Aston Rowant C of E Primary School

PSQM Silver Award Portfolio 2018

E: Science at Our School

We are a small rural school in Oxfordshire with the luxury of outdoor space including a 'wild' area, large field, mud kitchen, willow dome, raised beds, sun bubble and pond. The children in our school love learning outside of the classroom in their mixed year group/key stage classes.

E: Science at Our School

During the PSQM process, staff have become even more reflective in their practice and used this to highlight areas for professional development. Enthusiasm for Science teaching and learning has risen across the whole school in both staff and children. Children have many more opportunities for outdoor and hands on learning to develop scientific enquiry. There is now a clear vision for Science teaching and learning at Aston Rowant School.

A1: There is an effective subject leader for Science.

'The quality of teaching and learning has improved due to the sound subject leadership of Science and the dedication and passion for Science as a subject in our school. Teachers are demonstrating increased confidence in trying out new methods of teaching Science and feedback from the children is that they are enjoying the practical hands-on investigations that being part of the PSQM has opened up for us.'
Headteacher Aston Rowant C of E Primary.

'Green Training' CPD led by Learning through landscapes gave staff confidence to build fires during Forest Friday science activities.

There is a slot allocated to Science development in every staff meeting so that staff can access CPD, share good practice and discuss curriculum development.

Science: CPD update for experiments. Very easy to set up and child orientated. Georgie to organise a bank of experiments. Explorify very good website to use for ideas for talking about science. Free CPD on line with it. Please use.

Big Science Week theme is Travel. Assembly for judging will be 28th March at 9.15.

A weekly Science club, run by the subject leader, allows children to continue to play, explore and discover together outside of lesson times. This is fully subscribed most terms.

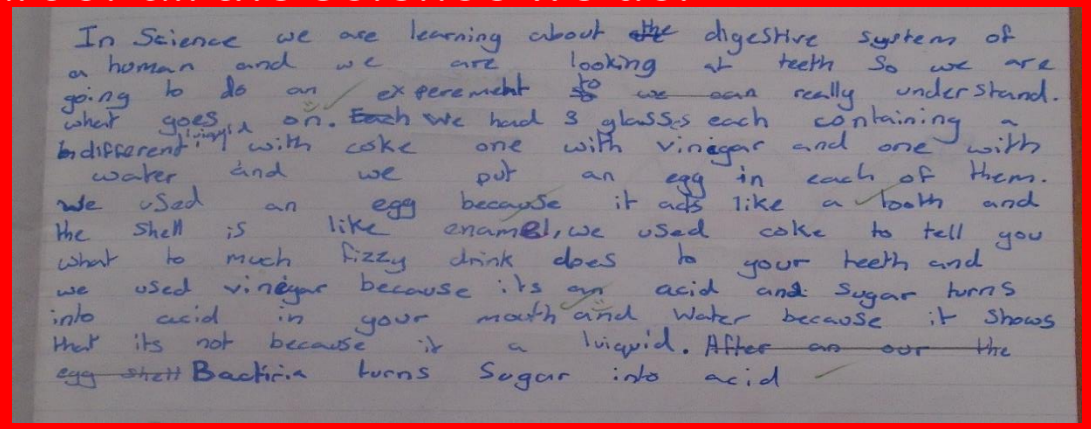
A2: There is a clear vision for the teaching and learning of science.

Our core principles for teaching science lie at the heart of all the science we do.

Science is going well when…

Engagement and Enjoyment

- Children can explain what they can see
- Children find out something they weren't expecting
- Children are asking questions and taking responsibility for their own investigations
- Children are playing
- Children are engaged



"It's interesting seeing what happens", Year 4 pupil.

A2: There is a clear vision for the teaching and learning of science.

Our core principles for teaching science lie at the heart of all the science we do.

Science is going well when…

Engagement and Enjoyment

- Discussions continue in 'free time'
- Children are enjoying their learning
- Children investigate without encouragement
- Children suggest experiments they can carry out themselves
- There are enough resources so children can be 'hands on'

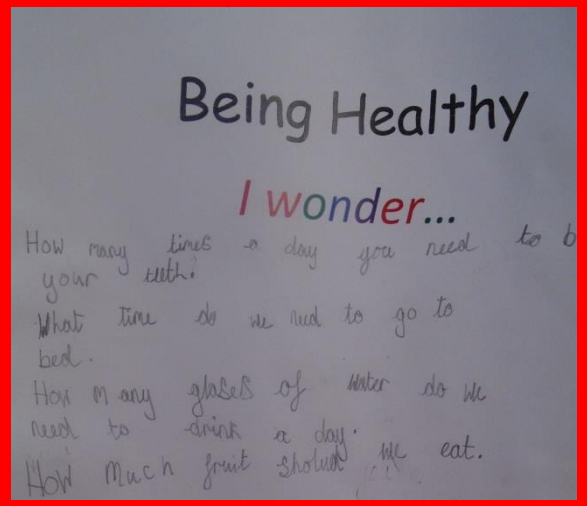
"We do lots of fun experiments", Year 4 pupil.

'How far does a whisper travel?'
'Does food containing sugar make you faster?'
'Can people with longer arms balance for longer?'
'Which pan lets heat travel the fastest to make popcorn pop the fastest?'
'How quickly can an object fall with a parachute?'
'Does more water travel further?'

Examples of questions during the Big Science Event.

A2: There is a clear vision for the teaching and learning of science.

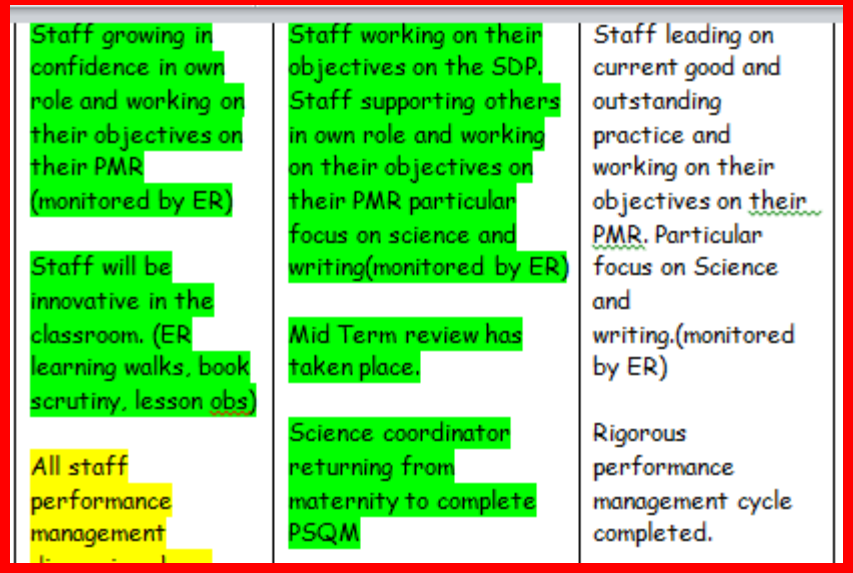
There is evidence of our vision throughout the school.



Our vision is displayed in every classroom supported by an 'I wonder…' table for free play and exploration.

Teachers plan and deliver science lessons where children are encouraged to be curious and inquisitive.

A3: The current School Development Plan has appropriate and active targets for Science.



Staff growing in confidence in own role and working on their objectives on their PMR (monitored by ER) Staff will be innovative in the classroom. (ER learning walks, book scrutiny, lesson obs) All staff performance management	Staff working on their objectives on the SDP. Staff supporting others in own role and working on their objectives on their PMR particular focus on science and writing(monitored by ER) Mid Term review has taken place. Science coordinator returning from maternity to complete PSQM	Staff leading on current good and outstanding practice and working on their objectives on their PMR. Particular focus on Science and writing.(monitored by ER) Rigorous performance management cycle completed.

Quality of Teaching and Learning in Science ensures all children making progress towards National Curriculum Science objectives
Work towards PSQM is ongoing
Children gaining more hands on investigative work.

Measurable milestones and monitoring procedures				Progress/Evaluation Impact
End of Term 2	End of Term 4	End of Term 6	Governor monitoring	
gets set for ding, Writing and ths. dren to include cific learning s and ievements through tos and recounts.	New Targets set for Reading, writing,Maths and Science All children updating Learning journeys at least fortnightly to include next steps targets.	Children keen to talk about their journey with adults and be able to verbalise their next steps with a growth mindset. Evident through pupil interviews and book scrutiny. (ER)	Paired Learning Walks – Terms 2,4,& 6	Improvements in learnin made not all children re recounts to learning goa Needs further monitori

The School Development plan is produced in partnership between the head teacher and the subject leader.

The objectives are designed to have the maximum impact on the quality of Science teaching and learning the children experience in school.

The science subject leader targets related to SDP on their performance management, which is monitored by the head teacher.

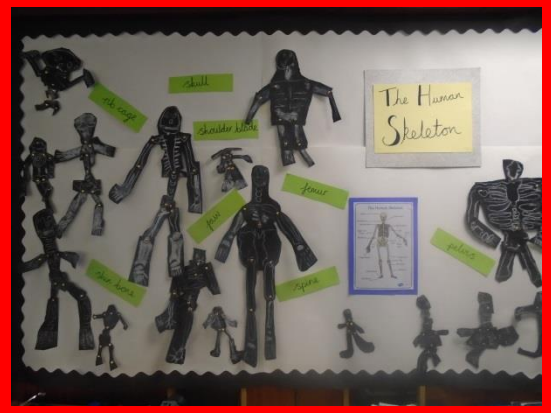
A4: There is a shared and demonstrated understanding of the importance and value of science to children's learning.

Staff place value on children 'understanding the world around them', the importance of helping children to develop 'logical/scientific thinking skills' and 'stimulating thoughts and discussion'. One teacher also highlighted the value of enjoyment in children learning science. (Staff audit)

Governor - Pupil questionnaire – 2017 / 2018 Academic Year

				Comment
Strongly agree No: 7	Agree No: 5	Disagree No: 0	Strongly disagree No: 0	
Strongly agree No: 7	Agree No: 4	Disagree No: 1	Strongly disagree No: 0	Science, Art Maths noted as favourites. Literacy not enjoyed – hard to get ideas on paper. (Yr3 Boy)

A range of Science displays can be seen in every class room and in the main hall.



Science was mentioned as a favourite subject by almost all pupils when asked 'Do you enjoy school?' during a governors monitoring visit.

A4: There is a shared and demonstrated understanding of the importance and value of science to children's learning.

We had a whole school visit from Zoo Lab to give the children hands on experience in understanding animals.

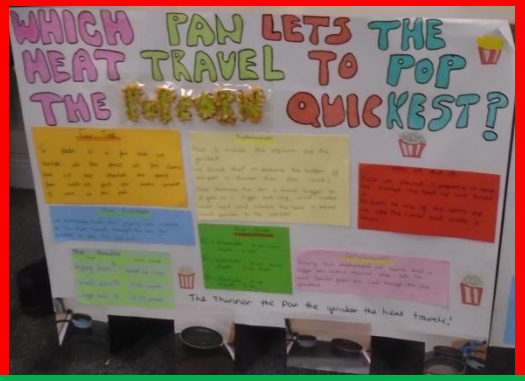
Parents with a Scientific background have been invited into school to share their knowledge with children, staff and other parents.

ABOUT THE AUTHOR

Robin Nixon Pompa is a health and science journalist and a mother of three young children. She received a degree in neuroscience and behavior from Columbia University and is a former staff writer for LiveScience.com, an online magazine syndicated by the Huffington Post, Yahoo!, MSNBC, Fox News, the Christian Science Monitor, and other outlets. She lives in Oxfordshire, England, with her family.

Come and meet Robin on

A4: There is a shared and demonstrated understanding of the importance and value of science to children's learning.

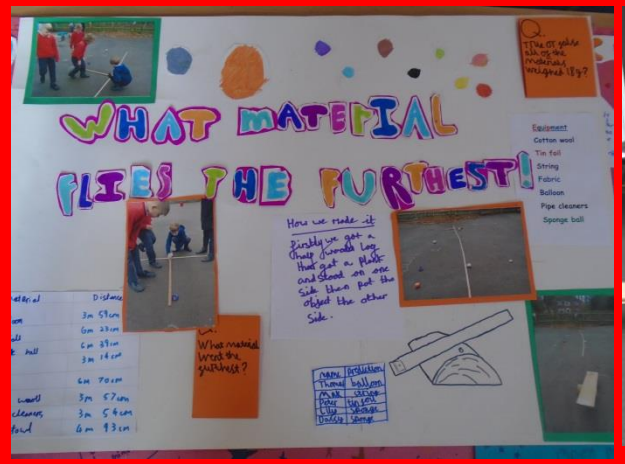


Thinking 'outside the box' in Year 6!

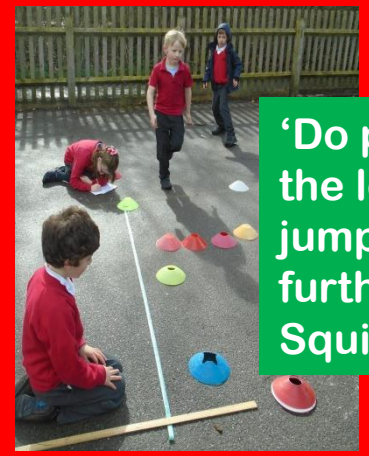
Hedgehog Class made and tested parachutes.

'Does more water travel further?' Squirrel Class

The Big Science Event 2018 'Travel'



Fox Class investigating catapults.



'Do people with the longest legs jump the furthest?' Squirrel Class.

A5: The science coordinator knows about science teaching and learning across the school.

Examples of Science in long term creative curriculum planning. Including science events; all developed in collaboration with the Subject leader.

Creative Curriculum Coverage

Focus: (NC Geography – region in Italy)

APHY:

s: study the mountains of Italy – formation, location,
y, human geography as it relates to mountains, produce

SCIENCE:

Materials and their properties

Which rocks are mountains formed from and why?

Changes of state and changes resulting in new materials – making model of an erupting volcano and baking – pizza.

Creative Curriculum Coverage

Focus: (HISTORY)

PHY:

Navigating and Maps

Comparing home with the Caribbean/The

SCIENCE:

- Food, nutrition, exercise and hygiene (animals including humans).
- Plants – growing healthy food
- Observation and questioning.

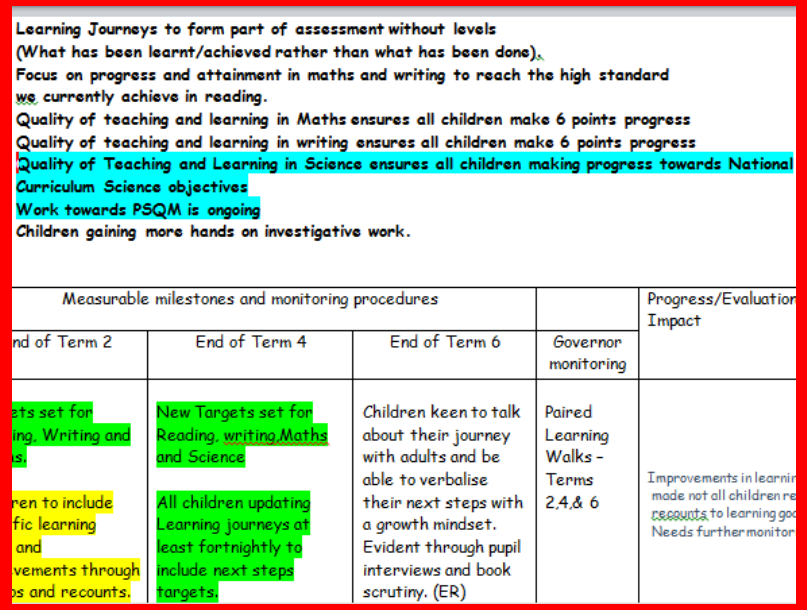
Five

Local/National Events:

- Oxfordshire Big Science Event – Online form to upload winners is open from Friday 23rd March. Deadline for uploading school winners Friday 13th April.

A5: The science coordinator knows about science teaching and learning across the school.

Staff working on their objectives on the SDP. Staff supporting others in own role and working on their objectives on their PMR particular focus on science and writing(monitored by ER) Mid Term review has taken place. Science coordinator returning from maternity to complete PSQM	Staff leading on current good and outstanding practice and working on their objectives on their PMR. Particular focus on Science and writing.(monitored by ER) Rigorous performance management cycle completed.



Learning Journeys to form part of assessment without levels
(What has been learnt/achieved rather than what has been done).
Focus on progress and attainment in maths and writing to reach the high standard we currently achieve in reading.
Quality of teaching and learning in Maths ensures all children make 6 points progress
Quality of teaching and learning in writing ensures all children make 6 points progress
Quality of Teaching and Learning in Science ensures all children making progress towards National Curriculum Science objectives
Work towards PSQM is ongoing
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Measurable milestones and monitoring procedures				Progress/Evaluation Impact
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Paired and intra class activities, science mentoring/reading buddies/digital learners have begun(Pupil Premium)(HTh ECh) Science enrichment. At least 1 whole school science investigation to be carried out to develop deeper mastery. In school Big Science and across partnership. (Pupil Premium)(GM) Partnership science network meeting attended by all.	Science drivers for creative curriculum planned for. (All staff and GM). Maths enrichment. At least 1 whole school Maths investigation to be carried out to develop deeper mastery linked with partnership schools .(Pupil Premium) (HTh) Collaboration with partnership schools in Science enquiry as per Partnership DP. Big Science Event is a success.	Year 6 mini enterprise investigated with partnership schools. Contribution to Science Partnership event at LWS (Pupil Premium x1) (HTh)	Curriculum mtg with Mrs Roberts	Year 6 have buddied with HH class and paired reading with Squirrel class. Digital learners not yet happened will re focus. Lots of Science happened. Lots of investigations but not yet whole school Big Science. It is scheduled for March. Deep Mastery science investigation Box planned and available for children to access on the playground. Science on Partnership development plan. Staff attended the inset.

The SDP is developed with the head teacher, governors and subject leaders. All staff work on the objectives. These are monitored rigorously by the head teacher through lesson observations, book scrutinies and learning walks. Successes and areas for development are shared with the subject leader so that she may support staff as necessary. The SDP is evaluated on a termly basis with a 'traffic light' system. Successes (green) are clearly highlighted as are areas for development (yellow/red). Science has been well planned and taught and all children make progress.

A5: The science coordinator knows about science teaching and learning across the school.

Governor Learning Walks – Curriculum/ SDP

Governors Monitoring

Term 4 – From SDP Objectives

1:1

Children involved in topic planning web

More lessons outside, linking with new Forest Friday and more hands on learning.

Promotion of enjoyment of science lessons through working scientifically/hands on learning.

2:1 / 2:1:1

Children understand targets for reading, writing, maths and science

Responsibility	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
Governors	Meetings with linked subject coordinators to monitor and evaluate action plans. Class visits to monitor pupil respo Visits in school to monitor objectives on SDP including enjoyment of Science, Spirituality, School Values, Forest F engagement				
Head Teacher	Planning and Assessment files (check writing) 1 Triangulation of evidence - observation, books & use of data Lesson obs/learning walk Science 2	Assessment folders (Check Writing)3 to include PIRA and PUMA data Diagnostic learning walk, SEN/AGT planning & provision of Science 4 Analysis of whole school data	Planning files including the planning off Big write, Learning Journeys and Science 5	Lesson obs Big Write 6 Triangulation of evidence - observation, books & use of data Analysis of whole school data Monitoring of all subject management folders	lesson obs focus o maintaining standards in Math Monitoring of writ Book scrutiny Pupil interviews enjoyment of Science.
Subject coordinators	Subject audits Action plans	Book scrutiny & pupil interviews	Lesson observations	Assessment procedures	Tracking progress

"Children are encouraged in all year groups to be curious and ask questions at all points of their lessons to prompt and extend their discussions" – feedback from Head teacher lesson observations.

Head teacher's monitoring cycle outlining responsibilities for the monitoring of science, linked to objectives on SDP. These include monitoring science planning, lesson observations, assessment and pupil interviews. Strengths and areas for development are then fed back to the subject leader.

B1: Staff continue to have opportunities for CPD within science that increases their skills, knowledge and understanding.

Teaching staff had previously found it challenging to meet all the curriculum areas for Science and keep Science teaching and learning 'hands on'. The CPD from Science Oxford provided a bank of practical sessions for all elements of the curriculum. Staff have since felt empowered to 'teach' less and guide more, providing the children with the resources, stimulus and questions needed for learning rather than giving them answers. During lessons children have been able to see what happens for themselves and use their experience to further their questioning and deepen their understanding.

Staff are presented with a variety of CPD opportunities to build confidence and subject knowledge.

Hi Georgie,
I gained an immense amount from attending the Science CPD held at LWS. It provided me with lots of ideas for practical science activities which I could use straight away in the classroom. Not only were they extremely engaging (even for the adults), but they were also simple. None of them required huge amounts of equipment but all of them were fun and provided ample opportunities for learning through 'play', even for older KS2 children. The tutor was clearly very experienced, and modelled very well the kind of questioning which would nudge children in the direction of finding things out for themselves, instead of being told the answer. An informative and inspiring session.
Thank you!
Helen

B1: Staff continue to have opportunities for CPD within science that increases their skills, knowledge and understanding.

Staff received 'green training' CPD from Learning through Landscapes.

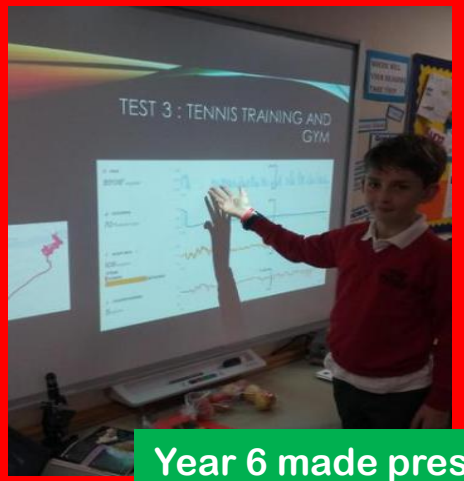
The CPD leader suggested plenty of ways to use our natural environment to meet many national curriculum objectives, rather than the obvious classification, animals and habitats we had previously been using it for. During this session, teaching staff were trained in using a variety of equipment to be used to work scientifically outdoors, including Kelly kettles to be used to teach changes of state.

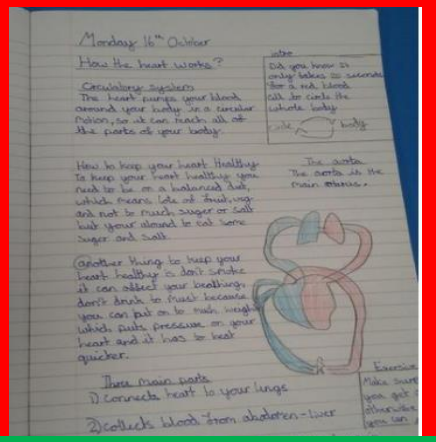
The impact of this CPD has been that teachers have been much more confident at bringing Science lessons outside of the classroom for a larger range of topics. The children are much more engaged when they can 'do' science, especially outdoors.

B2: There is a range of teaching and learning approaches for Science.

Squirrel Class adopted trees in the school grounds to research and observe seasonal changes.

A range of practical investigations in Fox Class.





Year 6 made presentations, wrote explanation texts and made clay models when learning about the human heart.

Hedgehog Class observed how water can change state.

Promoting Women in Science

Squirrel Class made and shared a healthy lunch when learning about nutrition.

B3: There is a range of up-to-date, quality resources specifically for teaching and learning Science. ICT is used both as a tool and a resource for teaching.Use of 'free' resources has been developed.

We use our outdoor environment to learn about animals and habitats.

Using mirrors and prisms to explore light.

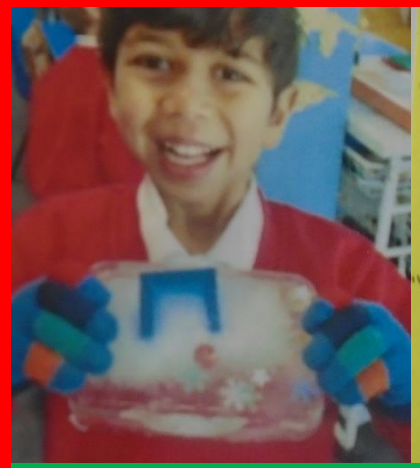
Using a range of resources to make boats.

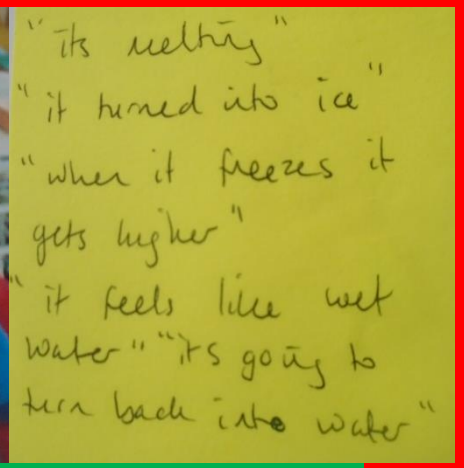
Children in KS2 regularly use laptops for internet research and to present their work.

Exploring magnets

Exploring electricity

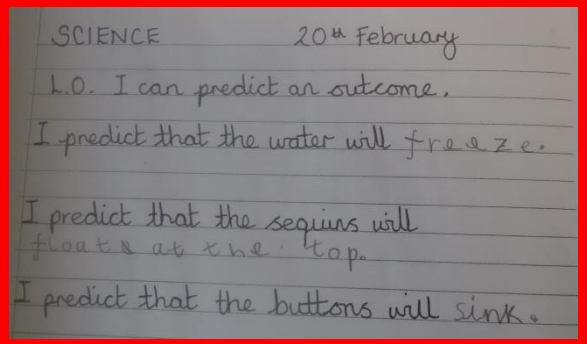
C1: All pupils are actively engaged in Science enquiry. They make decisions, answer their own questions and evaluate their work.





Making observations in EYFS

A variety of enquiries regularly take place throughout the school. Children suggest ways to answer their own questions.



'It doesn't matter if it doesn't go right, that's what's interesting about Science', Year 3 pupil.

C1: Children's curiosity is encouraged and valued. They are encouraged to engage in Science at home.

IF Oxford: science and ideas festival

in association with Science Oxford

Oxfordshire Schools Science Poetry Competition

Can you write a terrific scientific poem? Then enter the IF-Oxford schools science poetry competition for a chance to win some fantastic prizes!

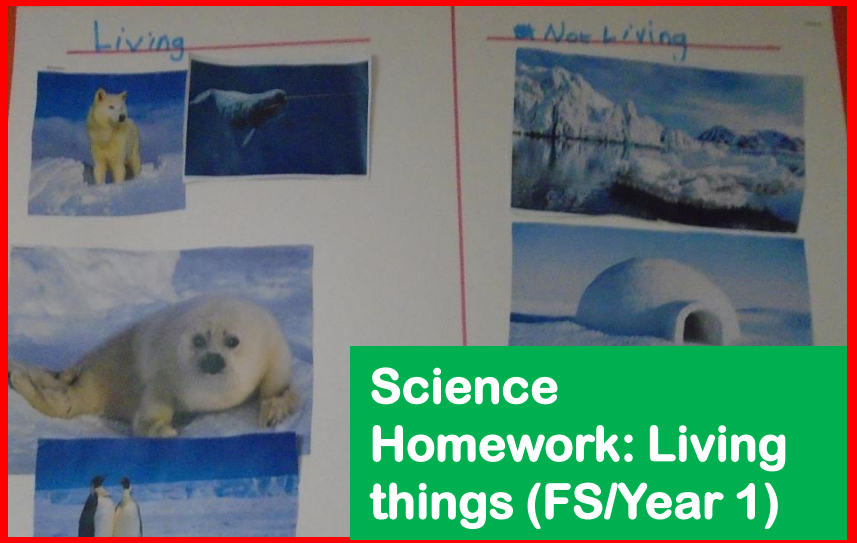
Who can enter?

The competition is open to any child a
will be judged in three age categories

- School Year 2 and below (i.e.
- School Years 3 – 6 (i.e. Key St

The children are writing their entries for this competition as homework, sharing their ideas with their families.

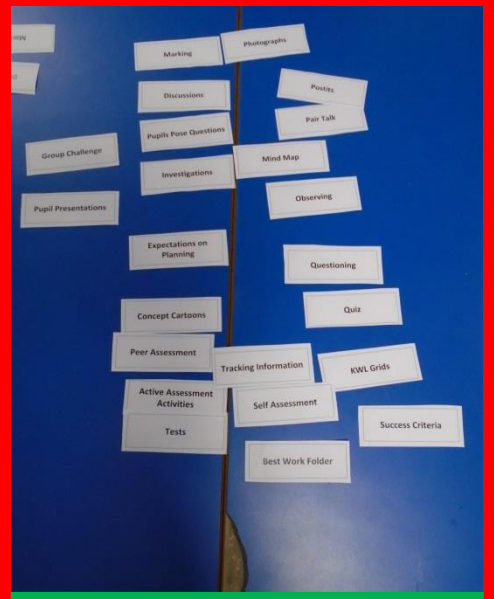
Children are encouraged to share things they find outside of school…like this bird's nest!



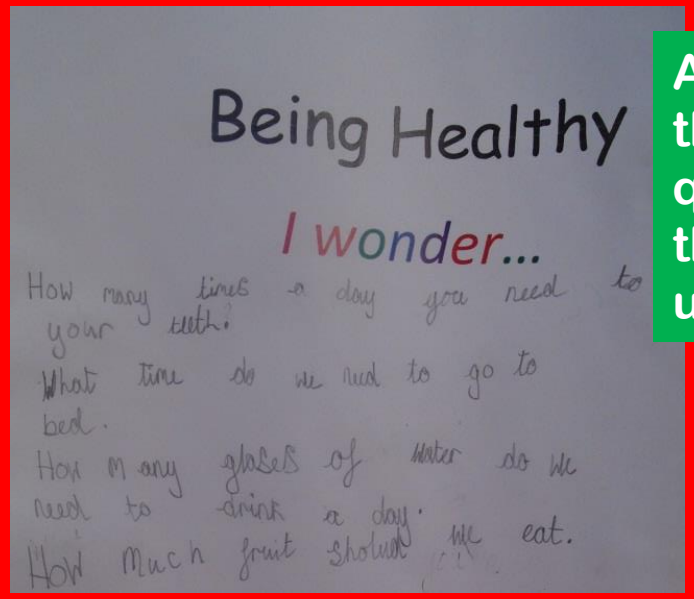
Science Homework: Living things (FS/Year 1)

'Do children who do more sport have stronger muscles?' Year 2 investigation.

C2: Teachers across the school build different assessment strategies into their science lessons.



Discussing the Principles of Assessment activity (Activity 10) during a staff meeting. Teachers agreed to use interactive displays more in their classrooms as an AfL too.



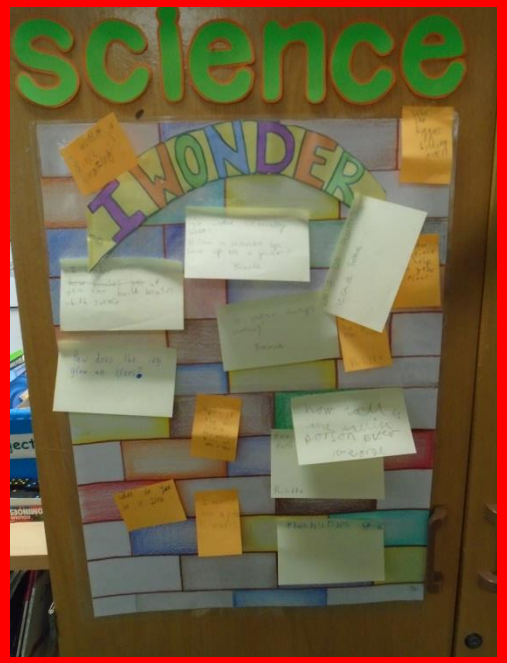
All children have an 'I wonder' page in their books to note down any questions and curiosities they have at the beginning of a topic. Teachers use this to help inform their planning.

Subject leaders within our partnership have collaborated to create a set of 'exceeding' criteria for each year group.

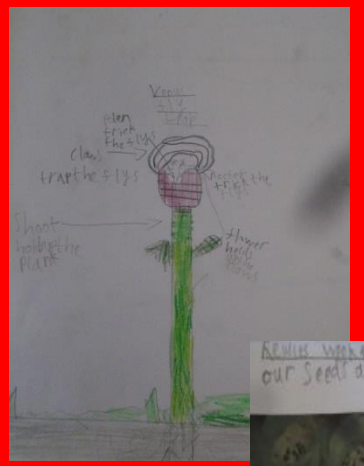
B1 Using scientific language appropriate for their age.

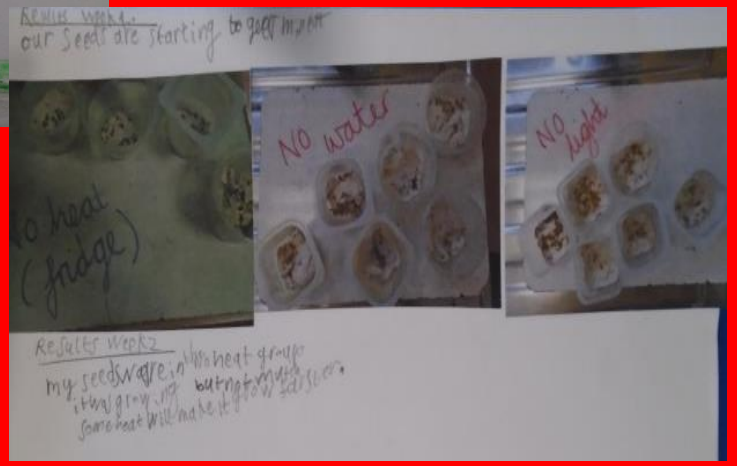
A	B
Year 1	Using scientific language appropriate for their age.
	Made a simple prediction base on prior knowledge
	Made observations with some detail, including pictures and verbally.
	Recorded results by completing table or drawing a simple diagram
	Used the results to make a basic conclusion.
	Thinks of their own questions.
	Uses results to answer question.
	Has suggestions as to how to test something or aspects of it.
Year 2	Asking questions and sourcing them
	Using technical vocabulary consistently
	Using prior knowledge to come up with answers to questions, predictions etc.

C2: Teachers across the school build different assessment strategies into their science lessons.



Children are encouraged to interact with displays to ask (and answer) questions, highlighting where their learning needs developing, as well as areas for interest to inform teacher planning.

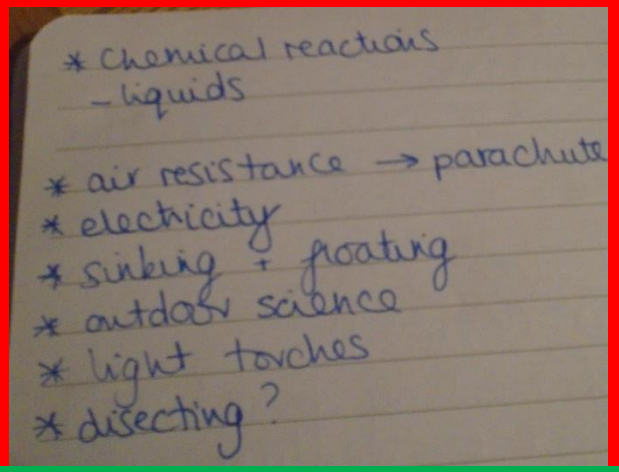




Children are also encouraged to demonstrated their learning through diagrams and photographs to ensure that even low attainers in reading/writing can show their attainment and progression in science independently.

C3: Children enjoy their science experiences in school. Children's opinions are valued and responded to.

'I can't wait for Science tomorrow!' 'Why what are you doing?' 'I don't know I just love Science'. A conversation between a Year 1 child and their parent.



The children in Science club made these suggestions for future sessions.

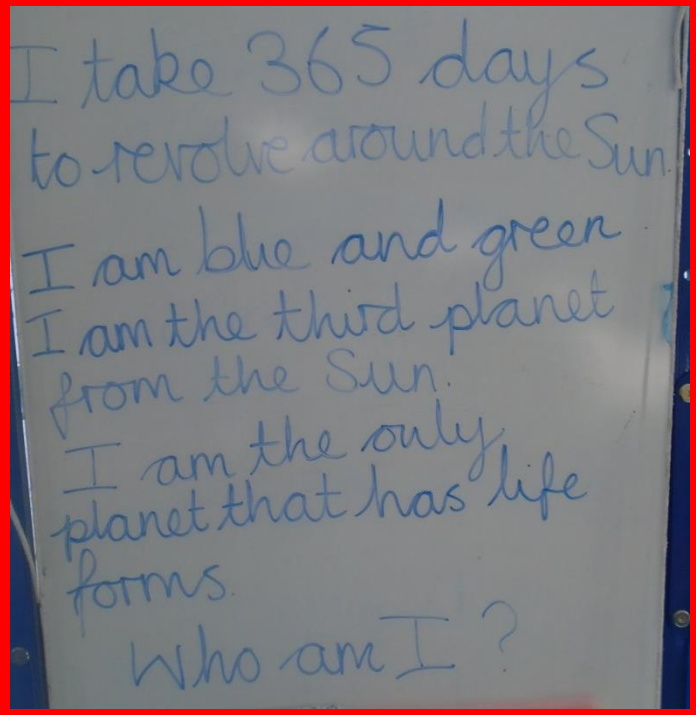
Children are encouraged to make suggestions about their own learning through investigation in class and in science club.

D1: Science supports links with other curriculum areas.

Links with outdoor learning in our sensory garden.

Hedgehog Class studied different animals during their Polar Regions topic.

Year 2 and 3 wrote riddles about the planets in Literacy.



D2: There are clear links to other schools and outside agencies to enrich science teaching and learning.

Science Events Calendar 2017-2018

Term	Hedgehog	Squirrel	Fox	Owl
Autumn 1	Science Enrichment Week	Science Enrichment Week	Science Enrichment Week	Science Enrichment Week
Autumn 2				
Spring 1				
Spring 2	Tring Museum Natural History Visit Oxford Science 'Big Science Event' Zoo Lab*	Oxford Science 'Big Science Event' Zoo Lab*	Oxford Science 'Big Science Event' Zoo Lab*	Oxford Science 'Big Science Event' Zoo Lab*
Summer 1	Science Oxford Science Show * Oxford Science Festival Poetry Competition	Science Oxford Science Show * Oxford Science Festival Poetry Competition	Science Oxford Science Show * Oxford Science Festival Poetry Competition	Science Oxford Science Show * Oxford Science Festival Poetry Competition
Summer 2	Partnership Science Fair LWS (1 child from each year group) The Great Science Share Visit to Oxford Botanic Gardens	Partnership Science Fair LWS (1 child from each year group) Visit to Harcourt Arboretum The Great Science Share Visit to Oxford Botanic Gardens	Partnership Science Fair LWS (1 child from each year group) The Great Science Share	Partnership Science Fair LWS (1 child from each year group) Flippy the Goldfish Science Investigation morning (LWS) The Great Science Share

Learning through Landscapes

ZOOLAB
Amaze Educate Inspire

The subject leader has developed a calendar of Science events to enrich science teaching and learning across all classes.