p>With guidance, suggest changes to questions following collection/analysis of data</p>	<p>Plan, with support, different types of scientific enquiry to answer questions. Begin to recognise variables and how to control them where necessary</p> <p>With support, ask questions</p> <p>Recognise, explore ideas and raise different kinds of questions about scientific phenomena</p> <p>Begin to make a scientific question so that it can be tested</p> <p>Understand that some scientific questions cannot be answered by a particular investigation</p> <p>The able to suggest changes to questions following collection/analysis of data</p>
MAKING OBSERVATION AND TAKING MEASUREMENTS	<p>With support, make simple observations to support identification, comparison and recording change</p> <p>Understand that we can gather information through our senses</p> <p>Understand that observations are all of the senses</p> <p>Use simple measurements, e.g. hand spans, to make more accurate measurements</p> <p>With support, select appropriate equipment for making measurements</p>	<p>Make simple observations to support identification, comparison and recording change</p> <p>Understand that we can gather information through our senses</p> <p>Understand that observations are all of the senses</p> <p>Select appropriate equipment, e.g. hand spans, to make more accurate measurements</p> <p>With guidance, use simple equipment provided, e.g. hand spans, to make more accurate measurements</p>	<p>With support, make systematic and careful observations</p> <p>Select appropriate equipment to observe and measure</p> <p>Follow a range of equipment to measure length, mass, temperature and capacity</p> <p>Begin to use standard units for their measurements</p> <p>With support, make measurements with data tables</p>	<p>Make systematic and careful observations</p> <p>Accurately select appropriate equipment to observe and measure</p> <p>Use a range of equipment to measure length, mass, temperature and capacity</p> <p>Accurately use standard units for their measurements</p> <p>Use only equipment such as data loggers appropriately</p> <p>With support, make measurements with data tables</p>	<p>Plan to make measurements, using a range of scientific equipment</p> <p>With support, make decisions about what observations to make, what measurements to use and for how long to make them and whether to repeat them</p> <p>Follow the correct procedures for making measurements and explain how to use it accurately</p> <p>Begin to recognise that some measurements on observations may need to be repeated</p>

Evidence pre PSQM: Working Scientifically skills, sequenced and in line with NC – developed before PSQM



Action: Enquiry logos introduced in Science books, next to learning objective

I find the enquiries we engage in quite enjoyable, and having the logos next to our learning objectives is really helpful. It helps my memory and makes it easier for me to understand what we are learning about.
Year 6 pupil

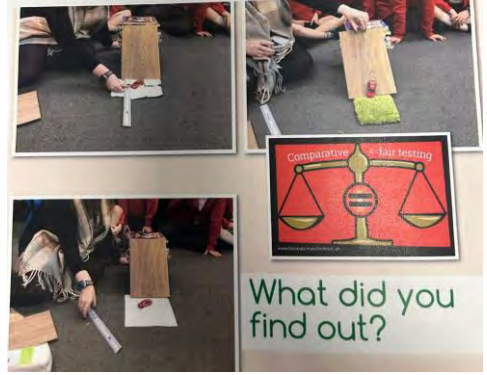
Impact: Teachers now exhibit increased confidence in employing various types of enquiry. Each classroom features a dedicated science display showcasing the five enquiry skills. During lessons, teachers openly communicate with children about the enquiry skill they are focusing on, fostering a more interactive and informed learning experience. **Pupils remember the different enquiries and can explain each of them.**

The planning really supported me as I sometimes struggle with selecting different enquiry types.
KS2 Teacher

Action: Whole school display celebrating examples of enquiry types from EYFS to year 6. This was also used as a moderating activity for science lead.



Comparing how things move on different surfaces.



Tuesday 19th December
LO: To research the everyday uses of magnets

What are magnets used for?

Magnets are used with microwaves and speakers of music. They help to make the mobile phone be.

Magnets are used in the traffic lights and in the MRI machine.

Magnets are used in the power stations.

Magnets are used in the MRI machine.

Magnets are used in the MRI machine.

L Aim: Science teaching is strengthened and developed through:

A. The purposes and process of science enquiry

Working scientifically
Develop children's skills in pattern seeking

Introduction

Age 5-11 years

Action: Revisited - Ogden trust resources shared with big question ideas for each year group for each enquiry type.

Big questions

Here are some examples of 'big questions' that can be explored through pattern seeking in KS1 and KS2. There is at least one for every area of the curriculum, so it is easy to plan opportunities for children to revisit this type of enquiry and develop their skills.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Do you think bigger animals have longer necks?	Do bigger mammals have longer necks?	What colour flowers do you think will be most popular?	How long does it take for a plant to grow?	Are there any animals that can fly?	The all flowers have the same number of petals?
Is there a pattern in the number of children in each class?	What happens when you mix different colours of paint?	What happens when you mix different colours of paint?	Are there any animals that can fly?	Are there any animals that can fly?	Are there any animals that can fly?
Do you get better at something as you get older?	What happens when you mix different colours of paint?	What happens when you mix different colours of paint?	Are there any animals that can fly?	Are there any animals that can fly?	Are there any animals that can fly?
Does the speed of something change as it goes on?	What happens when you mix different colours of paint?	What happens when you mix different colours of paint?	Are there any animals that can fly?	Are there any animals that can fly?	Are there any animals that can fly?
Is there a pattern in the number of children in each class?	What happens when you mix different colours of paint?	What happens when you mix different colours of paint?	Are there any animals that can fly?	Are there any animals that can fly?	Are there any animals that can fly?

Action: Year 1 observing over time

Monday 4th November
LO: Recognise that some observable features may change over time
WS: observing closely, using simple equipment.

The sky was cloudy. People are wearing coats, hats, scarves and gloves. I can see brown, yellow and orange leaves. Some leaves were scattering on the ground. It was cold. It was blustery.

How does the horse chestnut tree change over the year?

Action: Part of Year 3 display

Research using secondary sources

Does the size and shape of a magnet affect how strong it is?

It was cold. It was blustery.

As someone who works in the field of STEM, I found it rewarding to talk with my children about their recent science activities and hear them mention the enquiries they've been conducting in class.
Parent KS2

Action: Year 5 pattern seeking and observing over time

Wednesday 20th November 2023

Separation: When you separate something it is splitting them. When materials are mixed together it is possible to separate them. Examples: Filtering, Sieving and magnetism.

Mixture: Glitter + water
I would separate these materials by using filter paper. Then the glitter will remain and the water will sink through.

Mixture: Marshmallows and flour
I would separate these materials by sifting. Therefore, the marshmallows will not disappear because they are bigger than the flour. The flour will pass through the sieve.

Mixture: Sand and iron
The sand will magnetise so it will stick to the magnet.

Action: Year 2 observing over time

Thursday 12th February
LO: Understand that some questions can be answered by testing
WS: Predicting, observing, investigating and recording

Would a paper boat float forever?

How could we find this out?
We are going to make a paper boat and test if it can float in water forever!

What do you think will happen?
I think the paper boat will not float because it will get too wet and fall over.

What happened? Why?
We found out that a paper boat won't float forever because paper is absorbent.

Action: Year 4 pattern seeking

LO: Explain how the teeth in animal skulls show they are carnivores, herbivores, or omnivores

Diagram of sheep skull: incisors, premolars, molars

Diagram of fox skull: incisors, premolars, molars

Diagram of hedgehog skull: incisors, premolars, molars

I think sheep are herbivores because they get fat and they eat their food. They have small canines so canines are used for tearing meat.

I think foxes are carnivores because they have really sharp canines that tear the meat apart. They only have two premolars.

I think hedgehogs are omnivores because they eat worms and other things. They have small canines and premolars.

Action: Year 6 research

Our experiment:
We are going to investigate the rate of rusting. We will place a piece of iron into a small beaker filled with a liquid. We will observe it over time to see the rate of rusting.

Variables: Vinegar, water, salt water, lime juice

Action: Year 4 research

Tuesday 23rd January
LO: Recognise that some observable features may change over time
WS: observing closely, using simple equipment.

How does the horse chestnut tree change over the year?

The sky is boring and cloudy. Everyone is in coats, hats, boots, and scarves. The tree is bare, trees are only bare in winter. The temperature is really cold because it's -3C. The ground is snowy.

Action: Year 4 research

Friday 15th September 2023
LO: Describe the functions of the organs in the digestive system

Next, we mashed everything together to create the Chyme in the Stomach.

After it looked like porridge, we then transferred the food to a piece of rice. The rice represented our Small Intestine.

Finally, we transferred the stool from the Rectum where it was stored, out of the body via the Anus.

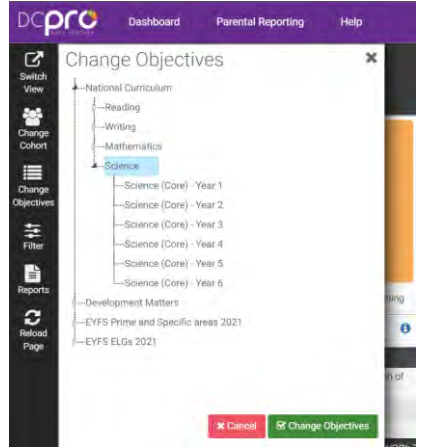
Next Step: Continue to plan staff meetings with the aim of enhancing teachers' subject knowledge of various enquiry types. This will empower teachers to guide children in independently determining their own enquiry types during investigations.

Science Learning: PSQM Gilt

L Aim: Science teaching is strengthened and developed through:

B. The purposes of science assessment and current best practice

Before: The DCPro assessment system monitor students' progress. Teachers use it regularly to assess each objective. It is worth noting, however, that discussions about science did not take place during the termly progress meetings.



Action: SL used DcPro system to generate reports and summative overviews. This was shared with SLT. Progress meetings include discussion about progress in science.

Academic Year: Last Year

Include Points: Grades and Converted Points

ARE or Flight Path: Use End of Year Expectations

Colour: None

Order the data by: Subject

Assessments to include: Sun, All, Sci, Ege

Which Grade Set: Ege

Group data by: Clas

ATTAINMENT GROUPS 2022/2023

Based on end of year expectation in: Egerton 1-6

Year 6	Below	Age Related	Above Related	Age Related & Above
Gender				
All	Aut 2022/23: 7 / 30 23.3%	19 / 30 63.3%	4 / 30 13.3%	23 / 30 76.7%
	Spring 2022/23: 5 / 30 16.7%	20 / 30 66.7%	5 / 30 16.7%	25 / 30 83.3%

Properties and changes of materials

compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets

know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution

	EXS	EXS	EXS	EXS	EXS
	28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022
	EXS	EXS	EXS	EXS	EXS
	10/11/2022	10/11/2022	04/11/2022	10/11/2022	10/11/2022

Before: DcPro – each teacher assess knowledge and scientific skills. Group tracking reports provide detailed information about how individuals have progressed through the year. Data is passed and discuss during transition meetings at the end of the year.

Match up the stages of human evolution with a number so that they are in the correct order:

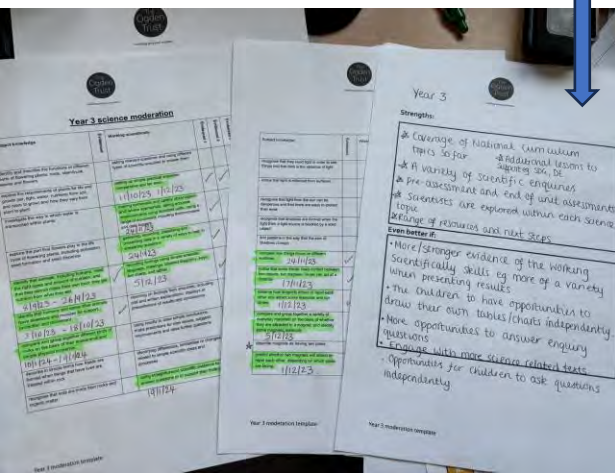
- Homo habilis
- Homo sapiens
- Australopithecus
- Homo erectus
- Homo heidelbergensis

Draw lines to match up each picture of a plant/animal adaptation with the description which tells us why it is useful.

	can use a special scent to attract and repel insects
	this stores rich fat as a form of nutrition
	thick layers of fat and fur provide insulation
	can change the color of their skin to camouflage against predators
	can grow on the surface of another plant instead of in the soil

Evidence pre PSQM: Example of end of unit test from Developing Experts used after each unit

Impact: Additionally, incorporating science discussions into progress meetings has fostered a more holistic approach to student assessment and support, ensuring that science education receives the attention it deserves within the school's academic framework.



Examples of Work
Max
Living things and their habitats - Year 2

Identify and name a variety of creepers and soil garden plants, including those that are very small. Identify and describe the basic structure of a flower of common flowering plants, including the:

Key vocabulary:

Lead flower: stamens, petals, that hairy, red, small, black, brown, stem, leaf, root, bud

Notes of flower in the local area:

Notes of garden and soil flowering plants in the local area:

Common garden plants:

- Flowers on flowering plants grow in parts with colored petals and leaves and a stem
- There are not plants
- All flowers are green
- All flowers are yellow
- Flowers are not a flower

Notes of garden and soil flowering plants in the local area:

Notes of garden and soil flowering plants in the local area:

Notes of garden and soil flowering plants in the local area:

Action: Moderation took place in Spring Term. Use of templates from the Ogden Trust supported the process.

Impact: Teachers refer to the documents outlining the progression of skills and knowledge to review both past and upcoming information. Staff voice highlighted that these documents serve as valuable tools for teachers in planning lessons and conducting assessments.

Next Step: Moderation meeting to take place again in the summer term and focuses on identified next steps for each year group. Impact report for governors to be written in Summer term.

Action: Teachers used exemplification materials for assessment when moderating work

Examples of work

Max uses his previous experience to find some animals. He decided to look under the logs, as he has found animals there in the past.

Assessment:

Working scientifically

Before: Documents shared with staff. Although, the planning matrices serve the dual purpose of aiding in lesson planning and teaching, as well as functioning as a document for moderation, they were not fully used when planning and assessment by all staff

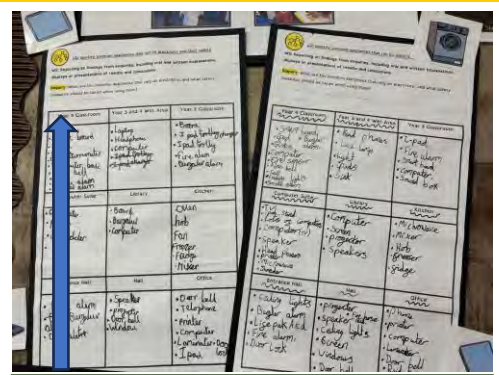
The materials are exceptionally clear and well-structured. The detailed breakdown of assessment criteria is particularly helpful, providing a comprehensive framework that guides me in evaluating children performance.. **Teacher Voice**

Science Learning: PSQM Gilt

L Aim: Science teaching is strengthened and developed through:

B. The purposes of science assessment and current best practice. Slide shows evidence from before and during PSQM

Before: Many different assessment strategies were introduced a few years ago. SL makes sure staff have access to new approaches by facilitating dialogues between staff during staff meetings. Staff uses assessment to inform planning and amend if necessary.



Action: Focused LO - objective and WS during each lesson; recorded in books and discussed with children

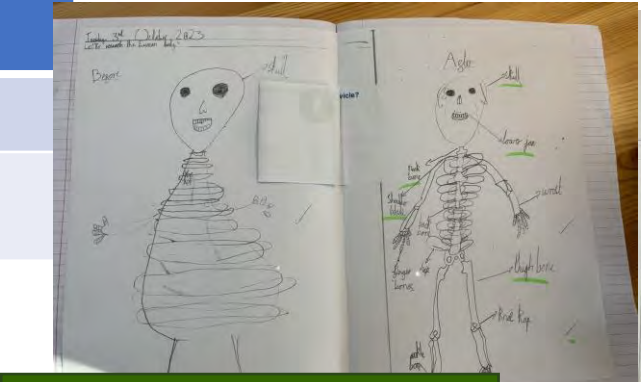
When we focus on one exciting thing at a time, it's like following a treasure map. It helps us have more fun during experiments and makes everything less tricky to understand.
Year 5 pupil

Evidence pre PSQM: To reinforce prior learning, and support short interventions, retrieval starters have been revisited, quizzes, covering material from various timelines, including the previous week, month, or even year.

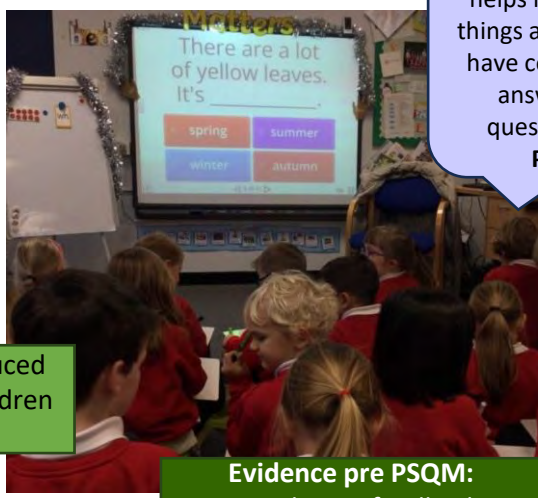
Before: Learning objectives were clear, however working scientifically skill was not included next to the LO.

Impact: Being clear about which part of Working Scientifically is the focus for the lesson helps to make the teaching and any pupil recording more manageable. Having one element as the focus helps to manage the cognitive load of practical activities. **Staff Voice**

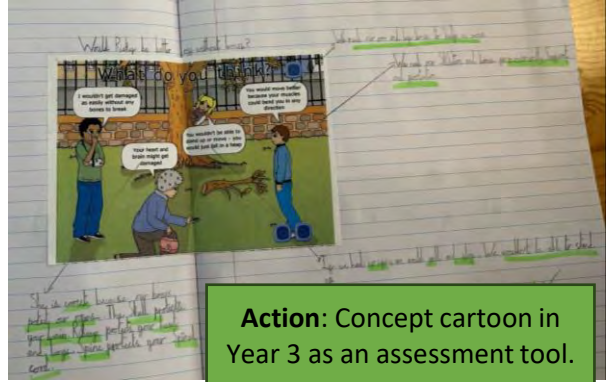
Action: New website WORDWALL introduced in Autumn term – quizzes and games. Children enjoy playing different games.



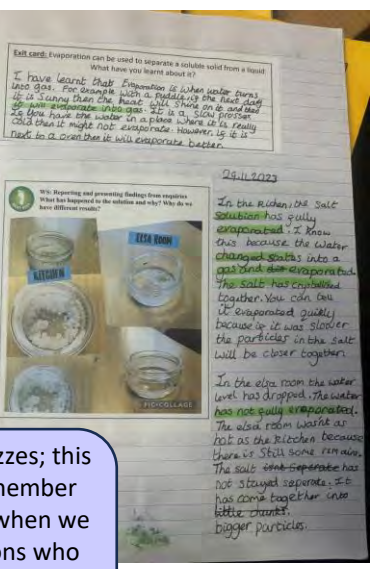
Evidence pre PSQM: Pre and pot assessment in Year 3



Evidence pre PSQM: Responding to feedback in Y6



Action: Concept cartoon in Year 3 as an assessment tool.



Year Group: Year 6
Subject: Science
Unit: Electricity

I enjoy doing quizzes; this helps me to remember things and I like when we have competitions who answers the most questions correctly.
Pupil Voice

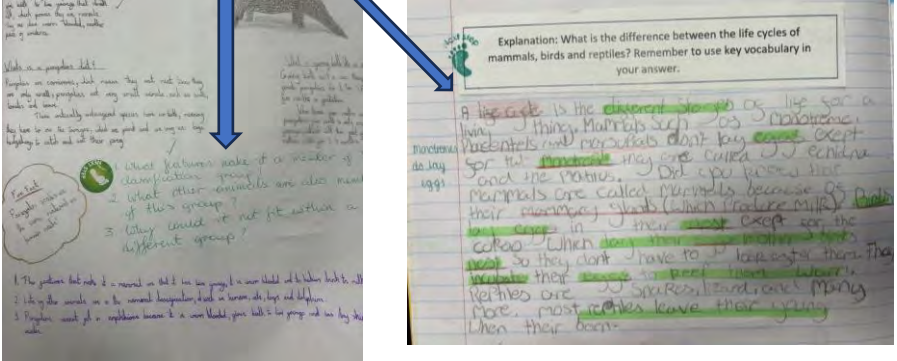
Evidence pre PSQM: Teachers annotating planning and adding next steps to deepen pupils understanding

Type of Enquiry Resources	Prior Learning	Learning Objective Activities, Input	Key Questions/Vocabulary	Assessment Next Steps
Week 1	YEAR 4 Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.	LO: Describe the function of electrical components and match them to their symbols File: C:\Users\monika\Documents\Summer2014\202021 Science\Electrical Components.ppt Video: https://www.bbc.com/bitesize/topics/zq4tjqs https://www.youtube.com/watch?v=5Y1P6v0E1HQ Ken Questioning "What objects do they use every day that need electricity to work? (e.g. laptop, tablet, phone, television, clock, kettle)." • Thinking about the objects, what is the electricity used for? (lighting up) • Where does the electricity come from? (the mains electricity) • They would not be expected to know how electricity is made. Types of objects use batteries? (toothbrush, clocks, mobile phones, soccer toys, cars) • Why do some objects use mains electricity? • What are the advantages of batteries? (e.g. portable) • What are disadvantages of batteries? (run out, not as powerful as mains electricity) • What else is needed in an object with batteries for it to work? (wires, a switch) Children to build simple circuits - revisit from Y4	Battery – a source of electrical energy Circuit – a closed loop around which electricity can travel Electricity – a form of energy used to power a wide range of objects Switch – a component that provides a break in the circuit that can be opened or closed	Not all children felt confident by the end of the lesson! At the start of the next lesson, conduct this activity: Peer Assessment Encourage students to work in pairs or small groups and have them assess each other's circuits, providing feedback on accuracy and completeness.



Action: EYFS children are learning about forces – display as an assessment wall

Teachers: Mrs Sedwick
Term: Autumn 1
Duration: 6 weeks



L Aim: Science teaching is strengthened and developed through:

C. The importance of, and strategies for, developing all children's science capital

Before: There were many opportunities already incorporated in our Science curriculum to develop science capital. However, after a staff voice it became clear that not all staff have the same, deep understanding about science capital, therefore some opportunities, sometimes were missed.

Scientists

- Dr Ernest Madu (born 1960)**
Dr Ernest Madu is a cardiologist. His work focuses on providing affordable healthcare in low-resource nations.
- Louis Pasteur (1822-1895)**
French chemist and microbiologist: develop the first vaccine.
- John Loudon McAdam (1756-1836)**
John Loudon McAdam was a Scottish engineer who modernised the way we build roads. He was the inventor of tarmac road surfacing - commonly called tarmac.
- Julie and Scott**
Julie and Scott are one of the inventors of Solar Roadways. Solar roadways use solar powered road panels to form a smart roadway.
- Dr Alexandra Harmon Threat**
Ecologist and bee expert. Assistant Professor of Entomology at the University of Illinois. Dr Harmon-Threat focuses on identifying local landscape features that contribute to invertebrate diversity and restoration.
- David Douglas (1799-1834)**
David Douglas was a Scottish botanist best known as the namesake of the Douglas-fir. He worked as a gardener, and explored the Scottish Highlands, North America, and Hawaii.

Science Week 2023 at Egerton Primary School

Science Week 2023 runs from Friday 10th March until Sunday 18th March. This year's theme is 'Connections' and we have launched the week with an assembly this morning, asking the children to think about the many different connections in science. Did you know that air has weight? In fact, a large amount of air can be very heavy. Mrs Rothwell demonstrated the weight of air during our assembly with a very interesting experiment - collapsing can.

Throughout the week, our focus, will be on how we can be inspired by connections with parents, who work in STEM, several parents have kindly offered to visit classes and talk to the children about their jobs and the connections they make every day in science. For example, we have parents visiting who work as a veterinary surgeon, in agricultural science and an analytical chemist.

We will be running a poster competition with one prize per year group. The top 5 posters from the school will be entered into a national competition run by the British Science Association. We will be encouraging the children to think of connections within science topics that they have been taught this year and also better connection that we, as humans, could make to help protect our planet.

Evidence: Scientists that the children learn about in Year 2 revisited to ensure diversity.

I really want to be a scientist when I'm older. I enjoy investigating things and mixing different liquids to find out what will happen. **Year 4 Pupil**

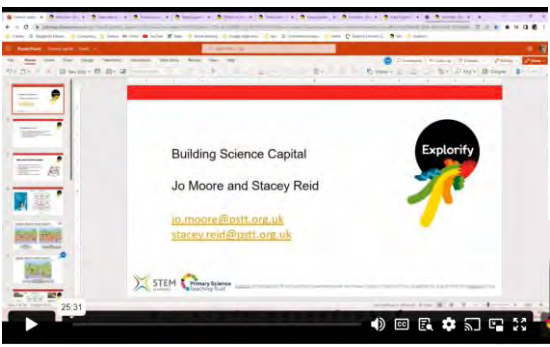


Before hot water

#ScienceSelfieCompetition

We will also run #ScienceSelfieCompetition. We want the children to recognise that science is all around us, every day, in order to get them to look for science around them, we are asking the children to take a Science Selfie. These are just a few suggestions: blowing bubbles, planting seeds, moving toy vehicles, looking at animal habitats, throwing and catching. The children will need to write a brief explanation of what Science their Selfie shows, e.g. kicking a ball shows how forces make an object move; taking your pulse shows how fast our heart rate is. You will find all the information on SeeSaw.

Some teachers will be setting homework linked to science week and it will be exciting to see how creative the children can be! If you would



PSQM Primary Science Quality Mark

Activity L Ci – Science Capital

Science learning is strengthened and developed through a shared understanding of the importance of, and strategies for, developing all children's science capital.

Outline of task

I love doing different experiments. It was so much fun doing them at home with my mum. **KS1 Pupil Voice**

Action: Science lead led staff INSET on Science capital to revisit this and embed understanding among staff

Action: SCIENCE WEEK to develop children's science capital 2023. Families involved in science activities.

Evidence: Cross curricular reading and writing activities incorporate finding out about famous scientists - display of Year 5 work.



After hot water

In this experiment I tested two types of balls to see which was faster - a baseball or paper ball? During the experiment I discovered that the baseball travelled faster than the paper ball because of its aerodynamic structure. The baseball is smooth and heavier giving it a faster speed than the lighter paper ball.



The light from planets doesn't twinkle because planets reflect light where stars produce light.

Also if you got a bath tub bigger enough full of water Saturn would float in it because its a gas giant.



Careers in Science

Monika S. @monikasedg · 22/03/2023
Our children had a fantastic week celebrating STEM. #ScienceWeek @ExplorifySchool @ScienceWeekUK @pstt_whyhow @WowScienceHQ @EgertonPrimary

Impact: The staff meeting on science capital was very beneficial and refreshed staff knowledge about cultural capital. They gained deeper understanding of the concept to further incorporate different strategies.

newsround

Watch Newsround

Emma-Louise has your Sunday Newsround. Pop star Ray Brit awards, Press-packer Annabel tells us why her wheel is important to her, and there's some inflatable art in Stran...

More on this

5:59 8:01

Action: Children watch Newsround each day. They stay informed about recent developments in the field of science



L Aim: Science teaching is strengthened and developed through:
C. The importance of, and strategies for, developing all children's science capital



Action annual event: EYFS pond dipping in Norton Priory. Promoting science for everyone

WHAT IS A SCIENTIST?
 They are people who...

- observe
- make guesses
- collect data
- measure
- ask questions
- invent things
- take notes
- wonder

YOU are a scientist!

"A scientist is someone who asks really cool questions and then tries to find the answers by doing experiments and investigations."
Year 3 Pupil Voice

Action: Teachers incorporate "What is a scientist?" into the beginning and end of each new unit of work. Pupil voice shows the question and answers from Y5 children



Action: Year 6 programming and flying drones with Tom from STEM ambassador.

Before: STEM visitors were invited to school predominantly for STEM week. Moving forward, the SL to focus on inviting visitors throughout the year to continually enhance children's experiences in science. Also, there was not a consistent science focus in our school weekly newsletter.



Investigating the melting point of different foods.

During Science this week, Year 4 carried out an investigation into the different melting points of foods. We wanted to discover if all foods melted at the same temperature. Working as scientists, we used a thermometer to accurately read the temperature as soon as the food had melted and we shared our results in a line graph. We have been exploring how to create a line graph during our maths lessons.

Action: Science at home activity Y5

#MY SCIENCE EXPERIMENT

presenting the bouncy egg

this is how it works

if you put an egg (a brown egg, not a white egg) in vinegar for 48 hours, then the hard bit of the shell will dissolve. It will also turn the remaining bit of the egg into a bouncy substance.

- The following questions are about connecting scientific learning to the real world:
- If you were to invent something, what would it be?
 - Where does [e.g. electricity] come from?
 - How can science help people?

- Doctors – make medicines/injections.
- Archaeologist – animals, rocks, fossils
- Architects – building, measuring, materials.
- Ecologists – environments, plants
- Gardener – plants
- Zoologist – need to have knowledge of life cycles.
- Vets – know about animals, medicines

Action: Science work is shared with parents and the wider community in a weekly newsletter



This week the children have been learning about dinosaurs! We started on Monday by discovering some fossil dinosaur eggs under the trees on the big playground. When we had a chat about what we thought they were opened them up and found tiny fossilised dinosaur skeletons inside! On Wednesday, we learnt about all the different dinosaurs and spent some time thinking about whether they are carnivores, herbivores or omnivor looking at their distinguishing features.

Next Step: : To repeat science capital questionnaires to measure impact of activities. Incorporate more visits and visitors to develop science capital.



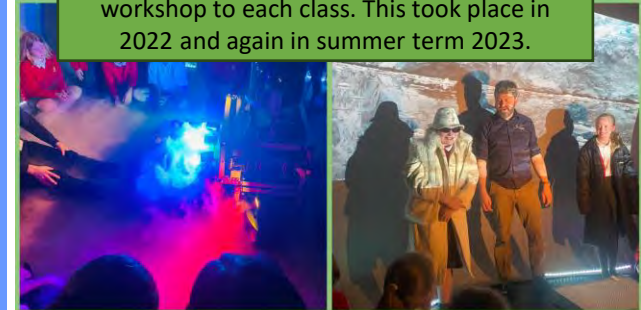
Class 1 carried out a comparative and fair test today to find out which material would be most suitable (waterproof) for an umbrella. We did this by placing different materials over a beaker with an object in and using a pipette to drip water on top. The best materials kept the object dry.

I really, really liked being in the big dome! And guess what? I know the names of all the planets! **KS1 Pupil Voice**



Action: EXPLORER DOME invited to deliver a workshop to each class. This took place in 2022 and again in summer term 2023.

Impact: The introduction of posters on "What is a Scientist?" and engagement in science projects and homework helped broaden children understanding of the diverse roles and opportunities in the field of science. They enthusiastically take part in projects at home and are very keen to involve family members. Parents get regular updates through weekly newsletter. This involvement not only enhanced communication between the school and families but also encourages families to support and reinforce scientific inquiry at home.



Science Wider Opportunities: PSQM Gilt

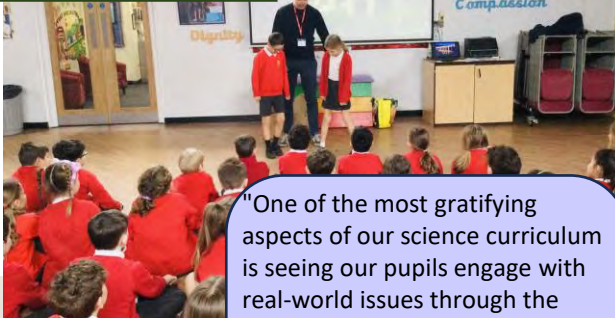
WO Aim: Science is enriched by:

A: Cross-curricular planning that links science to other areas of learning; development of SDGs through science lessons

Before: Our school has a comprehensive planning approach that integrates science with other subjects, identifying various potential activities across the curriculum. However, despite our status as a global learning school with a longstanding partnership with a school in Kenya spanning 15 years, we have not yet established robust connections between our science curriculum and the Sustainable Development Goals (SDGs). It was imperative for the Science Subject Leader to strengthen science education by aligning it with real-world global challenges, thus enriching our students' understanding of global issues and fostering a sense of responsibility towards sustainable development.

"Incorporating Sustainable Development Goals into our science curriculum has been transformative for my teaching practice. It has challenged me to think more deeply about the global impact of our lessons and has inspired me to explore innovative ways to engage children with real-world issues.
Teacher Voice

Action: Parent visit - assembly; linked to SDG 15 Life on Land



"One of the most gratifying aspects of our science curriculum is seeing our pupils engage with real-world issues through the lens of Sustainable Development Goals. It's inspiring to witness their enthusiasm as they connect classroom learning to meaningful global challenges."
Headteacher



Action: Parent Vet visit to Year 1; promoting science for everyone linked to SDG 15 Life on Land and careers

Action: Incorporating SDGs into science planning and lessons

I really like looking at SDGs and matching them with our science lessons and learning about real life problems.
KS2 Pupil Voice

Action: Science linked to SDGs in Year 6

Mrs Hooper said: "We were extremely proud to accept Egerton's fifth International School Award, confirmed in June and representing 15 years of excellence in global learning."

"This is in recognition of the school's commitment to ensuring the children are supported in developing skills such as critical thinking and problem solving when learning about their world."



Alison Hooper, former head teacher of Egerton Primary School with the award and some of the children's international work (Image: Egerton Primary School)

The school has formed a unique partnership with teachers and children in Africa.

Evidence: June 2023 Fifth International School Award

Action: Science linked to SDGs in Year 1

Next Step: Staff and pupil voice in summer term focusing on SDGs. Continue to develop stronger links between Geography and Science. Field Trips and Outdoor Activities: Organise field trips to eco-friendly facilities, research centres, or places where sustainability initiatives are in practice, providing pupils with practical examples of SDGs in action.

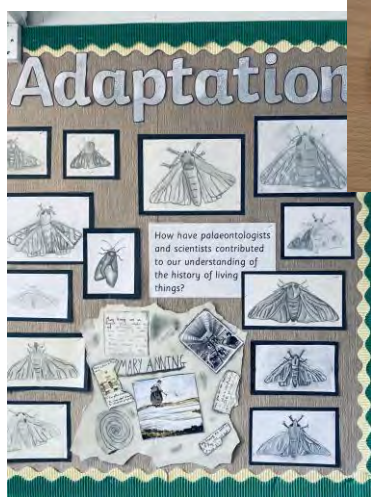
Impact: Through collaborative Professional Development Meetings, teachers have been empowered to align science topics with Sustainable Development Goals, fostering ownership and commitment. This integration has expanded pedagogical approaches, deepened pupil's understanding of global issues, and nurtured a sense of global citizenship and responsibility among young scientists – evident through pupil and staff voice.

Science Wider Opportunities: PSQM Gilt

WO Aim: Science is enriched by:

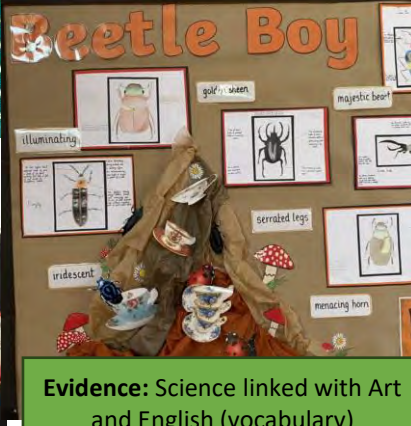
A: Cross-curricular planning that links science to other areas of learning;

Evidence pre PSQM: Science linked with Art: Sketching moths in Y6; planets in Y5



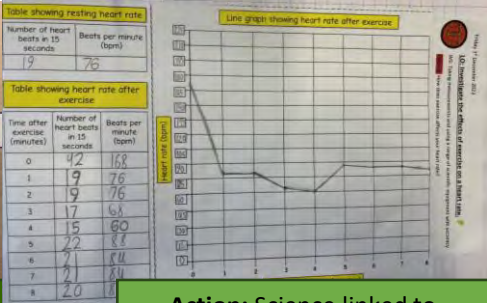
Evidence pre PSQM: Year 6 learn about micro-organisms; they used playdough to represent it..

Year 5



Evidence: Science linked with Art and English (vocabulary)

Next Step: Project-Based Learning: Design interdisciplinary projects that incorporate scientific concepts along with other subject areas. For example, children could work on a project that combines science, technology, engineering, and mathematics (STEM) principles with elements of history, geography, or art. This approach encourages critical thinking, collaboration, and problem-solving skills while reinforcing learning across multiple disciplines.



Action: Science linked to maths in Year 6 and Y1

Is there a pattern in the materials used for objects in school?

Material	Tally	Total
Wood		5
Plastic		5
Metal		5
Glass		5
Paper/card		5
Fabric		5

Conclusion: Which was the most popular? Why do you think this is?
Plastic is most popular
 I think because it is strong, colourful and water proof.

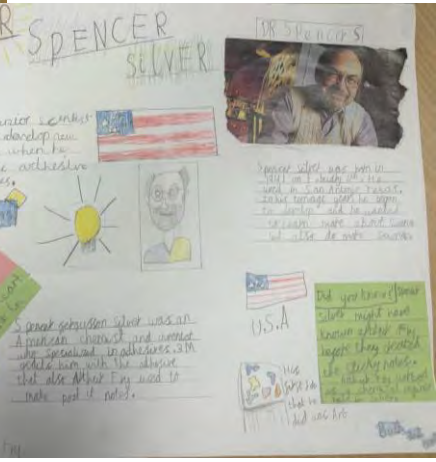
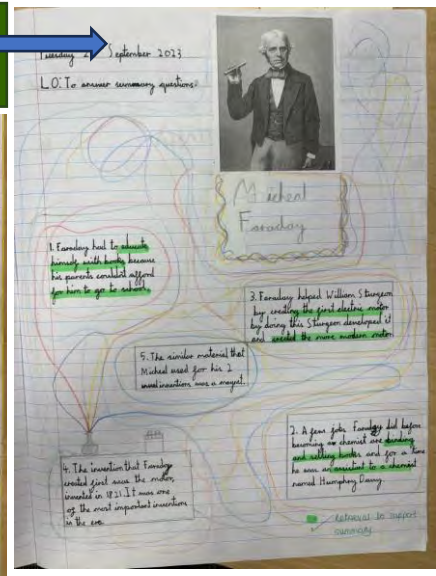
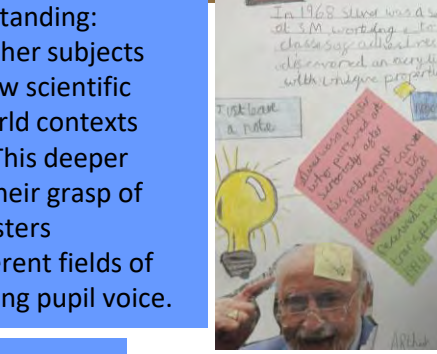
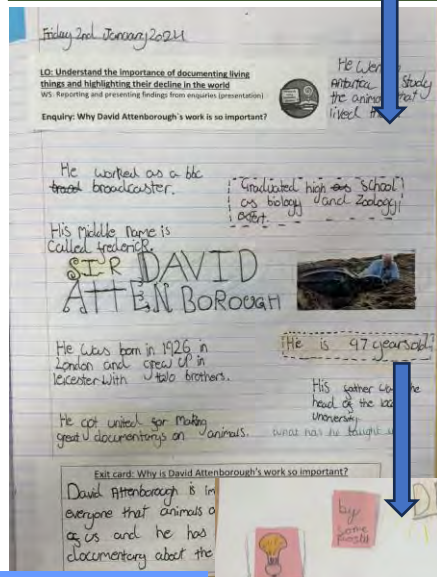
Impact: Professional Growth: Collaboration between different subject leaders provided opportunities for professional growth as educators share expertise, exchange ideas, and learn from one another's teaching practices. This shows more cohesive approach to curriculum delivery and more meaningful connections. **Staff Voice.**



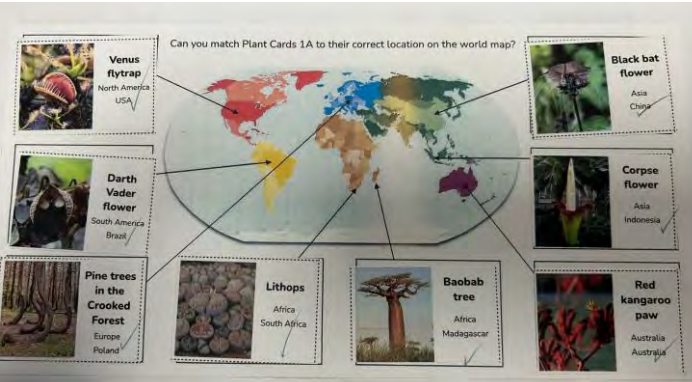
Action: Maths and Science in Y1

Impact: Deepened Understanding: Integrating science with other subjects allowed children to see how scientific concepts relate to real-world contexts and other areas of study. This deeper understanding enhances their grasp of scientific principles and fosters connections between different fields of knowledge as showed during pupil voice.

Evidence pre PSQM: Children research information about scientists that they study



Action: Science and Geography linked in Y3 when learning about plants and biomes



Science Wider Opportunities: PSQM Gilt

WO Aim: Science is enriched by:

B: Develop after school club links. Children have opportunities to enhance their science learning through enrichment activities.

Before: There was no after school club linked to Science. Gardening club was introduced last spring term. Eco Ambassadors started in September 2022. We wanted to increase the number of visitors to school and add new after school clubs.



I really enjoy coming to our science club. We do different things each week. Last week we learnt about electricity and this week we were investigating forces.
Pupil Voice

Impact: The Science club collaboration with Mad Science proved highly successful. Enthusiastic participation from attending children was evident, with each session met with great enthusiasm and excitement. The children thoroughly enjoyed their experiences and expressed a keen desire to continue attending the club into the next term.

Thank you for introducing few different after school clubs. My children love attending Mad science and Coding clubs. They can not stop talking about it.
Parent Voice

Action: Eye dissection in Year 6 with a Science teacher. Year 6 were able to write a detailed explanation about how the eye works after the session, including scientific, accurate vocabulary

Evidence pre PSQM: Eco ambassadors across the school established couple of years ago. Meetings every 3rd week.

PrimeVR Booking <booking@primevr.co.uk>
To: Monika Sedgwick
Cc: Egerton Primary Admin
Hi Monika,
Thank you for choosing PrimeVR for your VR experience day.
Your booking is now confirmed for Tuesday 12th March 2024 with Duncan.

Action: VR experience booked for KS2



Action: Coding Club, led by a parent started in Spring Term

This half term in Coding Club the children have had an introduction to LEDs and electronics; made name badges, virtual dice and games with the Microbit; tried their hand at Scratch and Python; sent each other short messages using radio waves; and submitted code to entertain the astronauts on the International Space Station.
Coding Club Lead (Parent)

Next Step: Conduct pupil voice to gain better understanding around pupils interest and continue to further develop the after school provision linked to STEM.

Impact: Working together in the garden fostered teamwork and cooperation among our children. It provides supportive and inclusive environment. Children that do not have large gardens at home, enjoyed being part of the gardening club at school.



Evidence pre PSQM: Eco Ambassadors involved in different projects – bird feeders