EUXTON PRIMROSE HILL Primary School

"Together we will make a difference."

# Subject Leader Report – Science

**Science Leader: Kathleen McKinley**

**Subject Overview:** INTENTION

The aim of Science teaching at Euxton Primrose Hill Primary School is to stimulate and excite children's curiosity about phenomena and events in the world around them and give them the knowledge that enables them to understand what is happening. We believe that scientific method is about developing and evaluating explanations through experimental evidence and modelling and that this encourages critical and creative thought. Through Science, pupils understand how major scientific ideas contribute to technological change - impacting on industry, business and medicine and improving the quality of life. We believe that through science, children learn to question and discuss occurrences and issues that may affect their own lives, the direction of society and the future of the world. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. Our science principles (developed by the pupil Science Leaders and staff) have been developed into a vision of science:

> *At Euxton Primrose Hill Primary School our vision is to give children a Science curriculum which enables them to explore the world around them, using the outdoors as an extension of the classroom, so they have a deeper understanding of how the world works. To achieve this, opportunities are given to work collaboratively with practical, hands-on activities encouraging children to investigate their own questions and use their curiosity as a springboard to learning. Our aim is to involve the children in explaining and teaching others to help secure and extend their scientific knowledge and vocabulary, creating lifelong learners and scientists.*

**Fundamental Great British Values:** INTENTION

At Primrose Hill, we understand our responsibility in preparing children for their next stage of education and for the opportunities, responsibilities and experiences of later life, laying the foundations so that they can take their place successfully in modern British society. We promote a **respect** for and understanding of different faiths, cultures and lifestyles through learning about scientists from around the world and the ways in which religion and science coexist. The need for **laws** to help society use scientific discoveries for the greater good is explored as the children's understanding of consequences increases. **Tolerance and respect** is promoted through discussion of different ideas and theories; children understand that not all scientists will agree with each other and that debate is a sign of a healthy **democracy.**

**Planning:** IMPLEMENTATION

Science is taught through a topic approach based on the National Curriculum 2014 with working scientifically skills following a progression approach using the Lancashire skills grid. Our curriculum is carefully planned to engage and excite all of our learners; phase maps ensure that a range of topics are taught across the phases, with some topics adjusted across year groups in order to closely fit with other subjects and allow for a cross-curricular approach when possible. For the majority of topics, science is taught weekly. The Association for Science Education (ASE) resources are now being used to assist with both planning and assessment.

**Assessment:** IMPLEMENTATION / IMPACT

Ongoing assessment and review is fundamental to Science teaching at Primrose Hill; teachers are constantly making judgements with regards to attainment and understanding in lessons and altering provision accordingly. Feedback and marking of work is guided by the school marking policy. Through professional dialogue, we seek to close gaps in understanding and ensure value added attainment – intervention for support and challenge is planned accordingly.

Children are assessed formatively at the end of each topic and this data is used to identify children who might need further support (within the class) and by the subject leader to identify any trends across particular areas of science which may require further CPD or particular groups of pupils that are struggling/excelling. Parents are informed of their child's attainment and effort on a termly basis through parent consultation evenings and Grade Sheets. Additionally, children are assessed at the end of each Key Stage against DfE descriptors and results reported to the DfE.

**Collecting evidence:** IMPLEMENTATION / IMPACT

Whilst data gives a snapshot of attainment and progress, standards in Science at Primrose Hill are continuously monitored using a plethora of approaches and methods including: planning reviews, book scrutiny, teacher discussions, pupil interviews and Science Leader discussions and evidence collecting. Governors are well informed of standards through the annual impact report and during the annual Governors' Week they have access to the Science Subject Leader folder, have the opportunity to observe science teaching in the classroom and can talk to the children. The school has just completed the Primary Science Quality Mark (PSQM) process which recognises schools that emphasise the importance of science and identify ways in which to improve teaching, learning, subject leadership and wider opportunities – the expectation is that the school will be awarded PSQM.

**Enrichment opportunities:** IMPLEMENTATION / IMPACT

| Enrichment | Further Information |
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| Adrian Bowden's Travelling Science Show | A visiting scientist came into school during the year to carry out workshops for KS1 (one session) and KS2 (two sessions) covering a number of different science areas – this is part of a yearly programme that introduces and increases children's understanding of basic physical processes. |
| Y2 and Y6 – Stardome (planetarium) visit to school | Pupils spent an hour inside the planetarium dome increasing year 5's understanding of 'Earth and Space' and expanding year 2's understanding of 'Explorers' |
| Y2 – Stephenson's Rocket Visit to school | Pupils were visited by a rocket engine as part of their history topic - in addition they were able to develop an understanding of the science and engineering involved in moving a train |
| Y3 Knowsley Safari Park visit | Trip to coincide with work on animals and their habitats. |
| Y5 to UCLAN Science festival | Introduction to a variety of different science careers, activities, applications etc – increased children's science capital |
| STEMkids club (Autumn 2018) | 6 week club run by STEMkids (KS2 group and KS1 group) – children build models each week, learning the theory behind why they work – *linked to DT* |
| National Science Week- 'Journeys' | 'Science selfie' and science poster competition as part of National Science Week. Number of different parents came into school and ran sessions based on their STEM careers – all were extremely well organised, with presentations and resources. This will be repeated next year with, hopefully, additional topic based visits for each class. |
| Volcanologist visit | Phd student who studies volcanoes in Hawaii visited EYFS, year 3 and year 6 to talk about his job and teach children all about volcanoes. |
| Visit by local civil engineering company running outreach session | Year 4 benefited from a day session run by a local company on bridge building, providing all resources and teaching by qualified engineers – DT unit linked with science |

STEMkids – balloon powered cars


Y3 – Knowsley Safari Park

Y2 moving a train

Adrian Bowles – Travelling Science Show

**Targets**: IMPACT

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| Focus on and promote the development of science teaching and learning by achieving Primary Science Quality Mark (PSQM) | • Subject leader attended PSQM meetings and implemented number of initiatives to promote and improve science<br>• Action plans for development of science across teaching, learning, subject leadership and wider opportunities written and acted on<br>• Profile of science has been improved across the school – science display in hall shows key principle in action and 'science investigation' board used regularly by children to share their questions one of which is answered/discussed each week in assembly |
| Embed and improve assessment procedures, particularly in 'working scientifically' | • Subject leader attended course run by Lancashire LA *Active Learning, Deeper Thinking and Challenge in Primary Science* – initially 3 key areas to improve formative assessment to be implemented during this academic year 2018-19 by year 6 and then extended to all year groups |
| Involve pupil Science Leaders in promoting science across the school | • Science Leaders involved in setting key science principles for the school along with staff<br>• Science Leaders choose questions for assembly each week, choose science principle to focus on for term, collect evidence via photos for blog and talk to class about science events<br>• Science Leaders have come up with a number of ideas to promote and improve science within the school – these are to be discussed in staff meetings and, where practicable, implemented |
| Use of brickwall tracker to identify if data is being used to identify and support certain children and to identify particular year groups/topics that have significantly better/worse outcomes for future CPD | ➢ Data analysis – areas to focus on identified and inconsistencies across assessment addressed in staff meetings. Impact of CPD to be monitored in 2018/19 data and 2019/20. |

**Staff training**: IMPACT

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| SL CPD | ➢ **PSQM** – information and guidance on how to attain PSQM. Subsequent sessions focusing on specific areas.<br>➢ **STEMfirst - Engineered Fairy Tales** – ideas for incorporating STEM subjects into literacy/using literacy as way into STEM subjects. To be introduced and considered when staff look at curriculum for next academic year.<br>➢ **Lancashire LEA – Active Learning, Deeper Thinking and Challenge in Primary Science** – ideas for assessing progress within a topic. Key areas to be shared with staff and 3 chosen to be focused on by year 6 and other interested classes initially before rest of staff incorporate into planning for next academic year.<br>➢ **Subject development** Primary Science Practical Activities STEM CPD – Young Scientist Centre, UCLAN - Ideas for incorporating 'real life' into science experiments in future and using everyday substances in small quantities. Ideas for using ipads (time lapse and slow mo) during experiments for more effective analysis and comparison of results.<br>➢ **Leyland Science Cluster Meeting for science subject leaders 1** - Very informative session – chance to share ideas about visions, STEM ambassadors and visitors and successful trips and events others had held at their schools. Able to share success of parent visitors. Key points will be shared so all can benefit in terms of planning trips and visitors next year.<br>➢ **Yarrow Valley Teaching Alliance Science Subject Leaders Meeting -** Up-to-date on latest Ofsted report on science and the implications of the new framework.<br>➢ **Leyland Science Cluster Meeting for science subject leaders 2** - Discussion about assessment and curriculum development – some ideas to try out. Explained how incorporating ideas from course (4 Dec) for assessment – had impact on some subject leaders who had gone a different way. Backed up by others who had also started using ideas. |
| STAFF CPD | ➢ 24.9.18 Staff Meeting – Prepared and delivered staff meeting to set science principles. All teachers involved in agreeing on set of key principles. |
| | ➢ 14.11.18 Training Y3 and Y5 teachers on how to use developingexperts.com (setting up courses, using resources, involving children) |
| | ➢ 21.1.19 Staff meeting sharing information about best practice in working scientifically, resources and science capital. Opportunity to see resources available on STEM.org.uk and primary.CLEAPSS.org.uk for use in future lessons. Introduced concept of science capital – discussed how this could be incorporated/promoted in lessons |
| | ➢ 1.2.19 Y2 teacher – 'Practical Strategies for the More Able in Science' course. Enthused with ideas for use in lessons. Shared ideas and enthusiasm in staff meeting – backed up what was being said by SL |
| | ➢ 4.2.19 Staff meeting on assessment methods and 'working scientifically'. Teachers now clear on where school is now and areas that whole school and them specifically need to focus on. Resources shared and specific areas to focus on agreed – teachers enthusiastic and keen to slightly alter planning to incorporate BIQ QUESTIONS and Focused WALT. |
| | ➢ 5/6.2.19 Informal meeting with year 4 and 5 teachers incorporating BIG QUESTIONS and Focused WALTs from staff meetings into planning. Beginning to think about how to plan in different methods to assess initial thinking – to be revisited later in term. Year 5 teacher printed out TAPS focused assessments – incorporating into her different topics. |
| | ➢ 18.5.19 Informal session with Y4 teacher on Focused WALTs (We Are Learning Today) on lesson plans. Y4 teacher more confident in ensuring that her WALTs are focused on a specific skill or knowledge. Big Questions now secure from previous informal training. |
| | ➢ 5.19 Read and shared Primary STEM teaching issue. Y5 teacher took Moon misconceptions section for use in space topic, eco coordinator took feature on school grounds for further study, SL to use 'From primary to secondary...' section when having meetings with main feeder school transition teacher |
| | ➢ 24.6.19 Shared curriculum information from Yarrow Valley Teaching Alliance Science Subject Leaders Meeting with staff. Suggested ways for KS1 staff to plan in their plants and seasonal changes across the year to ensure maximum teaching time and effectiveness – to be incorporated into planning for next year. |

**Future Targets**: FUTURE INTENTION / IMPLENTATION / IMPACT

- Incorporate 5 key ideas from *Active Learning, Deeper Thinking and Challenge in Primary Science* into year group planning in order to improve teaching, learning and assessment
- Work with DT subject leader to explore opportunities to link science and DT as part of STEM projects
- Increase number of science trips/visits across the school in order to increase children' **science capital**

See attached portfolio submitted for PSQM award that summarises all the work done this year.