

reflection

pre-PSQM

impact

during PSQM

evidence



suggested way to read evidence

Staff
voice

Pupil
voice

Parent
voice



Milwards
Primary School
& Nursery

Subject Leadership A:

Staff and children have agreed a set of principles for good science teaching and learning.

Key Need

1

Pre-PSQM: Our school science policy had not been reviewed for many years! Furthermore, it was not widely shared across the school.

Reflection: Carrying out a staff INSET with all stakeholders led to high quality discussions about what we value as good teaching and learning in science. As a result, our principles were updated, and a new vision statement was created.

Impact: There is a clear and shared understanding of what we are trying to achieve in science by all. Practise is becoming more defined by our principles. Children are given more opportunities to take part in outdoor learning as well as connect their science learning to the real world.

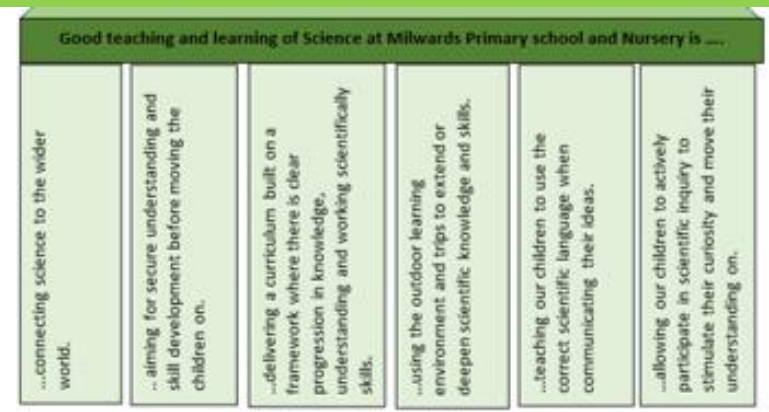
July 2021: our original policy was vague, outdated and incomplete!

Aims and principals of science at Milwards:

The objectives of teaching science are to enable children to:

- ask and answer scientific questions;
- actively explore the environment;
- plan and carry out scientific investigations, using equipment (including computers) correctly and safely;
- know and understand the life processes of living things;
- know and understand the physical processes of materials, electricity, light, sound, and natural forces;
- know about the nature of the solar system, including the earth;
- evaluate evidence and present their conclusions and scientific understanding clearly and accurately.

Autumn term 1, 2021: A clear set of principles embedded into our policy



Impact of our principles



Each term, staff and children add evidence of our principles in action to a whole school display.

Outdoor learning has been sustained in EYFS and KS1 and extended to KS2!

"It was fun being a gas and being able to run around outside." – Year 4 pupil

"It's much clearer what we are trying to achieve in science."
-Head Teacher-

"I don't feel as guilty when there isn't learning in the books because we have been outside!
-Class Teacher-

Subject Leadership B

2

There is strategic support enabling improvement to take place

Pre-PSQM: Historically, science has always been valued at our school. Staff have ensured adequate time and provision has been allocated for the subject throughout EYFS, KS1 and KS2.

Reflection: This year, science has been identified as a key need on the school's development plan. This has led to further meetings with SLT to report on the subject's performance. SLT show an even deeper understanding of the subject's strengths and needs and work closer with the subject lead to get better pupil outcomes.

Impact: There is greater staff accountability on pupil performance in the subject. Year groups are being monitored more closely by SLT. As a result, teachers are thinking more deeply about how they plan and deliver lessons or put in appropriate provision where necessary. Pupil progress and attainment has been sustained or improved across the school.

The school's strategic priorities are displayed around the school, raising its profile with all stakeholders.



Milwards Primary School & Nursery School Strategic Plan 2021-2022

Key Strategic School Strategic Priorities for 2021 - 2022:

Key Priorities

- Disadvantaged Champion - roll out of strategy through training and school based research - relationships (term 1), communication and language (term 2) and meta-cognition/self regulation (term 3). To raise attainment for disadvantaged/all children
- Curriculum - to revise the curriculum in line with the new September 2021 OFSTED expectations.
- Phonics - purchase of a new phonic scheme and implement. This implementation will include whole school training to ensure that a DfE recognised SSP is embedded and supporting children in early reading.
- PSQM - To undertake the requirements for the PSQM, focussing on raising the profile and attainment across the school.**
- Writing - to raise attainment in spelling and writing overall across the school. Focussing on composition, handwriting and stamina.
- EYFS - To embed the new EYFS curriculum and assessment

The subject's budget is well planned for and supported by SLT.

Licenses/Subscriptions	Renewal Date	Specific Budget
Developing Experts	September 2021	Science
Association of science membership	September 2021	
Bee Hive Insurance	September 2021	
CLEAPSS	September 2021	
Total		

Resources	Specific Budget
Peripherals	Science
Electricity resources	
Plants resources	
Human science	
Working scientifically resources	
Jars for honey	
Total	

CPD/Training	Specific Budget
Total	

Human Resources	Specific Budget
Science Boffins	Science
Total	

Total Budget costs	
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There is further involvement with SLT in supporting action planning.

SL C. There is a monitoring cycle, including pupil voice, that informs actions taken and the development of science.	1. Discuss concerns with deputy head about time allocated to carry out lesson observations and pupil voice - arrange. ✓	SL	JUNE 2021	INTENDED IMPACT: - Additional evidence collected to help triangulate subject performance. Truer reflection of what key needs should be prioritised/addressed. - Bespoke CPD and feedback given to teachers as an outcome of monitoring. Improved staff confidence and consistency established across the school with key needs.
	2. Arrange 'subject day', considering lesson observations and pupil voice- Feedback impact on monitoring to SLT ✓	HT	JULY 2021	
	3. Work with new Head Teacher and	SLT	2	
		CT	SEPTEMBER 2021	

During this year's professional annual review , provision was put in place by SLT to help the subject develop further.

Objectives (with reference to Teacher Standards)	Performance/Success criteria	Evidence - classroom observation and/or other	Support, Training and Development
Leadership & Management 1	- To improve the Science capital of children at Milwards Primary School - Making a clear link to the children of Science undertaken in the classroom and the relevance that this has to their lives	Writing - Understanding fully what children know already about Science and enhancing this further. - Understanding the impact that Science has on them already outside of the classroom through their own hobbies or through careers that their parents/carers undertake that have a scientific element to them. - Getting children to engage more with parents/carers to explain the Science they have been learning and how this applies to the home - Parents coming into school and undertaking Science with their children - STEM visitors into school - Engaging with local colleges, Secondary schools and businesses to allow children to visit laboratories and see Science within the community - Organising trips to Science related sites - Science buddies.	- Science Week 7-11 March 2022 - Pupil interviews/pupil voice - Parental questionnaires - Evidence in books - General profile of Science around the school - Time when needed to attend relevant external professional development events - Inset time with staff - Planning time for upcoming events - PPA - Subject Leader time
Subject Leader Evaluation: Sean is happy with the current position of Science at Milwards Primary School. Please see additional notes.			
Reviewer's Signature:		Date:	Reviewer's Signature: Date:

There is now critical reflection by the SL after attending courses, resulting in meaningful impact across the school!

Date	Activity	Who was involved	A sentence or two to explain the IMPACT	What will you do as a result?
12/11/21	Open Light and sound training	SL	Improved understanding of practical activities to help children developing their conceptual knowledge about light and sounds and ways of investigating these concepts scientifically.	Share resources with ECT. Introduce all staff to resource box gained from training as part of subject leader day.

The subject's development is shared more with governors.



DEEP DIVE OUTCOMES

HISTORY- SCIENCE- MATHS -

November 2021

"Sean has a good understanding of where the subject's going and what needs to be done next' - Governor

Subject leadership C:

A range of approaches is used termly for monitoring science teaching and learning

3

Key Need

Pre-PSQM: Due to staff capacity and COVID, monitoring of the subject mainly took part after school and focused heavily on planning, book and data scrutiny.

Reflection: Working with the newly appointed Head Teacher has led to a cyclic subject monitoring timetable being established and implemented during school time. As a result, there is breadth in information being collected including lesson observations and pupil voice.

Impact: Triangulation of data has enabled priorities to be addressed through discussions and staff meetings. This has led to consistency in teaching approaches across the school. Children are receiving the same quality strategies to help them engage with and embed learning.

Monitoring approaches before and during PSQM.

Data continues to be scrutinised, termly. Meetings with CTs help the SL establish patterns and identify provision needed.

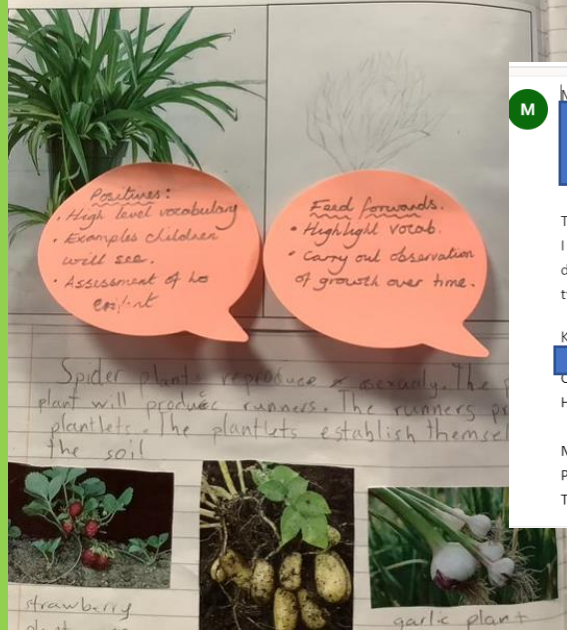
Questions and concerns:

YR.6 High percentage of children working below expected.

Teacher feedback.

- Gaps in subject knowledge. Plans to implement revision lessons before teaching new content.
- CHD need to be given more opportunities to work scientifically to practise and develop skills further.

Feedback and suggestions continue to be communicated with staff after book and planning scrutinies.



First round of lesson drop ins and pupil voice, Autumn term.

Science Subject Day – measuring impact: Tuesday 22nd November 2021

Session 3	Learning Walk:	Evidence of knowledge organisers out in some lessons. Years 2,4,5
1.00-3.00	In the afternoon, I will be carrying out a learning walk with Michael. I would like everybody to be teaching science.	Year 1/2 – scientific equipment out including pipettes and beakers.
Head teacher and subject lead	I will be focusing on the following: - Evidence that the knowledge organisers are being used as part of the lesson. - Evidence that resources are being used in a meaningful way as part of the lesson. This can include resources from the science trolley or resources from the science cupboard. - Evidence that our principles are being adhered to (obviously you may not be able to demonstrate all of these within one lesson).	Which materials is the best to make a dog bed out of? Which material is the best for a boat design? Year 3 – evidence of clamp stands out and torches – which material is the most reflective. Year 4 – teacher not in class Year 5 – teacher not in class. Year 6 – sorting sweets based on their characteristics – sorting and classifying.

David, Amber, Riley, Morgan

- Learning about evolution
- Knowledge organisers – aware of but not sure how to use in lesson.
- New books useful – help me learn more about science.
- I'd like to use the Science Trolley more!

Information collected from additional sources (learning walks and pupil voice).

Miss Alcock - Milwards Primary School

Thank you for looking at my planning. I really appreciate your support. I like the idea of The Darwin's finches investigation to get the children doing more pattern seeking. I agree, we do need to do more of this type of enquiry and classifying based on observations.

Kind regards,

Class Teacher

Harlow Inspirational Learning Trust (HILT)

Milwards Primary School & Nursery
Paringdon Road, Harlow, Essex, CM19 4QX
Tel: 01279 435850

To: Mr Huggett - Milwards Primary School

Good evening Sean,

Just wanted to drop you a quick email to let you know that I found your Inset very useful for my future Science teaching. Watching the video of you using the Knowledge Organisers within your own classroom was particularly helpful.

Kind regards,

Head Teacher
Milwards Primary School and Nursery

The outcome of this cycle led to further training on knowledge organisers which proved helpful.

Science Teaching A

There is engagement with professional development

4

Pre-PSQM CPD was offered frequently to staff at Milwards. This has always been well received with staff acting upon incentives, advice and suggestions to improve teaching and learning.

Reflection: This year, science CPD has continued to be timetabled into staff Inset. Staff have further improved subject knowledge as well as developed further ideas to use. As a result, teachers are trailing these in their classrooms with their children.

Impact: Developed subject knowledge is allowing teachers to explore ideas with classes in greater depth. More children are mastering concepts in science. Improved pedagogy is resulting in a broader range of resources and approaches being used, helping to engage, inspire and challenge children.

SLT have continued to timetable INSET in for science CPD.

Milwards Primary School and Nursery Staff Meeting Agendas and Timeline Spring Term 2022		
Date	INSET/Staff Meeting Wednesdays unless indicated	Timeline Dates (Including Assessment)
5.1.22	Meet in Maple class with iPads for a brief RE session followed by Subject Leadership/ECT dedicated time	Craig Duncan working with subject leaders - afternoon of 05.01.22
12.1.22	Google Classrooms Cross Trust	
19.1.22	PSHE/RSE Cross Trust	
26.1.22	Science	
2.2.22	Parent Consultation prep	
9.2.22	Parent Consultations	
	Half Term	
23.2.22	Science	
2.3.22	Cross MAT book look	Undertaken at Milwards Primary School
9.3.22	Science	
16.3.22	Cross town moderation - Years 1-6	
23.3.22	Data twilight evening	
30.3.22	Early excellence - EYF5 focus	



These children are taking part in activities suggested by OGDEN and STEM, once colleagues received training by the SL.

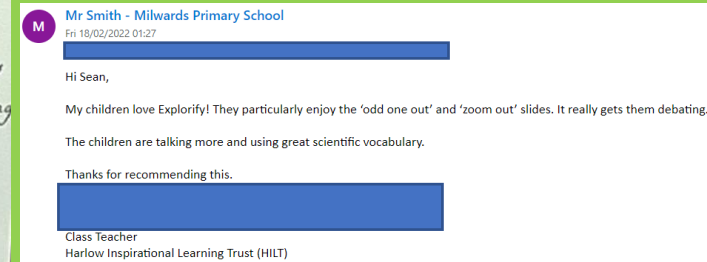
Since sharing, staff are beginning to carry out self study, using REACH OUT CPD to improve subject knowledge.



'I now feel confident to answer those tricky questions which I would not have known the answers to before.' – Class Teacher

Staff takeaways from CPD this year show there has been impact on teacher practise.

* Use Reachout CPD at the start of a topic, ~~plan~~
 * Bronze, Silver, Gold lesson to encourage retention
 * ~~plan~~ to plan
 * focus more on sticky knowledge



How to use the knowledge organiser in lessons.
 Using 'plan' for prior knowledge + misconceptions
 Outreach CPD - excellent resource.

I'm now confident with resources to use in upcoming topics.

Science Teaching B

A range of new teaching strategies for science has been introduced and evaluated in the last year

Key Need

Pre-PSQM: Teachers used a variety of strategies across the school as part of standard practise in science. Although these strategies promoted excitement and engagement, teachers reported many students were struggling to retain taught ideas in long term memory.

Reflection: Introducing knowledge organisers (KOs) in the science books and training staff up on how to use these with pupils has led to teachers having a secure understanding of the key concepts which are to be delivered. Furthermore, teachers have become equipped with strategies to promote memory recall by always making learning accessible during science lessons!

Impact: Content being delivered is more age appropriate. Engagement with KOs within lessons give children more opportunities to recall prior learning and help to improve the standards of discussions and work. Knowledge is becoming more embedding in long term memory. There has been a rise in the number of pupils meeting age related expectations in some topic areas.

Pre and continued approaches



Active learning approaches: **YR6** creating scatter graphs. **YR4** acting out different layers of the rainforest.



Learning activities

stic, glass, metal, water and rock
als
sis of their simple physical properties.

Core: Given table to complete in room/playground. Record what it made from and why.

Remember: What properties does the material have?
Understand: Why are the objects made from that material?
Apply: What else is made out of that material for that reason?
Analyse: What would happen if we used a different materials? (e.g. what would happen if we used metal for the floor?)
Create: Can you design a new method of recording ideas?

additional provision including EAL:
Vocabulary displayed and explained as needed. EAL children focused on during session.

SEN: KW supported by GB as needed but EAL (DCx2 & KK if KW okay) SD support LT and LC use discussion and



Classroom displays across the school were already and continue to help reinforce learning.

The journey of knowledge organisers, 2021.

2020

Band 3
Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
Describe in simple terms how fossils are formed when things that have lived are trapped within rock
Recognise that soils are made from rocks and organic matter

Data before KOS show not all children were secure with certain concepts.

Working Towards

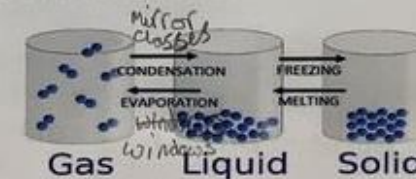
Achieved

Children actively use KOs in lessons and are beginning to annotate these.



'If I'm not sure what word to use in my work I can check in my knowledge organiser.'
Year 5 pupil

Changes of State (heating and cooling)
Warming **solid** ice makes it melt into liquid water. Adding more heat makes it evaporate, at 100°C, into water vapour (a gas). When it is cooled it **condenses** back into liquid water. If it is cooled to 0°C it **freezes** and forms ice.



2021

Band 3
Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
Describe in simple terms how fossils are formed when things that have lived are trapped within rock
Recognise that soils are made from rocks and organic matter

Data suggests, learning is becoming embedded in more children!

We had our Ofsted inspection during our PSQM year! There findings were positive, owed partially to KOs!

There are curriculum plans in place for some subject areas that are more developed. Where this is the case, in subjects such as mathematics and science, leaders have planned the key concepts and vocabulary they want pupils to learn. Consequently, teachers are teaching the knowledge and skills pupils need in these curriculum areas to ensure that pupils know and remember more.



Science teaching C:

Children have regular and easy access to quality science texts that are modern, relevant and age appropriate

6

Key Need

Pre-PSQM: We already had many high-quality physical resources which were being used regularly. However, science books were kept in the library. This meant that children were not accessing these regularly. Furthermore, some texts were extremely out of date!

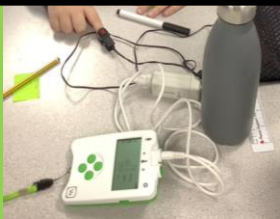
Reflection: Auditing, ordering and then distributing science books to classrooms led to children having more opportunities to engage with science texts beyond science lessons. As a result, some teachers are choosing to use the books to reinforce ideas in lessons or children are given more opportunities to read around the subject for pleasure.

Impact: A reading culture around science has begun to be established. The books have helped to expose and encourage children to use richer scientific vocabulary. Children are reinforcing and extending their own subject knowledge by reading about things which interest them.

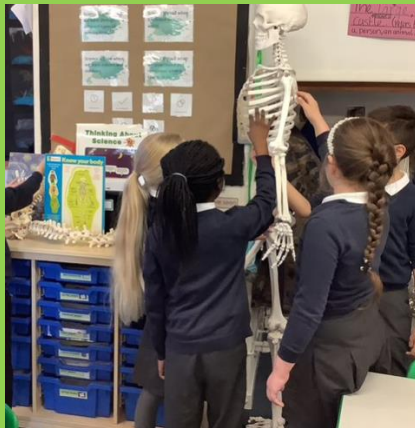
Pre-existing resources continuously used



We recently updated our data loggers!



We ensure children are given many opportunities to handle the resources within lessons.



Staff continue to use the OGDEN forces resource box we received last year.

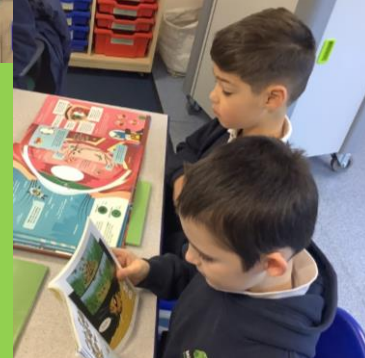


Information books

"I didn't read science books much before because they were in the library. We only went to the library once a week." Year 6 pupil 2020



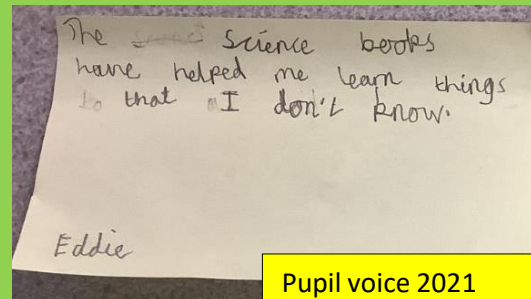
Books on display in classrooms.



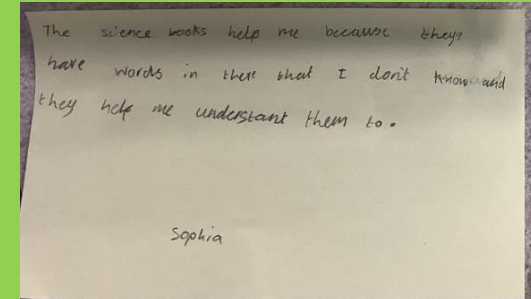
This child is engaging with a science text about the eye after learning about light and how we see.



Some children use the science books to learn about things brought in from home (dragonfly nymph).



Pupil voice 2021



Science Learning A
There is purposes and
process of
science enquiry.

7

Pre- PSQM: Teachers already
valued the importance of
practical work. The introduction
of a science trolley raised the
profile of working scientifically
across the school.

Reflection: The science trolley has
been shared with new staff
members. This has led to its use
being consistent across the
school. As a result, all children in
our school get opportunities to
engage with practical work,
regularly.

Impact: The working scientifically
trolley has made the organisation
and accessibility of practical work
easier for teachers. Due to its
regular use within classrooms,
children are familiar with a wider
variety of equipment types and
can use these appropriately in
investigative work. Children also
have a better understand of how
to work scientifically.

Curriculum pace plans take note of progression in working scientifically
skills (YR 2)

SCIENCE

Working Scientifically, Ongoing:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment.
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.
- Gathering and recording data to help in answering questions.

Plants ongoing (Class 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: local area of school (classifying/gathering and recording data)

Objectives:

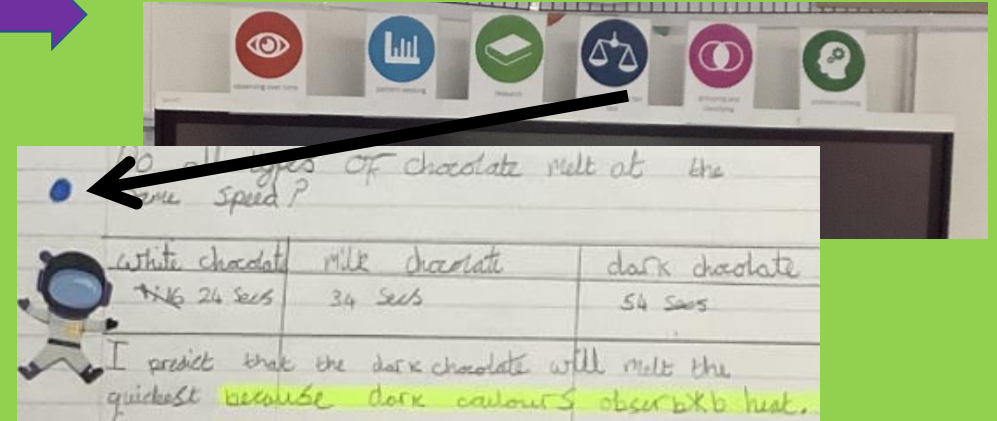
- Explore and compare the difference between things that are living, dead or alive.
- Identify that most living things live in habitats to which they are suited, and habitats provide for the basic needs of different kinds of animals and plants.
- Identify and name a variety of plants and animals in their habitats, including their basic needs.
- Describe how animals obtain their food from plants and other animals, and identify and name different sources of food.

Use of Everyday Materials: link to houses/transport

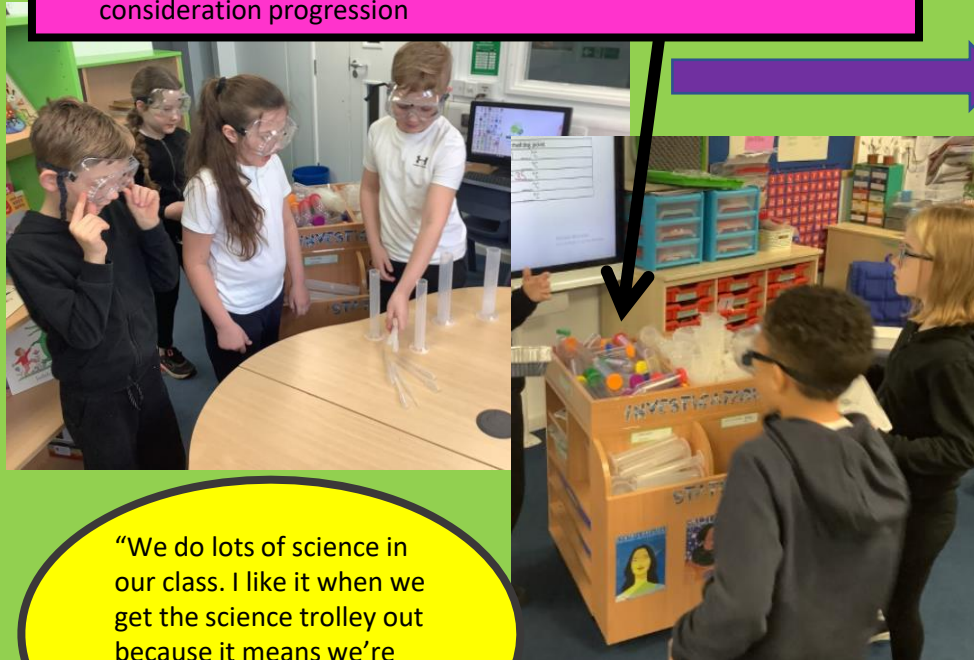
Objectives:

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, paper and cardboard for particular uses.

Teachers are beginning to get children to identify what type of enquiry they engage with in a science lesson, using display prompts to support.

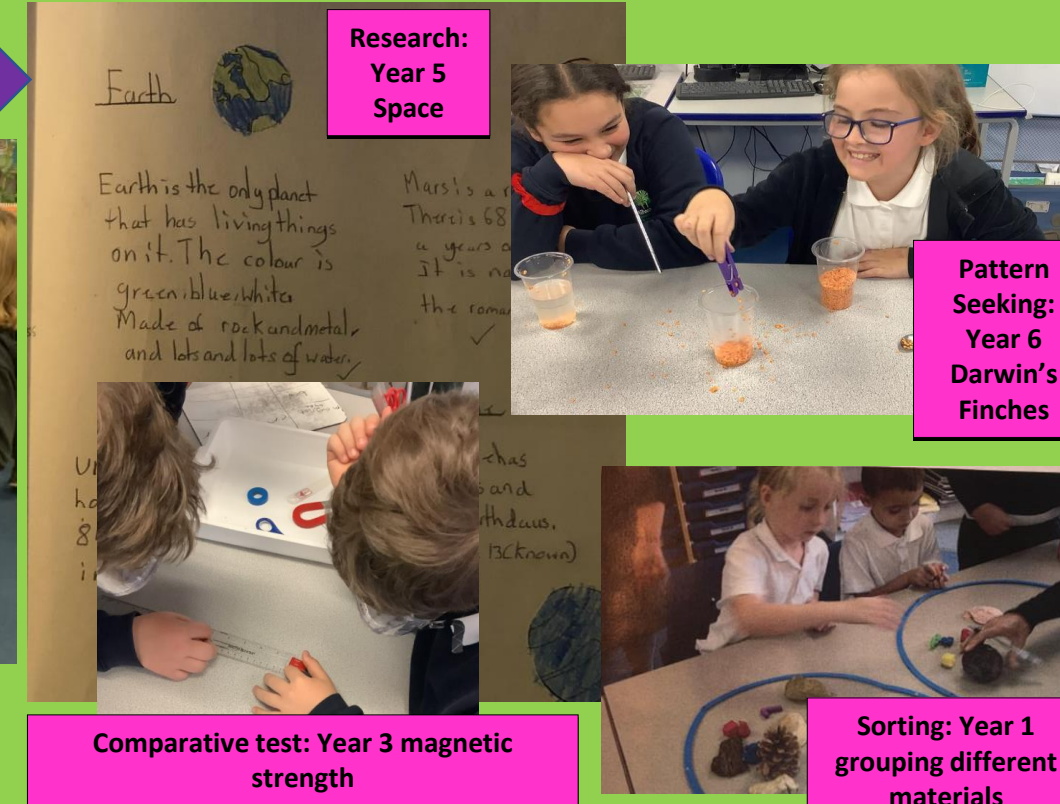


The equipment on the trolley is audited annually and takes into
consideration progression



"We do lots of science in
our class. I like it when we
get the science trolley out
because it means we're
going to do an
experiment." Year 4 pupil

**Research:
Year 5
Space**



**Pattern
Seeking:
Year 6
Darwin's
Finches**

**Comparative test: Year 3 magnetic
strength**

**Sorting: Year 1
grouping different
materials**

Science learning B

Teachers regularly use a range of assessment strategies to inform learning in science

8

Key Need

Pre- PSQM: Assessment strategies we used did not take into consideration how embedded knowledge was in long term memory. Furthermore, there were inconsistencies in teacher understanding of what essential knowledge children were expected to have retained at the end of a unit of work.

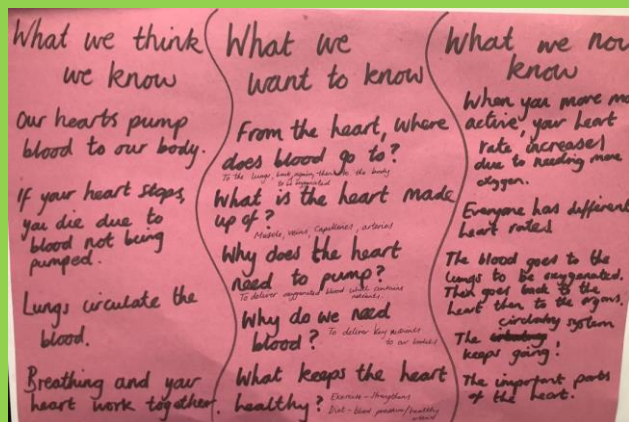
Reflection: Introducing knowledge checks at the start of lessons has led to teachers revisiting prior ideas more often. As a result, colleagues now check long term memory regularly.

Teachers are now expected to design their own end of unit tests based on information from knowledge organisers. There is a clear understanding of what children must know at the end of a unit. As a result, there is greater consistency in summative assessment in KS2.

Impact: Knowledge checks allow teachers to adapt teaching based on pupil misconceptions. Children are getting more opportunities to revisit, secure and embed prior learning.

Summative data is more accurate. Teachers have better guidance on how to pitch teaching sequences based on given data. Children's future knowledge and skills can be built upon appropriately, diminishing gaps.

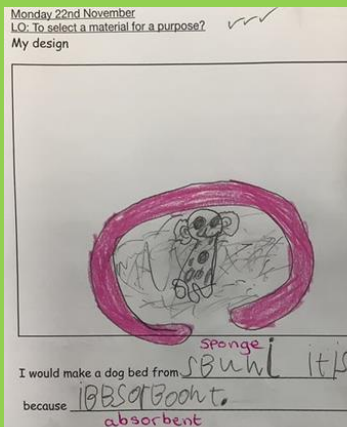
prior and continued practise



Teachers use discussion to help inform lessons.

Learning objective	Success criteria	Teaching input	Learning activities
Prior learning	Year 1: Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Year 2: I have understood ways germs can spread. I have understood ways I can keep myself clean to stop germs spreading		
Assessment of Year 2 prior work on germs:	- recall what you need to wash your hand effectively - list the steps needed	STICK NEW VOCAB SHEET! Recap what previously learnt about germs. Go through PP and look at what Louis Pasteur found out. Try glitter experiment together and talk about what they notice. Recap how to prevent germs spreading and important times to wash hands and what with!	Core: Design a handwashing superhero and the instructions. Remember: Describe how to wash hands effectively Understand: When is it important to wash your hand Why? Apply: Write a set of instructions for how to wash your hands. additional provision including EAL: Vocabulary displayed and explained as needed. EAL children focused on during session. SEN: PF with CH – teaching handwashing and hygiene (ONE PLAN / EHCP target) – preparing plans to wash

Teachers identify prior learning using PLAN resources so gaps in learning can be addressed and plan for opportunities to assess.



A tick system is used on work to assess how secure a child is with a concept.

✓ - working towards

✓✓ - secure

✓✓✓ - mastered

Newly introduced assessment strategies

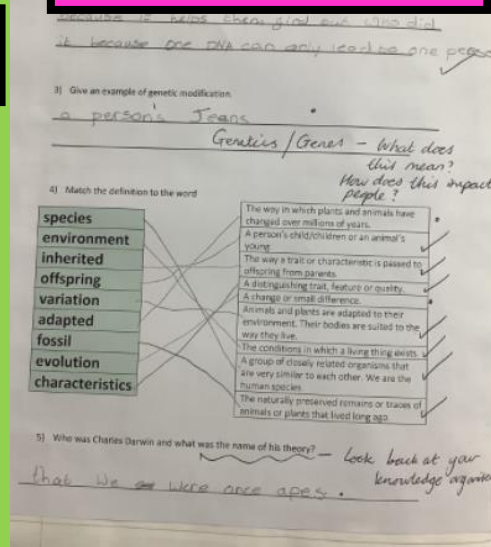
“Teachers are not deploying strategies to check long-term memory.” – School improvement Partner.

2020

Knowledge checks are pre planned.

Learning objective	Success criteria	Teaching input
Prior learning		
To know the purpose of different materials.	Identify the material an object is made from Identify why that material was chosen	Recap questioning Bronze – What different ways can you separate materials? Silver – What do babies need to be safe? Gold – Name the five invertebrate groups.

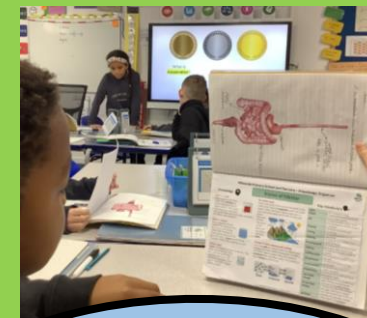
Summative assessments also check to ensure children are secure with key scientific vocabulary.



Progress Breakdown Y5 - All Pupils (28 pupils)

All Pupils (28 pupils)	Science	Average
Progressed by 6 steps or more	0 (0%)	0.0 (0%)
Progressed by 5 steps	0 (0%)	0.0 (0%)
Progressed by 4 steps	0 (0%)	0.0 (0%)
Progressed by 3 steps	0 (0%)	0.0 (0%)
Progressed by 2 steps	0 (0%)	0.0 (0%)
Progressed by 1 step	0 (0%)	0.0 (0%)
No steps progress	27 (96.4%)	27.0 (96.4%)
Regressed	0 (0%)	0.0 (0%)
Missing Data	1 (3.6%)	1.0 (3.6%)

Some year groups were not reporting data regularly!



‘I am beginning to feel my assessments are a proper reflection of the child, not just a snapshot in time.’
Class Teacher

2021

Progress Breakdown Y5 - All Pupils (28 pupils)

All Pupils (28 pupils)	Science	Average
Progressed by 5 steps	0 (0%)	0.0 (0%)
Progressed by 4 steps	3 (11.1%)	3.0 (11.1%)
Progressed by 3 steps	8 (29.6%)	8.0 (29.6%)
Progressed by 2 steps	12 (44.4%)	12.0 (44.4%)
Progressed by 1 step	0 (0%)	0.0 (0%)

Data can now be tracked across the school.

Science Learning C

All children engage in activities in school to develop their science capital.

Key Need

9

Pre-PSQMC COVID had dramatically impacted on the opportunities children were given to engage with science beyond classroom learning. Furthermore, there were inequalities in pupil's science capital.

Reflection: Science Buskers introduced at playtimes have led to pupils taking part in a range of science activities. As a result, children have become more aware that science is not just confined to lesson time.

Impact: A less 'threatening' environment has enabled our more reluctant children to have a go and discuss scientific ideas more freely. Children have been able to further contextualise science to everyday life, including its importance. The gap in pupil science capital is closing!

	YEAR 6				
	never	sometimes true	true	mostly true	always true
We learn about science at play or lunchtimes.	18	4			
We do different types of science at play or lunchtimes.	16	6			
My science learning moves on during play or lunchtimes.	21	1			
The science I do at play or lunchtimes makes me want to find out more.	12	10			
I use my classroom learning during play or lunchtimes.	18	4			
Total					

October 2021, pupil survey about science at playtimes.

	YEAR 6				
	never	sometimes true	true	mostly true	always true
We learn about science at play or lunchtimes.		20	1	1	
We do different types of science at play or lunchtimes.	1	3	18		
My science learning moves on during play or lunchtimes.	3	15	3		
The science I do at play or lunchtimes makes me want to find out more.	8	11	3		
I use my classroom learning during play or lunchtimes.	9	11	2		

December 2021, pupil survey about science at playtimes.



Science busking at playtime



Science buskers have been given badges to signify their role!



Science busking has started to be mimicked in Early Years.

How can we make it better?

- more change of experiment
- actual place for ~~the~~ science buskers
- lots of ~~them~~ taking experiments taking place at @ans.

Science buskers have become responsible in reviewing and making suggestions on how busking could be improved.

Science Learning C

The science capital teaching approach.

9

Key Need

Pre-PSQM Teachers were planning opportunities for children to study influential scientists, but our pupils found some of these figures too hard to relate to. Furthermore, COVID had impacted visitors to our school.

Reflection: Being linked to a STEM ambassador has led to Year 4 children working regularly with a real-life scientist. As a result, the scientist has helped the children develop certain working scientifically skills. The children can contextualise these skills to the real world and jobs in science.

Impact: Children can differentiate between science skills and enquiry types. Children can talk about a wider variety of science skills used by scientists. Children are beginning to identify which skills they are using in their work and are becoming more aware of their own skill strengths and weaknesses. Pupils are supporting each other with skill development during classroom learning.

prior and continued practise

A Scientist just like me



Telma G. Laurentino
Evolutionary Biologist

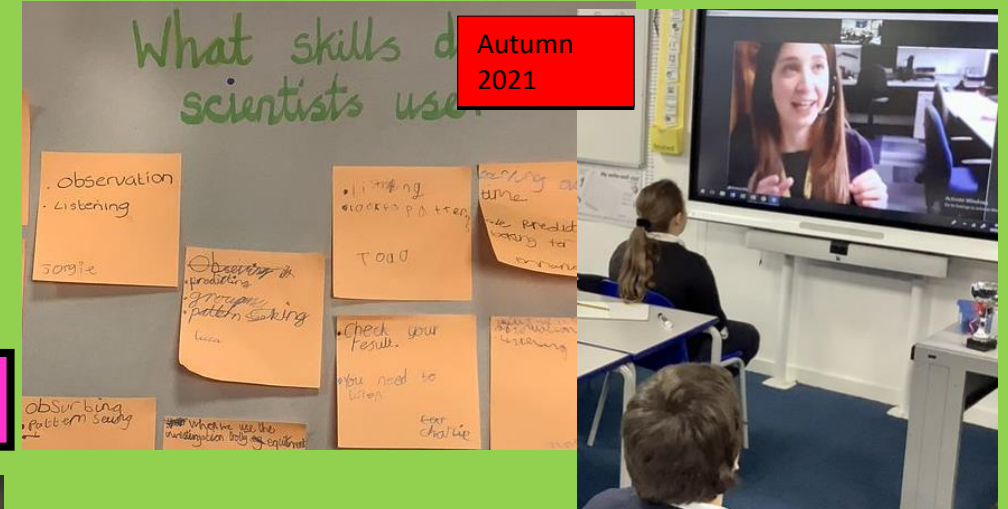


'The slides really interest my children and make the learning relevant.' – Class Teacher

The PSTT slides are shared with children in some classes when a scientist can be linked to a topic.

STEM ambassador project

Autumn
2021



The children really engaged with the blood scientist and sharing skills they developed.

Spring
2022

Wednesday 8th September, 2021
10- To carry out and present research

Mary Anning's life

- Born in London, England
- Dedicated life to wild life
- Collects natural objects
- He Attended University of Cambridge
- Worked for BBC
- Life On Earth
- Knighted in 1985

Name:

SCIENCE

We have continued to focus on influential scientists.

YR5 long term plan

HIDDEN FIGURES

Aliferi, [redacted]
Wed 19/01/2022 09:36
To: Mr Huggett - Millwards Primary School
Hi Sean,
Thanks for having me, I am glad the kids (and you!) had a good time. You have a great class and this was really fun for me too.
Next Thursday at 11.45 works for me, looking forward to it!

What skills do scientists use?

In spring, the children could list more skills and talk about these in depth.

Children learnt about sustainability through the 'Our Planet' topic, linked to the text 'One Plastic Bag.'. They used their knowledge of recycling, materials and DT skills to design and make upcycled outfits.

Pre-PSQM: Before our PSQM journey, Milwards reviewed and revised its curriculum. Teachers worked together with an aim to ensure topics had 'authentic outcomes' whereby knowledge and skills were linked to meaningful contexts, some science centred.

Reflection: Sharing our redesigned curriculum with new colleagues has led to fluency in its delivery. As a result, we all have a shared understanding of what we are trying to achieve and continue to make relevant links.

Impact: Meaningful links to science have been sustained. Children are given opportunities to apply skills, deepen knowledge and embed learning. Learning has continued to be fun, relevant and memorable!

I learnt that recycling and reusing stuff such as plastic bags is helpful for the planet.
I liked the topic because it was something that not ~~much~~ ^{many} people got to do and it was engaging.

I learnt that you can reuse and recycle things. So there is less pollution. We used our knowledge to make d... out of plastic. ... it because it was fun, and

Pupil voice

Children deepened their knowledge about bees through their 'communities' topic.

Children could extract honey from our school hives

"Olivia asked for a bee suit for Christmas!"
– Parent voice.

We link maths skills to science as well!

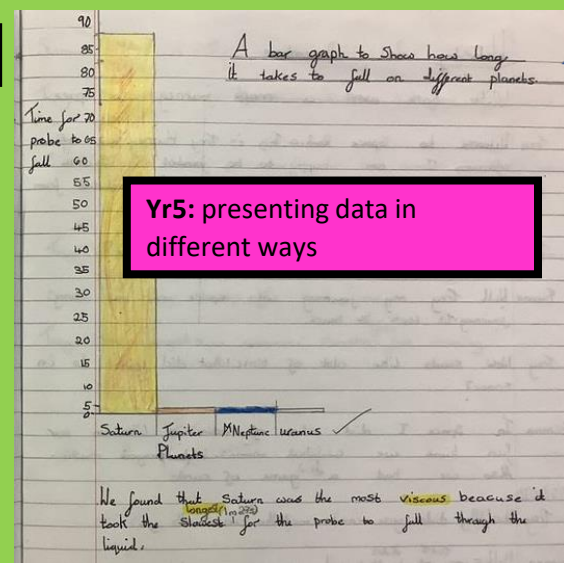
Yr5: presenting data in different ways

Yr4: Measuring out the lengths of different animal's small intestines

Research and experiences with the beehives led to high quality writing about bees.



Happy bee life cycle
Then are six steps to metamorphosis. First it starts as an egg in the queen's cell. Then the egg hatches into a translucent larva and it goes through metamorphosis. After the nurse bee caps the cells with wax. After that it turns into a pupa. The pupa changes shape when it's in that stage. Interestingly, the pupa sheds its skin and then it becomes a honey bee and it instantly cleans its cell. It's very interesting when you can see it in real life or on a TV screen.



Wider Opportunities B

Parents participate in science activities with children in school and at home

11

Key Need

Pre PSQM: Covid had massively impacted the work parents did with the children in our school. Due to government guidelines parents were stopped from coming on site.

Reflection: Continuing dialogue with parents through newsletters and our sensory garden fundraiser led to parents still being actively involved in their children's learning. As a result, discussions around science continued at home. The running of the Big Bird's School watch led to parents coming back onto site. Our school's sense of community had begun to be re-established.

Impact: There is a broad range of experiences for the children to engage in with their parents. Parents actively discuss and support their children's progress in science. Children see their parents as valuing science. Areas of our school have been developed to support science.

Science has featured more on the school's newsletter since the pandemic.

Jeans for Genes

Friday was Jeans for Genes day where we set about raising valuable funds for genetic research. Our dress down and cake sale raised money for the charity and when we have a total, I will share it with you.

Stars of the Week

congratulations to this week's Stars of the Week

Acorns - Oliver
Is - Mohammed
ry - Yannis
le - Arslan
- Isabella
w - Emily
- Albert
- Amber

Children in Key Stage 2 had a fantastic time learning about genetics and replicating human DNA using sweets, of which of course they had to taste!

On in the Moon comes to Milwards!

In all my years of teaching, I can categorically say that this week, both children and staff, took part in a truly unique experience. Thanks to the work of our Science co-ordinator, Mr Huggett, Milwards took temporary care of a precious piece of Scientific history - moon rocks!

The atmosphere amongst children and staff was electric as the children observed and investigated the samples. Each class became temporary custodians as the rocks visited the whole school. The impact was so great that I even had parents and carers on the gate asking if they could come in a view the samples. Clearly, our Science in school became the topic of many a dinner table discussion!

This was a once in a lifetime opportunity. Thank you, Mr Huggett.

Year 6 pupil voice

MS favourite thing I use finding a chaff finch and me for the first time and enjoying the fresh air.

MILWARDS
Primary School & Nursery
Paringdon Road, Harlow, Essex CM19 4QX
Telephone: 01279 435850



Our Sensory Garden

2020: The area before our sensory garden was built.



£525 raised

This fund organizer	
Ali	£10 • 18 mos
Ian	£10 • 18 mos
Mary	£5 • 18 mos
Clare	£30 • 18 mos
Olesia	£20 • 18 mos

Donations from parents: 'Go Fund Me' page.



2021

Work in the sensory garden helps me understand the wildlife and how plants grow.

The sensory garden helps me learn how plants grow and how to look after plants.

Big Bird Watch

Children regularly maintain the sensory garden.

2020

"We've not had many opportunities to come into school and support our children recently. Ginelle was so happy I came in."



Sun 20/02/2022 20:15
To: Mr Huggett - Milwards Primary School
Good morning Sean,

I was just writing a piece for the Newsletter and wanted to congratulate you on the success of the Big Bird Watch 2022. It was so nice for this to be the first event post COVID where we welcomed parents/carers on site - and the number of parents/carers who participated reflected that they were also keen to come in and work with their children. It was so nice to see the children and adults inspired by ornithological endeavours.

Thank you.

Kind regards,

Head Teacher
Milwards Primary School & Nursery

Wider Opportunities B

There are regular links with other organisations to enhance/enrich science learning

12

Key Need

Pre PSQM: Traditionally, our school has followed the national themes set during British Science Week. This has included carrying out activities suggested in the online resource packs

Reflection: Working with teachers to plan our own personalised science week has led to more activities being centred around jobs in science. Furthermore, we have increased our links with members of the scientific community by inviting parents and STEM ambassadors to share their jobs with children. As a result, children have had an opportunity to learn about wider careers, meet people who work in science as well as engage in broader science activities.

Impact: Teacher's enthusiasm towards the subject has grown further. Teachers have engaged and delivered additional opportunities for children to connect with science. Children's perception of what a scientist looks like has changed. Children can articulate a variety of jobs in science. Pupil science capital has increased further with some children developing aspirations to become scientists when they are older.

Prescience week: Children across the school were asked to draw what a scientist 'looks like'.



We had a variety of parents visit our school to talk about how they use science in their jobs.



"The organisation of this week has made it enjoyable to teach." – class teacher

We carried out a whole school investigation to see how far a Curly Wurly could be stretched.

'The children have been so engaged this week' – class teacher



We all dressed up as scientists!

Children learnt about careers in science through a treasure hunt.



The specialist science assembly really engaged our children.

The children's perceptions of what a scientist looks like had changed by the end of the week.

