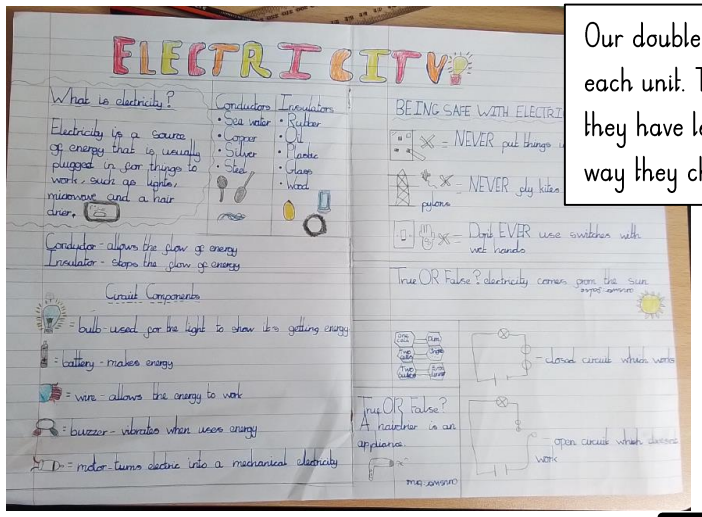


Our double page spreads at the end of each unit. The children share everything they have learnt about the unit and in a way they choose.

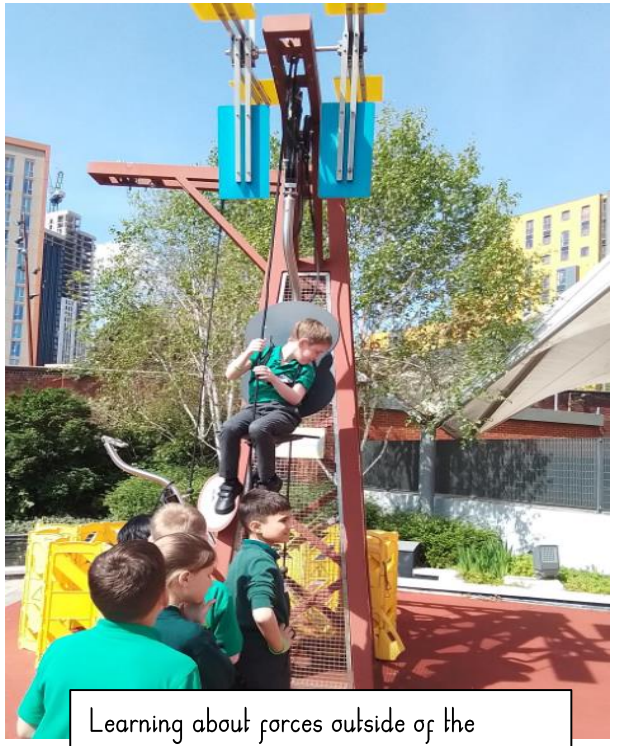
Timbertree Academy

PSQM Portfolio

Timbertree Academy

Relationships, Learning, Success

The Best in Everyone

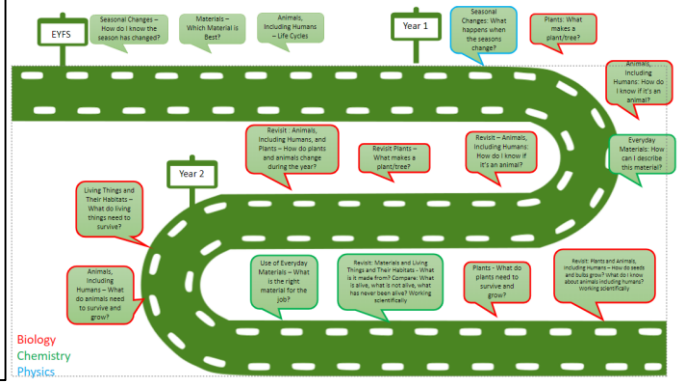


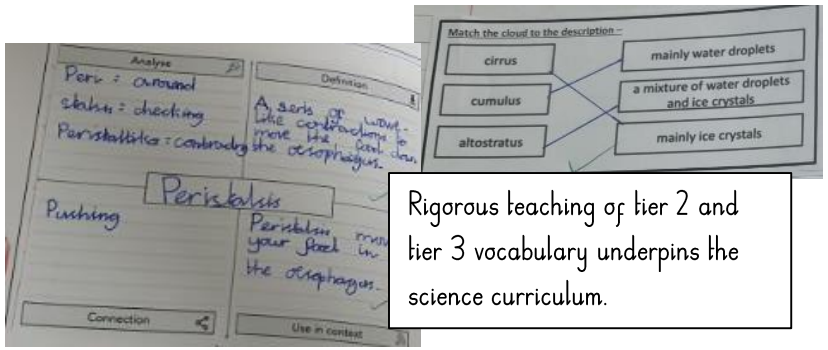
Learning about forces outside of the classroom on an educational visit.

Our Drop Everything and Read (D.E.A.R) trollies in each class include a range of science fiction and non-fiction.

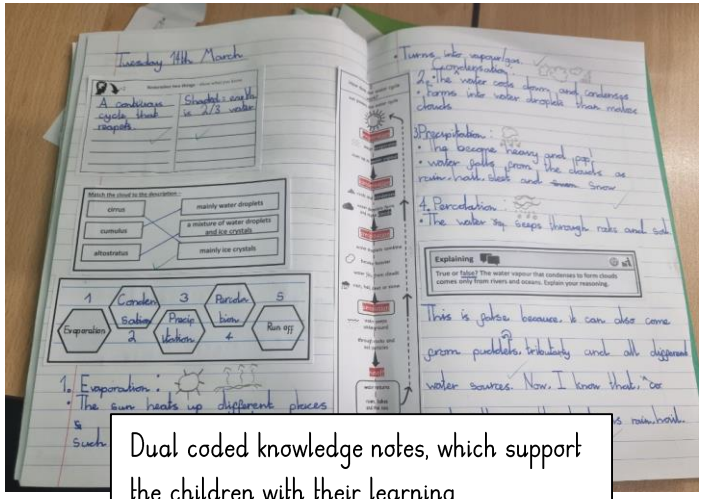
Pre-PSQM	During PSQM	Impact

A sequential and progressive curriculum from EYFS up to Year 6. shared with all stakeholders.





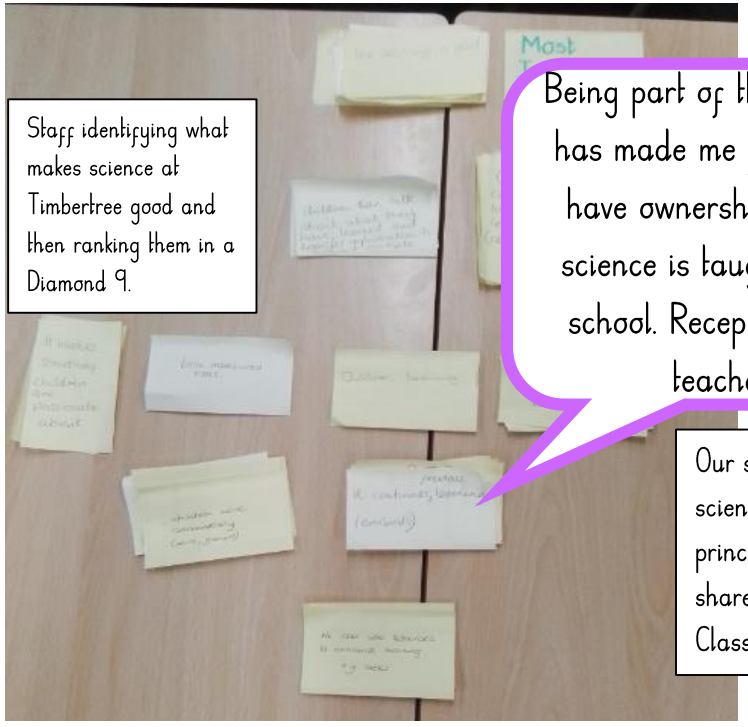
Rigorous teaching of tier 2 and tier 3 vocabulary underpins the science curriculum.



Dual coded knowledge notes, which support the children with their learning.

Science Subject Leadership - SLA

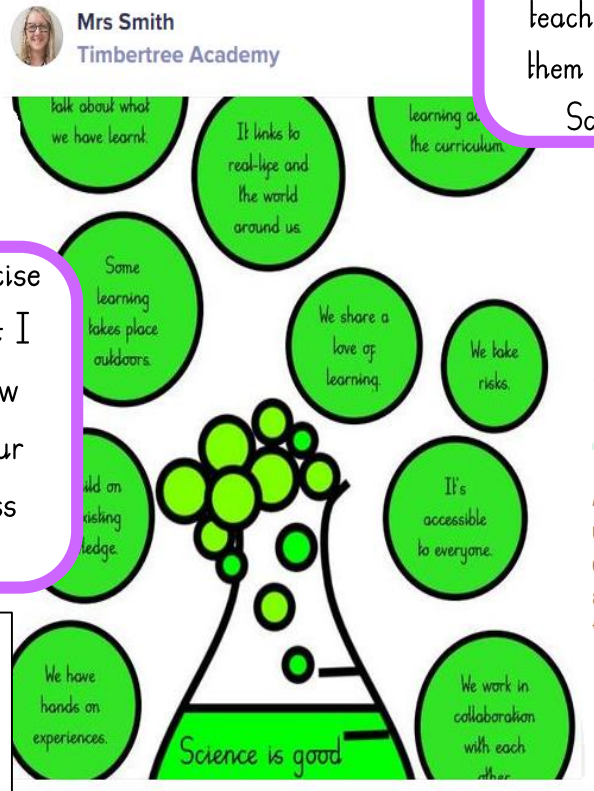
A science policy was in place and updated every 2 years. The planning was informed by the National Curriculum and a progression document was used to assess pupil's progress.



Staff identifying what makes science at Timbertree good and then ranking them in a Diamond 9.

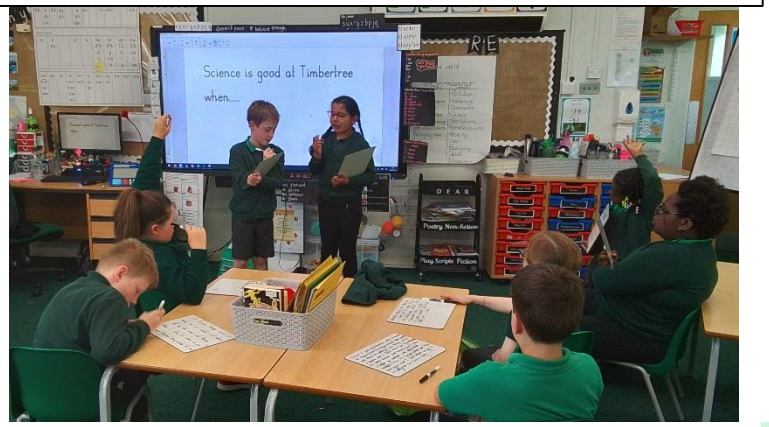
Being part of this exercise has made me feel that I have ownership of how science is taught at our school. Reception class teacher

Our school's science principles are shared on our Class Dojo.

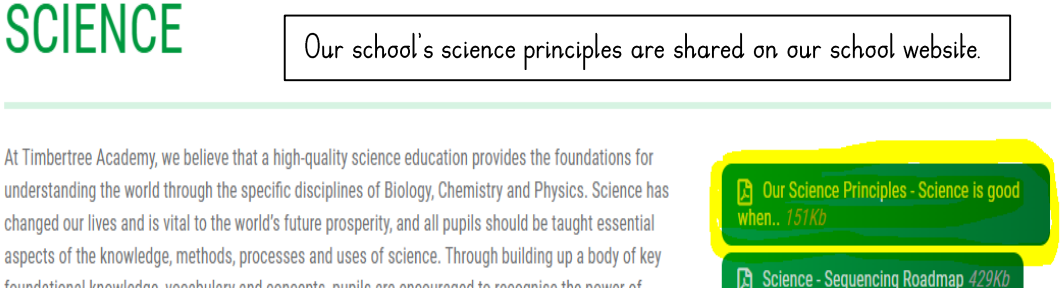


I loved being part of this. I can't believe how many things we had the same as the teachers. I will look out for them in our lessons. Year 4 Science Ambassador.

Y4 Science Ambassadors gathering pupil voice on the school's science principles.



Our school's science principles are shared on our school website.



Teaching staff are clear about the vision of science for the school. They use it to support the teaching and learning by making reference to our key principles in their teaching. The staff have ownership of the key principles as they were involved in their creation.

A staff meeting was held to identify the principles of science at Timbertree. The statement "Science learning is good in our school when..." was provided and the staff worked as groups to complete the sentence. They then completed a Diamond Nine as a whole staff to rank the importance of the principles identified.

A similar activity was led by the Science Ambassadors with their classes and then feedback to the subject leader.

Following this an updated set of principles were created, which are displayed on the Science working walls in each classroom. In, addition they have been shared with our parents/carers via Class Dojo and shared via the school website

Children can talk about the principles and challenge the teacher to include them in their lessons.

Governors, parents and carers are clear about the school's vision for teaching science and can access them on the school website.

Science Subject Leadership - SLA

SCIENCE

Our core documents ,including our science policy (3Is document), are shared with all of our stakeholders on the school website.

At Timbertree Academy, we believe that a high-quality science education provides the foundations for understanding the world through the specific disciplines of Biology, Chemistry and Physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge, vocabulary and concepts, pupils are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They are encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Our Science curriculum is underpinned by subject knowledge acquisition before applying this to an investigation. This allows our children to learn new vocabulary, processes, methods and ideologies which then informs purposeful and focused investigative practice. Our Science curriculum is knowledge and vocabulary rich, ensuring children gain a deep understanding of fundamental scientific knowledge and concepts as well as embedding key science specific vocabulary and terminology (Tier 3 vocabulary). In addition, children are encouraged to develop their scientific curiosity and understanding by working scientifically

- Our Science Principles - Science is good when.. *151Kb*
- Science - Sequencing Roadmap *429Kb*
- Science Curriculum Map and Assessment Framework Autumn 22 *2Mb*
- Science One Page Profile *598Kb*
- Science Policy 22-23 *99Kb*
- Working Scientifically Progression Map *246Kb*

Our Science curriculum aims to ensure that all pupils...

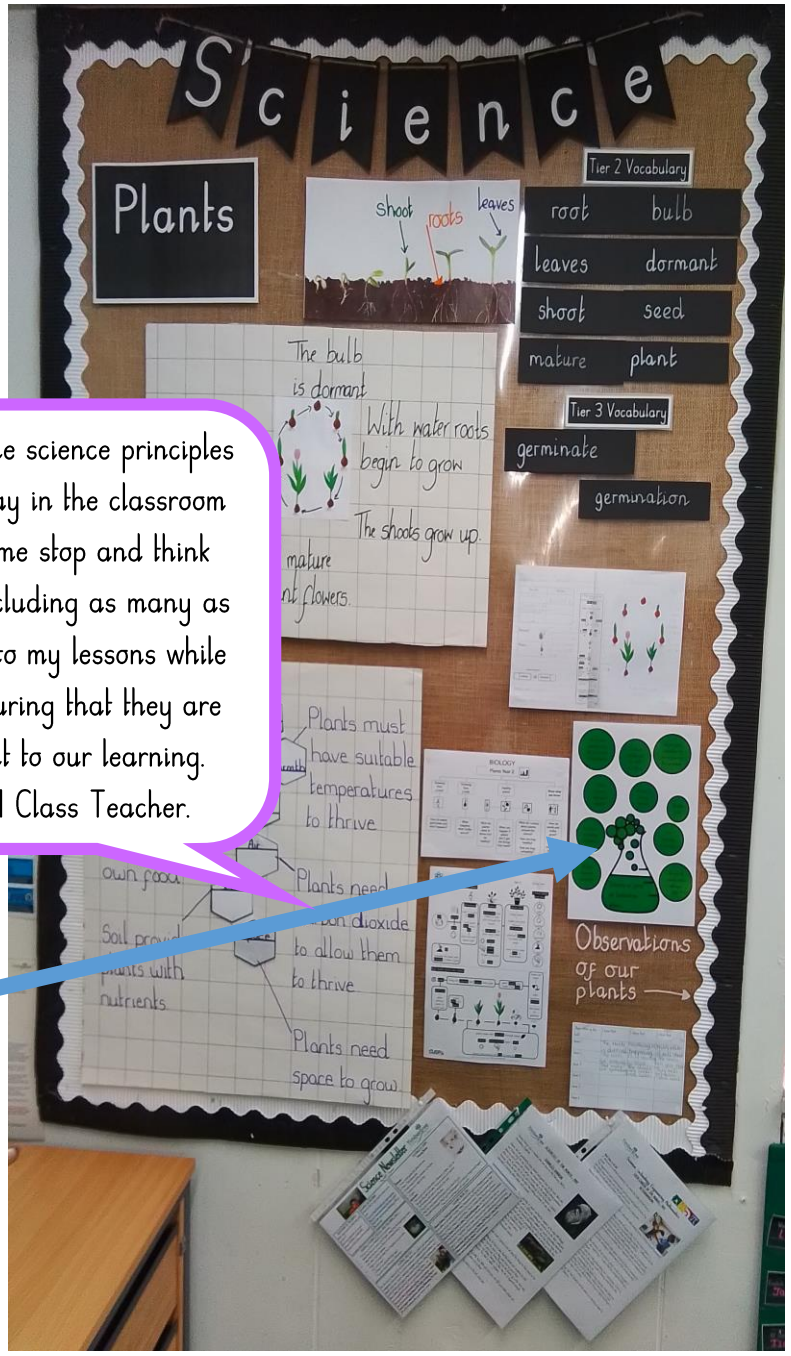
- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

On the school website we share the most up to date copies of our core documents for Science with all of our stakeholders. These are reviewed and updated annually by the science lead.

Our vision statement which has been shared with staff and pupils in school and with our other stakeholders on the school website.

Working walls and displays share the school's vision and principles. They share the importance of science at the school throughout the year to the staff, children and visitors to our school.

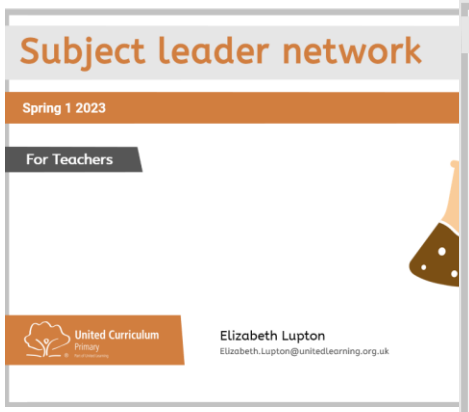
Having the science principles on display in the classroom makes me stop and think about including as many as I can into my lessons while still ensuring that they are relevant to our learning.
Year 1 Class Teacher.

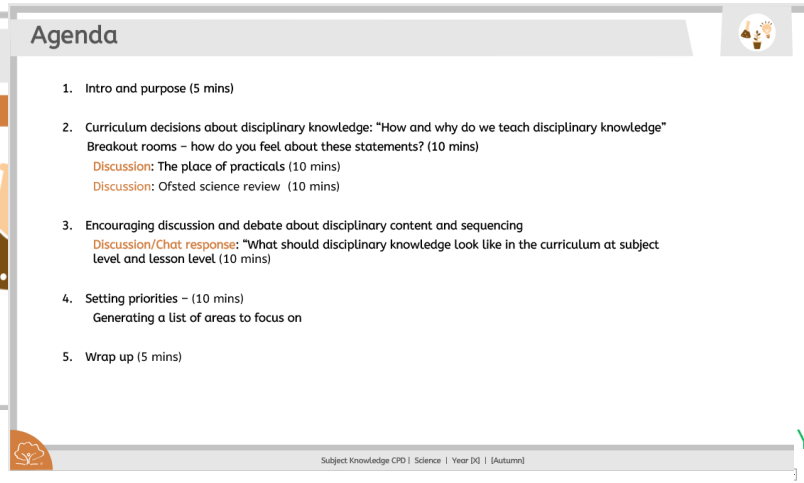


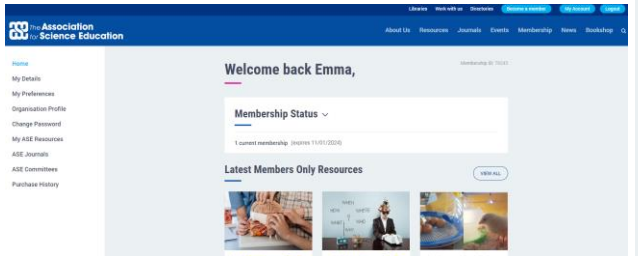
Our science principles are now part of the non-negotiables on our working walls in every classroom and let everyone know what we value in science at Timbertree.

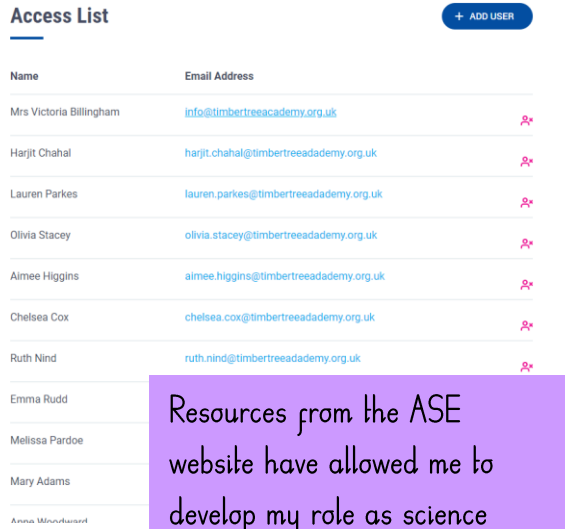
Science Subject Leadership - SLB

As the science lead, I ensure that I attend the science leader subject network meetings that are organised termly within the academy trust. Through these I stay up to date with current issues, DFE and OFSTED updates. We also receive CPD through these sessions, which I am able to disseminate to the staff at Timbertree.

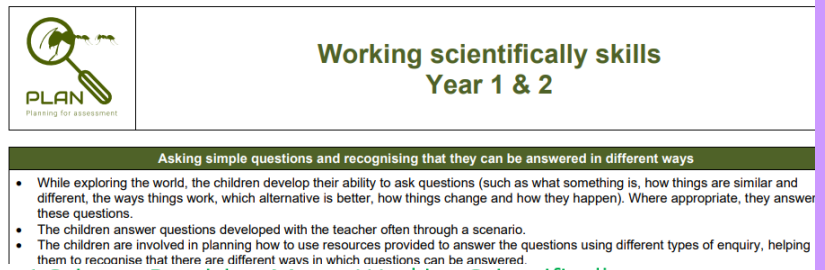








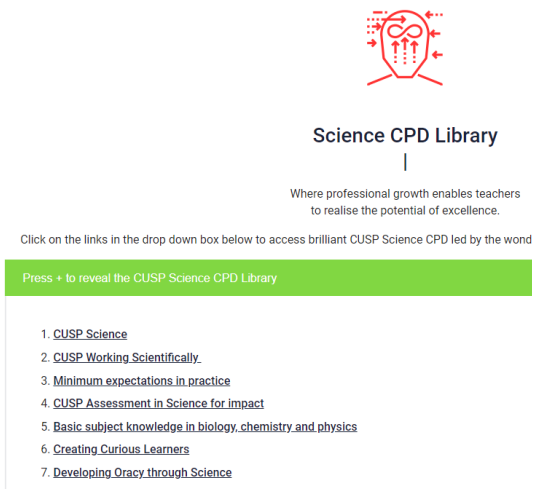
The school now has membership to the ASE. All staff have their own login and can access resources on there. Time was spent in a staff meeting investigating the website and staff identifying resources to use in their teaching and assessment.

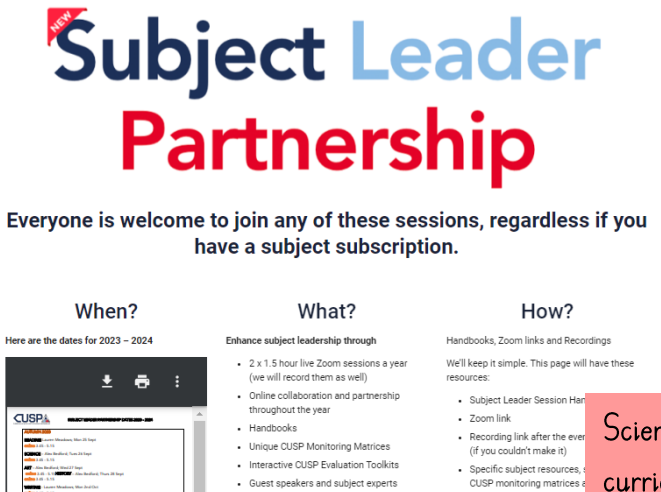


Year 1 Science Provision Map – Working Scientifically

	Asking simple questions and recognising that they can be answered in different ways	Observing closely, using simple equipment	Performing simple tests	Identifying and classifying
Plants	Look at images of plants. Children to generate What if ... questions. For example: What if a plant had no leaves? These can then be investigated	Observe the changes to the plants based on their What if... questions	Growth of a seed and a bulb over time. Testing their What if... questions	Observe and collect a variety of leaves. Working in trios, ask the pupils to group the leaves based on their own criteria. Can pupils group them using different criteria, e.g. shape, size, colour etc. ?

Resources from the ASE website have allowed me to develop my role as science lead further and provide CPD for staff. I have used the "Working Scientifically" skills matrixes for KS1, LKS2 and UKS2 to ensure staff know what opportunities and evidence they should provide to ensure that all of the skills are being taught. This has then been used as part of the monitoring cycle for "Working Scientifically skills". Staff have also mapped opportunities for the skills across their year group curriculum.





Science lead has also attend webinars through CUSP Unity (our science curriculum) and access their bank of CPD materials. I have then been able to direct staff to specific CPD for their identified areas of development.

Science Subject Leadership - SLB

The science budget is used to restock resources and purchase items for science events in school.

The annual membership for the ASE is now included within the Science budget.

Science lead and staff have access to all of the ASE resources and research. Science lead uses this to inform the direction of science at Timbertree.

1. Evidence Collection

Focus Questions
- Are there any weaker areas regarding staff subject knowledge?
- What is the quality of provision – books/learning environments
- Are pupils retaining the key knowledge – how do you know?
- What does Science look like in EYFS and how does this link to Year 1?
- How is provision adapted for children with SEND & disadvantaged?

Possible Areas
- Discussions with staff
- Subject knowledge audits
- Work in books
- Pupil conferencing/quizzing
- Classroom/Lesson visits

Notes

Staff survey to be completed by Oct half term to assess teachers who are confident and competent when delivering Science lessons and those who require additional support.

All teachers to be following the curriculum map for Science. Teachers to use the model planning from CUSP and the Thinking Science Tasks from CUSP to plan and deliver their lessons. Use of the CUSP unit plans to support staff subject knowledge.

Use the Science Foundation Subject Assessment Sheets to assess the children's skills in Working Scientifically (disciplinary) and topic knowledge (substantive) Scientific at the end of each lesson and at the end of each unit.

PSQM to be completed over the academic year.

Strengths/Weaknesses

A clear sequencing road map from EYFS up to Year 6 which aligns with the National Curriculum and CUSP units.
Staff confidence to deliver all areas of the Science, some curriculum areas are areas of weakness
Robust use of the assessment procedure to identify children who are making less than expected progress or making significant progress..

Priorities

Ensure all staff are trained in using the Science Foundation Subject Assessment Sheets .

Ensure staff survey is shared W.C 10.10.22 so results can be analysed for Autumn 2.

Each year a science action plan is written by the science leader. This includes the priorities for the year , which link to the school's SIP where it is appropriate.

2. Action

Focus
- Consider research evidence in your subject so that you can make smarter decisions about where to invest your subject time g. EEF guidance, Ofsted Subject Reviews
- Be as specific as possible where you can

Possible Areas
- training staff (subject knowledge)
- organising experiences
- team-teach/staff support
- appropriate & necessary subject resources

What needs improving?	Difference	Who?	When?
▪ To further improve the use of assessment in Science.	100% of teachers' science judgements are accurate. Moderation across the school and within the West Midlands Cluster.	ES / SLT	Termly and half termly for key year groups
•Staff confidence to deliver consistently good Science lessons in all areas of the Science curriculum. •Support put in place for staff who require it, through CPD including subject knowledge, modelling and team teaching of Science lessons.	Staff survey to show a significant percentage increase with regards to confidence and ability to deliver Science lessons. Staff will feel prepared and confident to teach all areas of their current curriculum Staff will deliver effective Science lessons that engage, support and motivate all pupils.	ES	Survey to be completed in Oct and again in the Spring term. Ongoing.
•Raise the profile of Science and ensure quality education for all pupils.	The school will apply for the PSQM with the aim for the award to be given to Timbertree for demonstrating a strong, quality Science education for all pupils.	ES / SLT	Ongoing

Dear Victoria and Emma,

Your application for a grant to purchase science boxes including Fascinating Forensics (& top-up) and Cool Catapults from our Super STEM Bundle pre-filled form has been processed and I am pleased to inform you that the Trustees have authorised a grant of £700. Please see the separate letter also attached to this email and paragraph in red below as your school has been randomly selected as part of our auditing process.

This is the maximum and final grant available under the Edina Science Grant Scheme.

A payment has been made by electronic transfer to the account detailed on your application form and arrived on 28th March 2023 with the reference: Timbertree Edina

The approved items should now be purchased by your school. please visit https://curiosity-box.com/shop/edina-trust-super-stem-bundle/ to place your order or proceed via your usual procurement channel. To get the special Edina Trust bundle price, be sure to quote 22EDINA23 at checkout.

The Trust conducts random checks to confirm that grants are used for the intended purpose.

Please note that your school has been randomly selected as part of our auditing process. You will need to retain all receipts and invoices for items purchased as evidence that the money has been spent on the approved items. A separate letter is attached to this email setting out what you need to do to satisfy our audit.

The Edina Trust requires a short report on the use of your grant. Choose between our online SurveyMonkey or our downloadable report form at www.edinatrust.org.uk/reporting . Your school will then be entered into Edina's termly **Super Scientist Prize Draw** for a chance to win two high quality children's STEM books from our selection of acclaimed titles.

In addition, the Trust is keen and particularly grateful to receive photographs to assist in marketing its grants to other schools. These can be emailed to reporting@edinatrust.org.uk **Please state whether permission is granted for the Trust to use them on its website, Twitter, and in its newsletters.** Where permission is expressly given, photographs will be used for no more than six years, after which time they will be deleted.

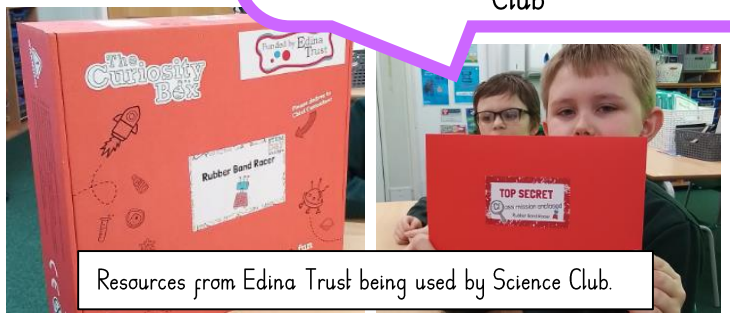
Thank you in advance for providing us with your feedback by the end of September 2023.

Yours sincerely

Emma Vickers

Emma Vickers. Trust Administrator

When we open a new Curiosity Box in Science Club it's really exciting. We have everything we need to investigate. My favourite is the robot drawing machine. Year 4 pupil and member of Science Club



Resources from Edina Trust being used by Science Club.

In addition to the school budget, for the last two years we have been applying for and receiving grants for science equipment for EYFS, KS1 and KS2 from the Edina Trust.

The Edina Trust resources have been used in Science lessons and in the school's Science Club (Curiosity Boxes). This has meant that more of the science budget has been allocated to building science capital.

Science Subject Leadership - SLC

The science leader holds half termly meetings with the science ambassadors. During these meetings the tasks for that half term are shared with the science ambassadors e.g. monitoring, pupil surveys, helping to organise competitions.

A survey to gain the voice of the pupils at Timbertree was undertaken by the science lead and the science ambassadors. The children were asked questions about their science lessons, the resources they use, how they work together, their science lessons and science experiences outside of the classroom.

4. **What topic have you been learning about this half term?**

Electricity

Year 4 pupil

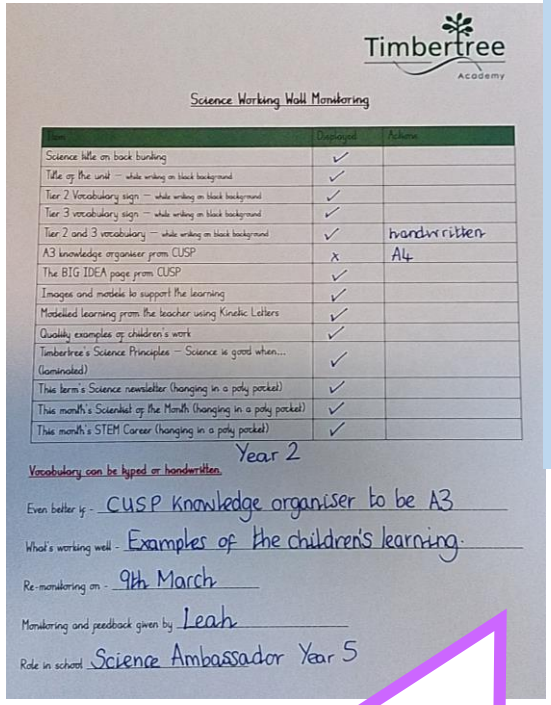
5. **Which resources have you used in your science lesson this term?**

We have used bulbs, wire, buzzers, bulb holders, batteries, battery holders, switches, motors, buzzers to make circuits and different materials to see if they conduct electricity.

8. **What is your favourite part of science lessons?**

Year 3 pupil

I like to work with my friends when we do investigations. Doing it together is fun and we can help each other if one of us is struggling. I also like it when we get to use the equipment and answer our own questions.


Timbertree Academy

Science Working Wall Monitoring

Item	Displayed	Actions
Science title on back banking	✓	
Title of the unit — white writing on black background	✓	
Tier 2 Vocabulary sign — white writing on black background	✓	
Tier 3 vocabulary sign — white writing on black background	✓	
Tier 2 and 3 vocabulary — white writing on black background	✓	handwritten
A3 knowledge organiser from CUSP	x	A4
The BIG IDEA page from CUSP	✓	
Images and models to support the learning	✓	
Modelled learning from the teacher using Kinetic Letters	✓	
Quality examples of children's work	✓	
Timbertree's Science Principles — Science is good when... (laminated)	✓	
This term's Science newsletter (hanging in a poly pocket)	✓	
This month's Scientist of the Month (hanging in a poly pocket)	✓	
This month's STEM Career (hanging in a poly pocket)	✓	

Year 2

Vocabulary can be typed or handwritten

Even better if - CUSP knowledge organiser to be A3

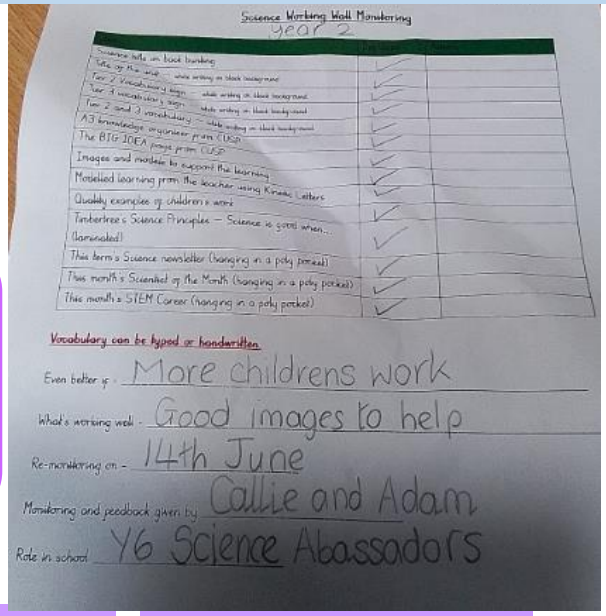
What's working well - Examples of the children's learning.

Re-monitoring on - 9th March

Monitoring and feedback given by Leah

Role in school Science Ambassador Year 5

Science ambassadors from all year groups undertook monitoring the science working walls to see if they were compliant. This included monitoring if the Science Principles were on display in the classrooms. They then re-monitored to see if the changes had been made.


Science Working Wall Monitoring

Year 2

Vocabulary can be typed or handwritten

Even better if - More childrens work

What's working well - Good images to help

Re-monitoring on - 14th June

Monitoring and feedback given by Callie and Adam

Role in school Y6 Science Abassadors

It feels like we've been listened to as our school trip was focused on science and the things we had learnt about. Year 4 pupil

Monitoring the working walls in other classes helps the teacher know what they need to get better at and what they do well. I enjoy giving the feedback. Year 5 Science Ambassador.

Teaching staff are listening to the opinions of the pupils and making adapting their lessons accordingly whilst still ensuring that they are using the Key Principles that were agreed by staff and pupils.

Staff are held accountable by not only the science lead, but also the science ambassadors.

Science Subject Leadership - SLC

Each term a staff meeting and monitoring agenda is set by the SLT and shared with all staff. Each term at least one staff meeting is dedicated to science and at least two weeks where science book looks (with specific foci) are carried out by the subject leader, in the SLT meeting or as part of a staff meeting and learning walks are scheduled to take place.

Science Book Compliance SWOT – November 2022 by E Smith	
Strengths	**Weaknesses**
• All work is marked up to date. • Year 2, 4 and Year 5 books are a strength. • All books contain the relevant book inserts "Our Curriculum" for their year group • A range of scientific skills are being demonstrated across the year groups and through the topics. • In units where it is appropriate, key scientific figures have been investigated. • Review and recall activities taking place in all lessons • The scientific learning journey is evident in most books – building through the collect connect and create stages. • Cumulative quizzing is being used in all year groups • Evidence of adaptations for pupils with SEND	• In some books basic skills, year groups appropriate spellings and topic specific spellings are not being identified. • Opportunities for reading across the curriculum are not evident in the books although we know that it is happening. • Some photographs, diagrams etc are in books, but with no explanations of what they show.
Opportunities	**Threats**
• Time for the children to correct the basic skills, spellings and respond to any marking comments to be planned into the start of science lessons. • Signpost the reading activities through the Thinking Science Task headers e.g. researching. • If diagrams, photos etc are in books, the children should explain: what it shows; what they did; what they found out and why they did it.	• If basic skills and spellings are not being identified, then children will not value these skills outside of the English lesson. • If reading activities explicit to the children, then they will not make the links between reading and the wider curriculum. • If photos, diagrams etc. do not have any explanations with them, then in future weeks they will mean nothing to the children and the scientific learning will not be evidenced.

During subject leadership time the science lead has undertaken book looks, learning walks, gained pupil voice and collated feedback to share with staff and SLT.

The science lead has gained a clearer understanding of the strengths and weaknesses in science across the school. They have identified staff who have needed additional CPD. They have also gained a greater insight into the opinions of the pupils.

Examples of book look monitoring carried out by the science lead and a learning walk carried out by the science lead with the SENDCO.

Science Learning Walk – SEND Focus following book looks ES & MM (06.03.23)	
WWW	**EBI**
• Adaptations are beginning to be made across all year groups, so that all children can access the curriculum. • Areas of strength are Y1, Y2, Y4 and Y5. • Adaptations for Flick Back rather than Flashback for the recall activities, cloze procedures, partly completed tables, which give the children access to the curriculum and a feeling of success. • In Y2 the use of the adult is highly effective. • In Y4 a child was able to articulate how the adaptations to her learning helped her.	• The purple box/highlighter was used on the knowledge notes to show what you expect the children with SEND to complete • Sharing of good practice across the
Actions Share highly effective examples of adaptations in science for children with SEND books with Y3 and Y6. Also display these in the staff room to encourage sharing of ideas across the school and celebrating good practice.	

I sometimes find it hard to remember what we've learnt before to answer the recall questions, but I am allowed to Flickback to help me remember.
Year 4 pupil with SEND

WK9 7/11/22			YES	History learning walk PSHE folders Citizenship books PE learning walk Interventions paperwork SLT: Science books	RN AW AW HC/ES LP MM SLT

	STAFF MEETING FOCUS	WHO	SIP	WEEKLY MONITORING FOCUS
WK8 27/2/23	**CPD Focus:** Design & Technology **Support Staff:** Thursday 2nd March, 1545-1645 Trauma informed practice	MP		Science Book Look/Pupil Book Study/SEND 176 grid analysis – Year 3 and Year 4 Art books RE books

A section of the staff meeting a monitoring agenda for autumn 2022 and spring 2023.

Science Teaching- TA

Science staff meetings are scheduled to happen once a term. In addition, micro CPD for science is directed for two sessions a term.

These are both shared with all staff on the staff meeting and monitoring agenda at the start of each term.

	STAFF MEETING FOCUS	WHO
WK7 5/6/22	**Feedback:** TBC **CPD Focus:** Science Staff meeting	ES
WK9 6/3/23	**Feedback:** **Micro CPD:** Writing Moderation **CPD Focus:** Science Staff meeting	ES
WK13 5/12/22	**Feedback:** DT/Writing/History **Micro CPD: Maths** **CPD Focus:** Science Staff meeting	ES

SCIENCE MICRO CPD

E Smith
TeachingAssistantsTimbertree@timbertreeacademy.org.uk

Tue 06/09/2022 17:40

Hello

Since Micro CPD

Please complete the following micro CPD on the following dates.
After watching the short video – please email or send me a note to say how this will change your practice in science.
Follow the link https://www.unity-curriculum.co.uk/science-cpd-library/ to the CUSP website

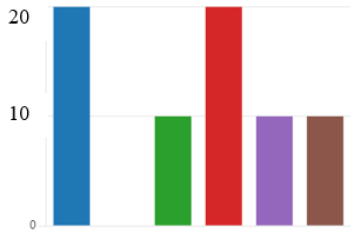
1. CUSP Science WC 05.09.22 (new starters only)
2. CUSP Working Scientifically WC 19.09.22
3. Minimum expectations in practice WC 14.11.22
4. CUSP Assessment in Science for impact WC 16.01.23
5. Basic subject knowledge in biology, chemistry and physics WC 13.03.23
6. Creating Curious Learners WC 24.04.23
7. Developing Oracy through Science WC 12.06.23

Kind regards
Emma Smith
Assistant Headteacher
Timbertree Academy

Following each micro CPD session a Microsoft Forms was sent to all teaching staff for staff to reflect on how they would change their teaching.

15.
Which strands of Working Scientifically do you think you are confident in delivering and assessing?
(0 point)
More Details

Identifying and classifying	20
Pattern seeking	0
Research	10
Observing over time	20
Fair and comparative testing	10
I don't feel confident in any of the above.	10



Science lead undertook an audit of staff subject knowledge and identified that no staff felt confident in teaching pattern seeking. Science lead shared with all staff in a staff meeting a document from the Ogden Trust on how to teach pattern seeking at KS1 and KS2.

What is your main takeaway having completed session 5 of the micro CPD?
10 responses

ID	Name	Responses
1	Emma Rudd	I now understand the purpose and importance of sharing the big picture from CUSP with the children each lesson. It helps them understand where the learning that will have during that lesson fits into what they already know/have learnt and what they will learn in future lessons. It also explicitly references the area of science that they are studying.

Responses from staff survey

Article to support CPD from The Ogden Trust

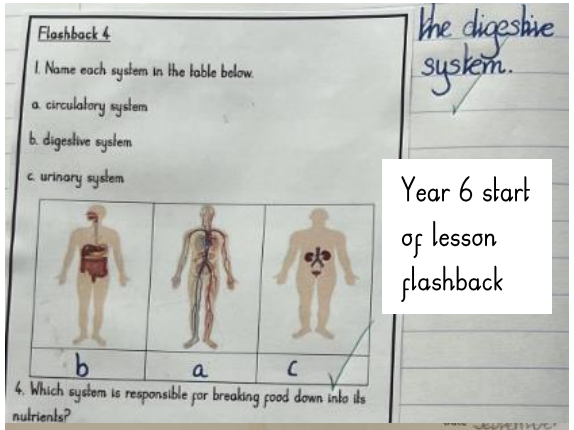
Now that I've read the article, it has given me confidence that what I was planning and teaching the pupils is correct. I will use some of the Big Questions in lessons.
Year 6 teacher

Staff have become more reflective during and following the CPD provided in staff meetings and following the micro CPD. They have identified how they will use the CPD in their teaching to improve the outcomes for the children. Subject leader has seen evidence of this on learning walks and in pupil books.

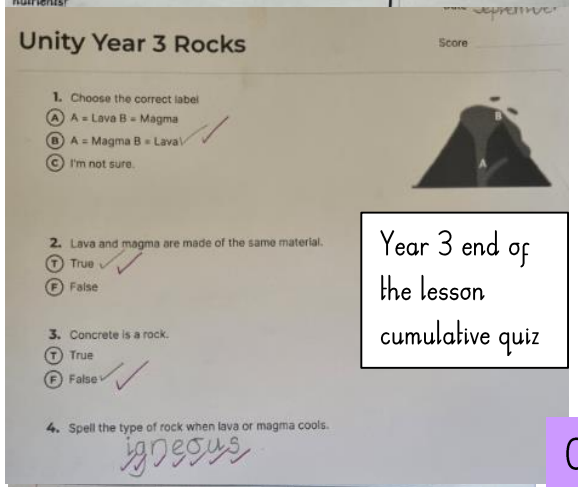
Staff now have increased confidence in teaching pattern seeking.

NS – repeat staff survey to identify the impact of CPD.

Science Teaching- TB

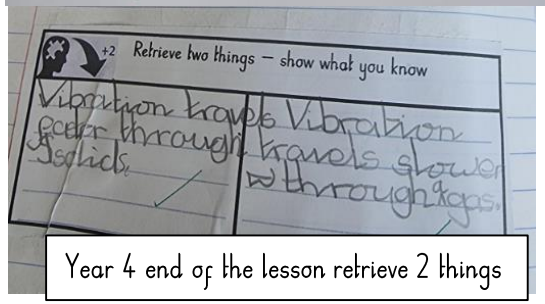


Year 6 start of lesson flashback



Year 3 end of the lesson cumulative quiz

During lessons and at the end of units teachers use a number of activities to assess the children's learning within the lesson and across the unit.



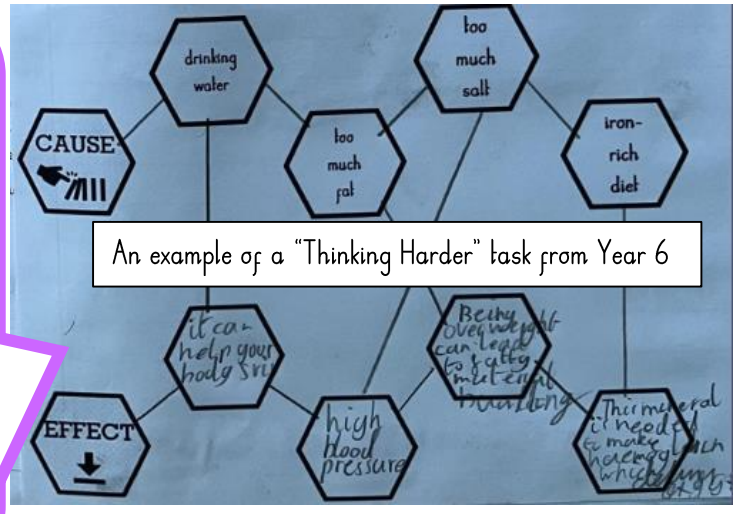
Year 4 end of the lesson retrieve 2 things

Children are able to recall knowledge and vocabulary when assessed..

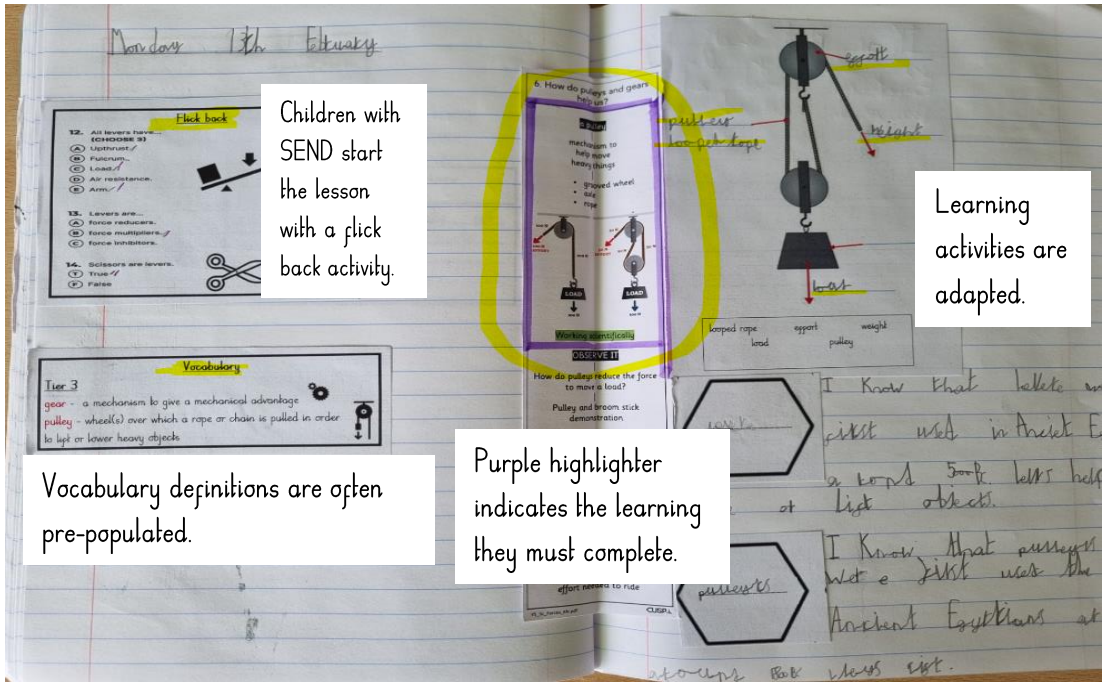
Children with SEND are able to "flick back" in their books when answer the recall questions. See quote from Y4 pupil on slide 7. Flexible grouping is also use to adapt the learning

Learning walk completed with the SENDCO to monitor the provision of teaching and learning in science for children with SEND. See slide 7.

I enjoy the challenge questions as they really make me think. Sometimes I find the learning quite easy, but then the challenge questions is quite difficult as it is to do with other things not just what we have learnt about in that lesson. Year 5 pupil.



An example of a "Thinking Harder" task from Year 6



Children with SEND start the lesson with a flick back activity.

Learning activities are adapted.

Vocabulary definitions are often pre-populated.

Purple highlighter indicates the learning they must complete.

Children with SEND are able to access with confidence because of the adaptations that are made to the curriculum by the teachers.

Thinking Hard tasks provide an opportunity for children working at greater depth to make connections beyond the learning from the lesson.

Subject leader carried out book looks and pupil voice to monitor the use of the "thinking harder" questions and activities for children working at greater depth.

Children working at greater depth are being challenged to apply their learning to other contexts and make links to prior learning.

Science Teaching- TB

Knowledge and Vocabulary acquired

	End of Unit Quiz Assessment		
	Low <60%	Mid 61 – 84%	High 85-100%
%	0%	17%	83%
Pupil Names and percentage		TFS JC JT AJ PH	UA NA IA MA TB LBe LBi NB CB RC SC LMC MHG LMH II JM IM EGM AP HP FR AS LMS AS SU

Year 5 end of unit full cumulative quiz scores for Earth and Space.

When we do the questions again it helps me to remember the facts. I like the quiz at the end. I can show my teacher what I've learnt.
Year 2 pupil

At the end of each unit the cumulative quiz (substantive knowledge) is repeated in full and the children's score are recorded and are taken into consideration when making teacher assessments.

Subject leader monitored the pupils recall of substantive knowledge through the end of unit cumulative quizzes.

The cumulative quizzes are helping to move the knowledge into the long term memory: pupils are retaining the knowledge that they have learnt. In every class, over 80% of pupils scored over 85% on the end of unit quiz.

I feel confident that my judgements are accurate as I can look back at each lesson to identify children who were struggling with the learning or showing greater depth.
Year 4 teacher

Knowledge and Sequence Lessons overtime	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	**Support**	**Standout**
What are the parts of a plant?	√	√		√	√		TF, AW, OC	IW, GH, SC, IH

Year 1 working scientifically assessment for the plants unit.

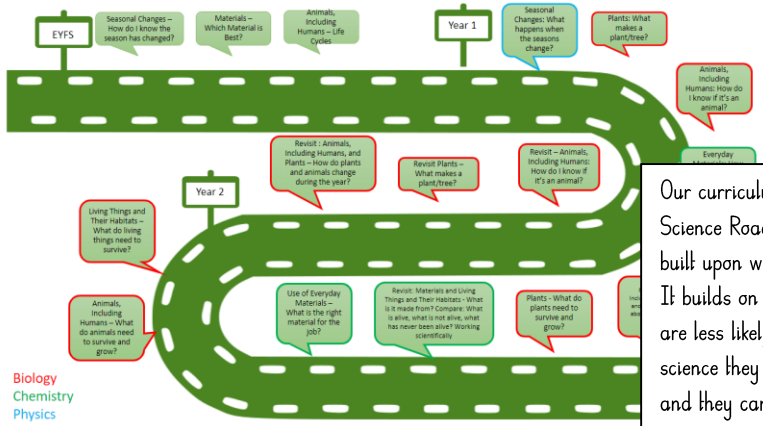
Teacher assessment of working scientifically skills takes place at the end of each lesson and identifies those children who needed support and those who stood out. These judgements then feed into to end of unit assessment.

Subject leader monitored the teachers' judgements of the working scientifically skills through pupil voice, learning walks, books looks and professional conversations.

The subject leader is confident that the teachers are able to make accurate assessments of disciplinary and substantive knowledge. The parents and children receive accurate judgments of their performance in science throughout the year and on their end of year report

Science Teaching- TB (research informed teaching strategies)

At Timbertree we follow the science curriculum of CUSP Unity. CUSP Unity science is research based and the teaching approaches used are supported by Ofsted documents and research papers including Research review series: Science Published 29 April 2021.



Our curriculum progression is clearly mapped on our Science Road Map. This sequence shows how learning is built upon within year groups and between year groups. It builds on existing knowledge, so that misconceptions are less likely. The teachers also know which area of science they are teaching (chemistry, biology or physics) and they can share this with the children, so that they able to use the knowledge going forward into secondary school.

Working scientifically has been mapped across the school. This give the teachers the knowledge of which working scientifically skills they must teach in their year groups. This helps them as they know what the children have already learnt and what they will learn in the future.

Working Scientifically – Progression Map

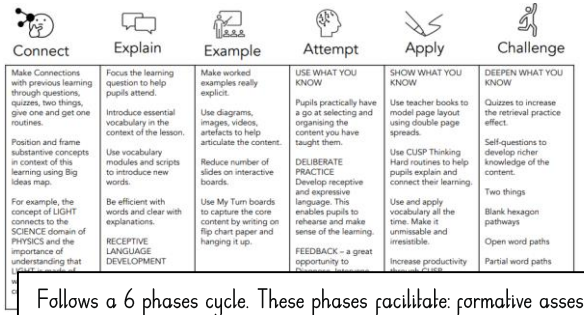
Key Stage 1	Asking simple questions and recognising that they can be answered in different ways	Observing closely, using simple equipment	Performing simple tests	Identifying and classifying	Using their observations and ideas to suggest answers to questions	Gathering and recording data to help in answering questions.	
Lower Key Stage 2	Ask relevant questions	Set up simple, practical enquiries and comparative and fair tests	Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers	Gather, record, classify and present data in a variety of ways to help in answering questions	Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests	Identify differences, similarities or changes related to simple, scientific ideas and processes
Upper Key Stage 2	Plan enquiries, including recognising and controlling variables where necessary	Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work	Take measurements, using a range of scientific equipment, with increasing accuracy and precision	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models	Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions	Present findings in written form, displays and other presentations	Use test results to make predictions to set up further comparative and fair tests	Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments

Animals, including humans

Y3 Animals, including humans (skeleton)
Y4 Animals, including humans (teeth, digestion)

Lit spine – Pig Heart Boy
Writing – Explanatory texts Block A

Within each unit of work, links to other areas of the curriculum and previous learning from science have been identified. This allows the teachers and pupils to make connections between their learning, build mental models in the long-term memory; therefore, freeing up the working memory for new learning.



Connect	Explain	Example	Attempt	Apply	Challenge
Make Connections with previous learning through questions, quizzes, two things, give one and get one routines. Position and frame substantive concepts in context of this learning using Big Ideas map. For example, the concept of LIGHT connects to the SCIENCE domain of PHYSICS and the importance of understanding that	Focus the learning question to help pupils attend. Introduce essential vocabulary in the context of the lesson. Use vocabulary modules and scripts to introduce new words. Be efficient with words and clear with explanations. RECEPTIVE LANGUAGE DEVELOPMENT	Make worked examples really explicit. Use diagrams, images, videos, artefacts to help articulate the content. Reduce number of slides on interactive boards. Use My Turn boards to capture the core content by writing on flip chart paper and hanging it up.	USE WHAT YOU KNOW Pupils practically have a go at selecting and organising the content you have taught them. DELIBERATE PRACTICE Develop receptive and expressive language. This enables pupils to rehearse and make sense of the learning. FEEDBACK – a great opportunity to	SHOW WHAT YOU KNOW Use teacher books to model page layout using double page spreads. Use CUSP Thinking Hard routines to help pupils explain and connect their learning. Use and apply vocabulary all the time. Make it unmissable and irresistible. Increase productivity	DEEPEN WHAT YOU KNOW Quizzes to increase the retrieval practice effect. Self-questions to develop richer knowledge of the content. Two things Blank hexagon pathways Open word paths Partial word paths

Follows a 6 phases cycle. These phases facilitate: formative assessment – adapted teaching and learning; recall and retrieval of prior knowledge; explicit vocabulary instruction; the teaching/modelling of new learning; deliberate pupil practise; application of new learning and deepening understanding. It also reduces cognitive load thus, freeing the working memory and allowing new learning move into the long-term memory.

Substantive and disciplinary knowledge are progressively planned across the curriculum. Staff are aware of the learning that children will need to undertake to think like a scientist (disciplinary knowledge) and the scientific knowledge and understanding (substantive knowledge) they must learn in each unit; including how this links to the National Curriculum. The staff are also informed of the children's prior learning on the area of science, so that they can build upon that knowledge.

Quality texts are planned for our curriculum. These can be accessed online and at home by the children and families, so misconceptions will not be built.

Misconceptions – learning traps pupils can fall into

✗ Not true	Teach this ✓
Particles in a liquid are further apart than particles in a solid.	For a long time, pupils have been taught that particles in liquid are drawn further apart than in a solid. • Particles in liquid remain in contact with each other. • They exist in a more random formation, overlapping in a 3D model. The knowledge organiser outlines this graphically.
Water droplets on the outside of a cold can of drink have come from the inside.	Water vapour in the air condenses when it meets the cold can and turns into water droplets.

Possible Misconceptions are explicitly identified in the planning so that they can be addressed, and pupils learn how the misconception is different to the scientific idea.

Year 2				
Term and Focus	**NC objectives** **Pupils should be taught about:**	**The Big Idea**	**How will I think and act like a Scientist (Disciplinary Knowledge)**	**Pupil Outcomes** **Scientific knowledge and understanding**
Year 2 Spring Term **2.3 – What is the right material for the job?**	• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Everyday Materials and Their Properties (Chemistry)	**Opportunities to:** • group and classify different materials using their properties • conduct simple enquiries about materials • communicate findings in a variety of ways	**Pupils will know that:** • materials have different properties such as: waterproof; strong; hard; soft; flexible; rigid; light or heavy. • the properties of a material decide how useful it is for a given job. • applying forces to objects can change their shape. • absorbent materials take up liquid. • waterproof materials do not let liquid through them.
Curriculum Narrative **Previous Learning**	ELG 14 The World Children know about similarities and differences in relation to places, objects, materials and living things		Y1 Science Properties of materials	

Science Subject Leadership - TC

A regular of science equipment is undertaken by the science lead annually and staff are asked for lists of any consumables that are needed for the teaching and learning each term.

The science stock cupboard has been relabelled and a list of resources created, shared with staff and displayed in the science cupboard.

The science lead applied for grants from Edina Trust to supplement the school's resources (see slide 5).

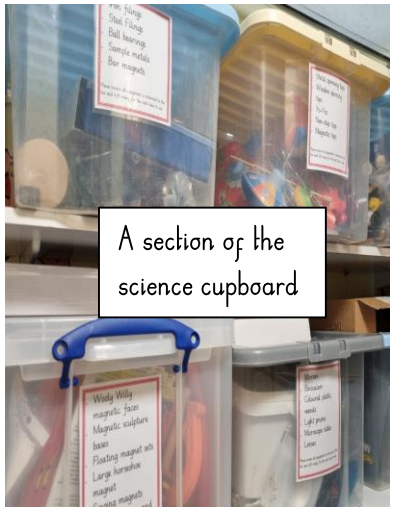
All staff have the knowledge of the science resources that are in school and can order any additional resources through the science lead for the next term's lessons. Lessons are well resourced. The children are able to use the equipment independently, confidently and safely.

Having the new resource list and the cupboard being relabelled has made everything so much easier to find. I can also find out what else I need to order for the next term's units.
Year 2 teacher

Science resource list

The science lead undertook a audit of the school's outdoor environment to identify opportunities for outdoor learning. A staff meeting was also dedicated for teachers to identify where they could use the school's outdoor areas and resources.

More lessons are making use of the school's outdoor areas for science lessons. When questioned the children found these lessons more enjoyable. Staff reported that all children were more engaged and were able to use the learning back in the classroom.



A section of the science cupboard

Nursery children in the EYFS Forest School releasing the butterflies they had observed.

Reception children using their outdoor areas to investigate floating and sinking.

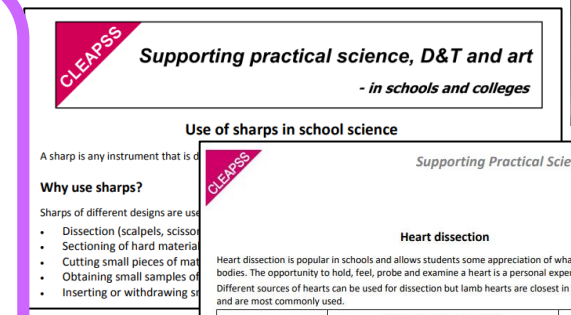
I love learning outside. It is fun. We can get messy. Reception children.

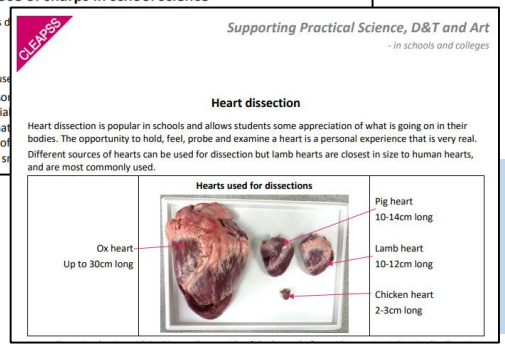
I felt the air resistance slow me down when the surface area was larger. Year 5 child.

Year 5 investigating air resistance

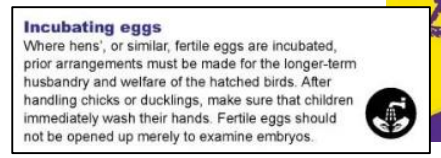
Year 2 investigating plants on the school site.

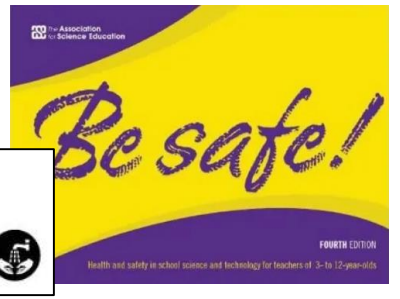
In Science today, we were identifying healthy and unhealthy plants around our school.





The ASE's BE SAFE book and CLEAPSS website are used by teaching staff to write risk assessments and to follow health and safety guidance.





Science Learning- LA

SCIENCE

Introduce Animals including humans

Year 2 Autumn Term

Pupils should be taught to:

- notice that animals, including humans, have offspring which grow into adults
- find out about and describe the basic needs of animals, including hum
- describe the importance for humans of exercise, eating the right amou

Overview of enquiry skills for each unit from CUSP

Previous learning: **Curriculum Narrat**

EYFS: The Natural World
Explore the natural world around them, making observations and drawing pictures of animals and plants.

EYFS: The Natural World
Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

EYFS: The Natural World
Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

Year 1
Plants
Everyday materials
Animals, including humans

Year 2
Living things and their habitats

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

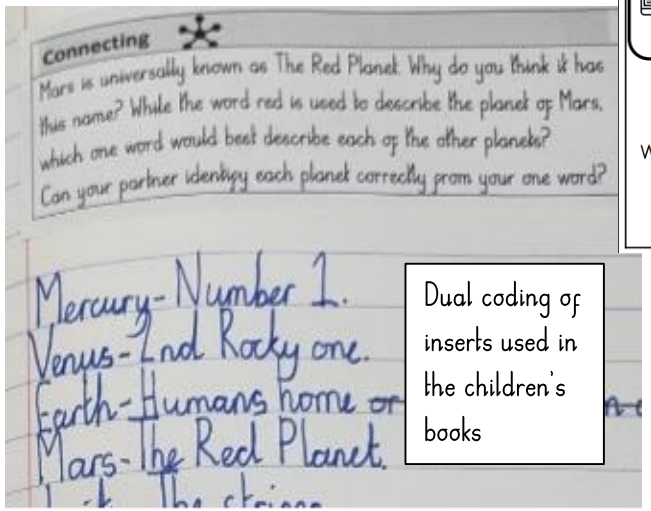
The curriculum gives the children opportunities to develop the scientific enquiry skills in each unit and the progresses across the year groups. Planning suggests a menu of activities for the teacher to plan into their lesson.

The teachers now use the dual coding symbols showing the enquiry types on their teaching slides and in the children's books.

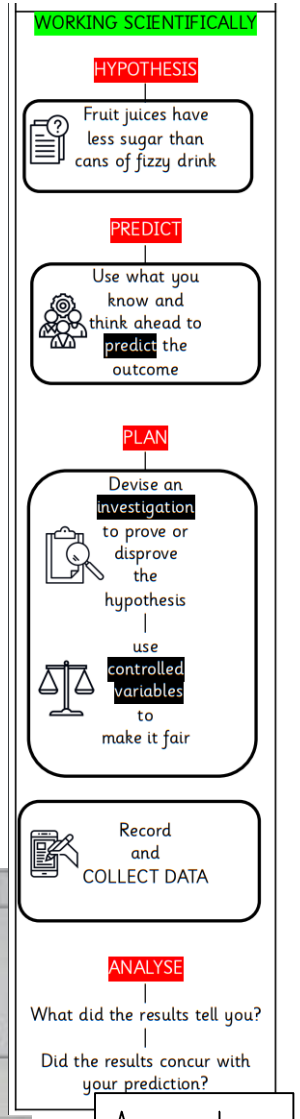
The children can confidently talk about the enquiry skills they have used in the lesson and the dual coding helps the children with SEND and LA children to make the connections

The children have started to recognise the symbols and how they relate to their activities and the teaching slides. When they have the opportunity, they are becoming much more confident choosing the skills to use. Year 2 teacher

In Year 3, when the children have worked in pairs or groups there have been some heated discussions as the children try to decide how to present their findings. Strong cases from all. Year 3 teacher



Dual coding of inserts used in the children's books



An example of a pupil knowledge note

Year 2 Animals, including humans

Q1 Remember: what is an animal?

Generating curiosity IPROF

Show an image of an animal that mimics a plant, e.g. the Orchid Mantis. Ask pupils to classify it as a plant or an animal. Share ideas. Do not reveal the correct classification at this point. Revisit the characteristics of animals. Ask pupils to devise questions about the chosen animal which would need to be answered to prove whether it is a plant or an animal. Reveal the identity of the species.
Challenge: Ask pupils why they think an animal would mimic a plant.

Comparing

True or false? The only difference between a plant and an animal is that an animal moves freely. Pupils discuss their ideas. Encourage them to use precise scientific terminology from the Knowledge Note when doing so.

Classifying IPROF

Working in small groups, give pupils images of a range of **unfamiliar** animals that move in different ways (as an interesting example, include an octopus which moves through propulsion). Ask them to classify each as a vertebrate or invertebrate. Discuss their reasoning. Then group them according to how pupils think they move, based on their observable features.

Hypothesising

Pupils work in groups of three. Give e
unusual animal (sea creatures are exc
Star or the Dumbo Octopus). Ask then
move, eat, grow etc. (linked to MRS G
explain their reasoning. Swap images.

"Menu" of suggested activities from the CUSP planning

Questioning

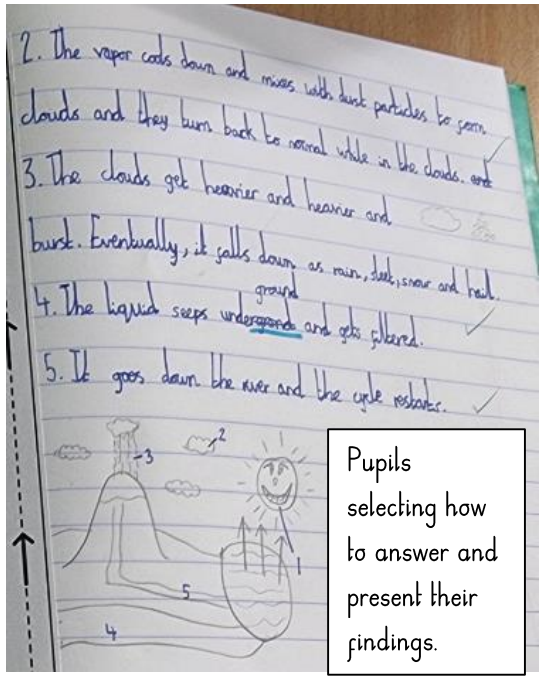
Present pupils with the scenario: A biologist has discovered a new species. She says it is a reptile. What questions could be asked to prove that it is a reptile? Pupils then work in pairs to repeat the task for a different discovery. One plays the role of the biologist and decides on the animal group of the species discovered and the other devises the questions. Swap over.
Challenge: What is the fewest number of questions that could be asked to prove that the animal has been correctly classified?

Science Learning- LA

Links to science in the "real world" were not always made explicitly clear.

Teachers planned in "real world" links to the science curriculum. The children used their scientific enquiry skills and substantive knowledge to apply to real life problems. Where possible links to STEM careers were also made.

The children are able to explain how the unit of science that they are studying links to real life events and careers.

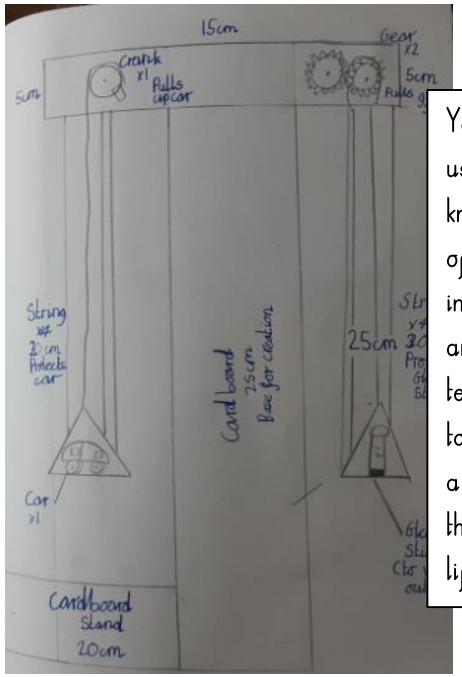


Pupils selecting how to answer and present their findings.

Children were restricted and not given the choice of how to investigate or present their finding.

Teachers planned opportunities for children to select the scientific enquiry skills they would use to answer questions.

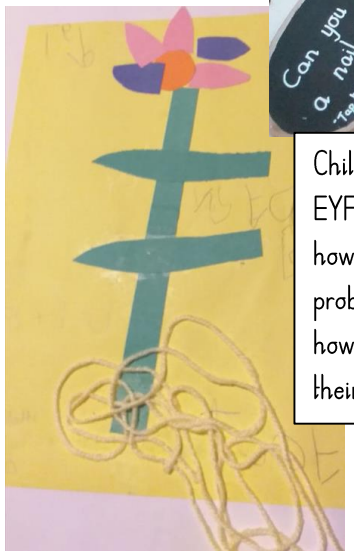
Children are becoming increasingly confident in selecting which enquiry skills they could use to answer a question.



Year 5 using their knowledge of forces in design and technology to design a machine that will lift cars.

Year 4 designing electrical games following their unit of teaching – the teacher set a real life problem.

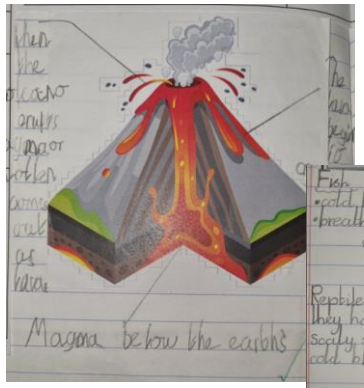
Since my child learnt about making electrical games in science, they have been taking apart all of theirs to find out how they work.
Year 4 parent

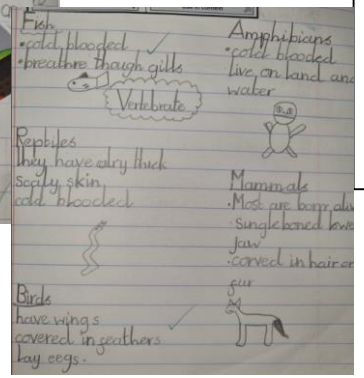


Children from EYFS choosing how to tackle problems and how to present their learning.

Year 2 deciding how to group their leaves based on their features.

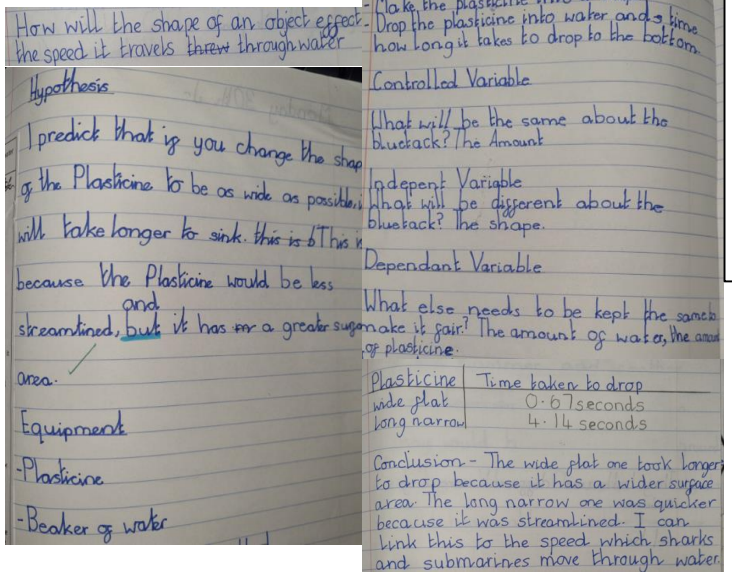
Science Learning- LA (IPROF)





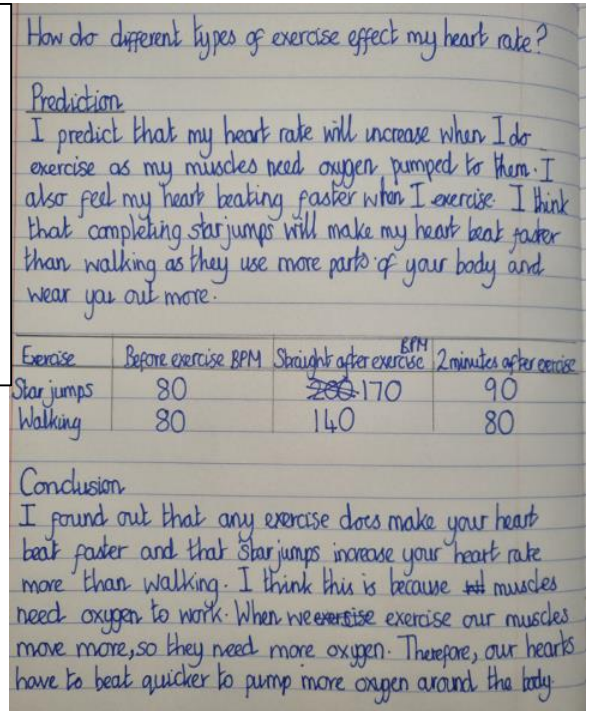
Research

Year 3 used secondary sources to research how rocks are formed. Year 4 used secondary sources to identify the features of different vertebrates.



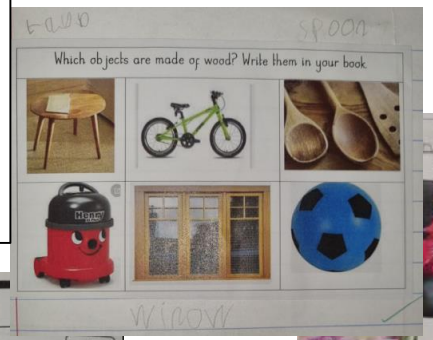
Fair and Comparative testing

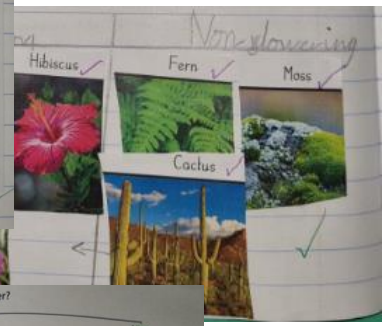
Year 5 investigated the water resistance and Year 6 investigated the changes to a person's heart rate.

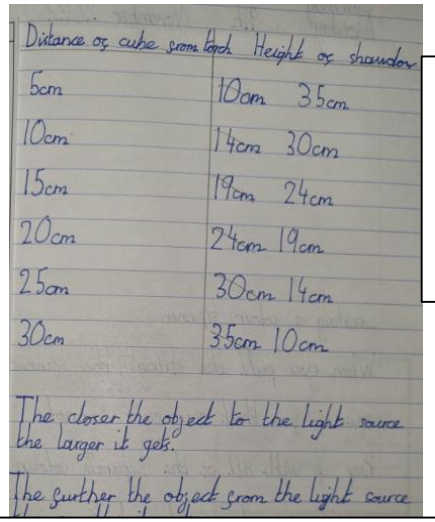


Identifying and classifying

Year 4 used classification keys to identify invertebrates, sorted plants into flowering and non-flowering and created questions to form part of a classifying key to identify living things. Year 1 learnt about materials and identified what they were made of.

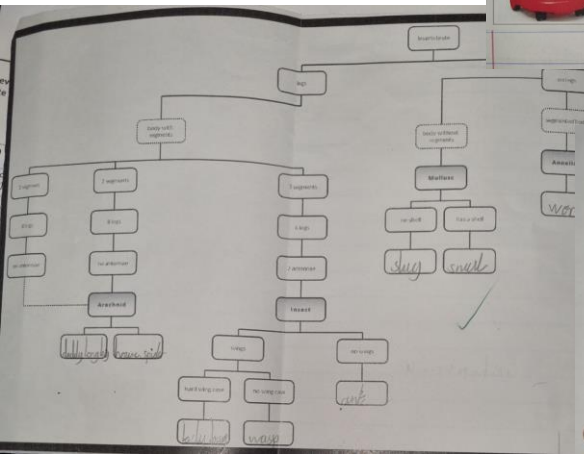


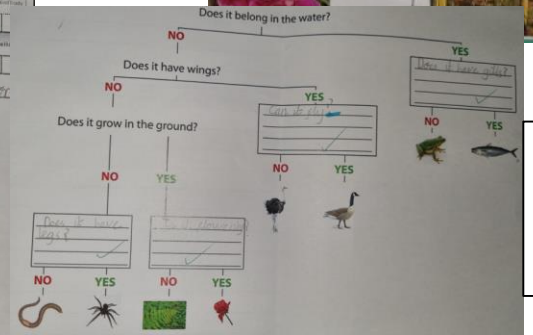




Observing over time

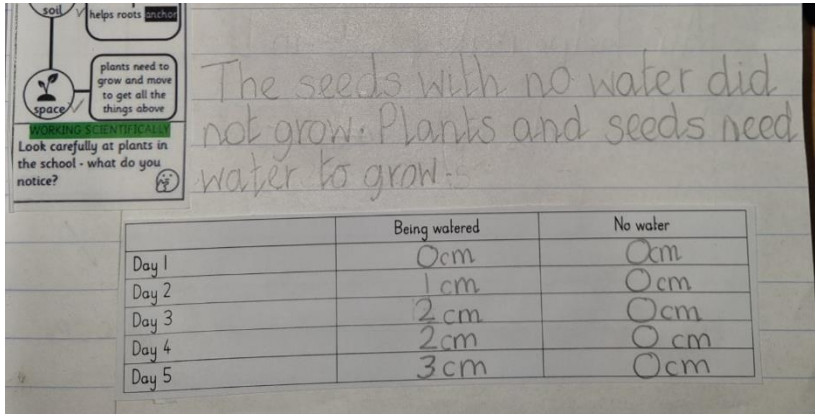
Year 2 observed the growth of cress seeds when learning about what plants need to thrive and be healthy. Groups took measurements over 5 days (the seeds had been sown prior to the start of the 5 days). They then wrote about what they observed.





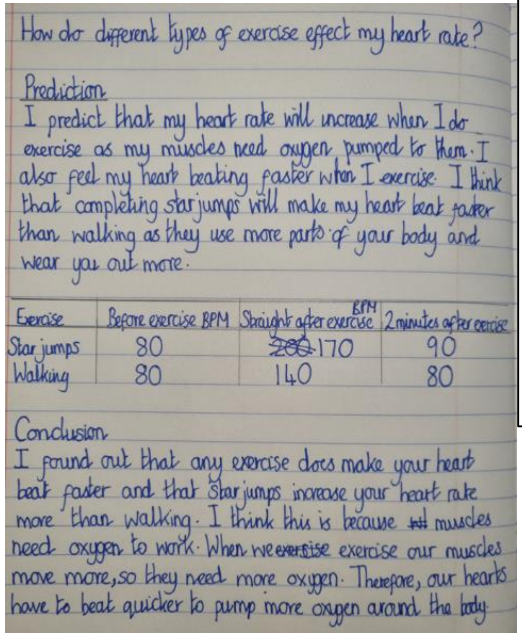
Pattern Seeking

While studying light, Year 6 looked for patterns in the length of shadows when an object is moved closer/further to/from a light source. They identified patterns within their results.



Science Learning- LA (Independence of enquiry)

Year 6 worked independently to ask their own questions about changes of heart rate when learning about the circulatory system. They then investigated their questions and drew conclusions from their findings and their knowledge of living things; they also drew on their knowledge from PE.



How do different types of exercise effect my heart rate?

Prediction

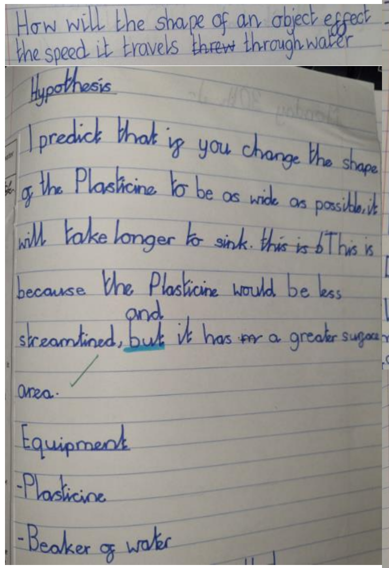
I predict that my heart rate will increase when I do exercise as my muscles need oxygen pumped to them. I also feel my heart beating faster when I exercise. I think that completing star jumps will make my heart beat faster than walking as they use more parts of your body and wear you out more.

Exercise	Before exercise BPM	Straight after exercise BPM	2 minutes after exercise
Star jumps	80	~~200~~ 170	90
Walking	80	140	80

Conclusion

I found out that any exercise does make your heart beat faster and that star jumps increase your heart rate more than walking. I think this is because ~~~~ muscles need oxygen to work. When we exercise our muscles move more, so they need more oxygen. Therefore, our hearts have to beat quicker to pump more oxygen around the body.

Year 5 worked in pairs to questions about water resistance. They planned and conducted their investigations using what they had already learnt about upthrust. They also made connections between their knowledge of the real world to make connections.



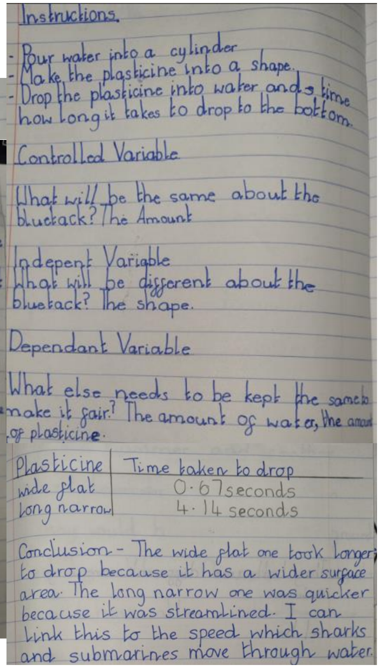
How will the shape of an object effect the speed it travels ~~threw~~ through water

Hypothesis

I predict that if you change the shape of the Plasticine to be as wide as possible, it will take longer to sink. ~~this is b~~ This is because the Plasticine would be less streamlined, and it has a greater surface area.

Equipment

- Plasticine
- Beaker of water



Instructions

- Pour water into a cylinder
- Make the plasticine into a shape
- Drop the plasticine into water and time how long it takes to drop to the bottom.

Controlled Variable

What will be the same about the bluetack? The Amount

Independent Variable

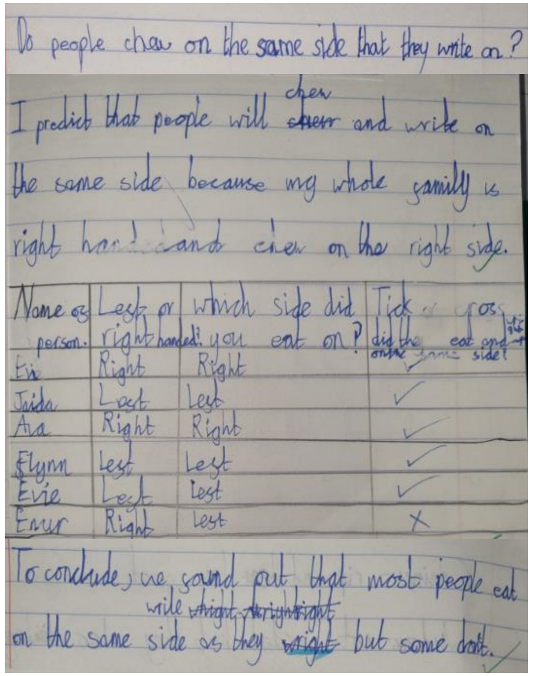
What will be different about the bluetack? The shape.

Dependant Variable

What else needs to be kept the same to make it fair? The amount of water, the amount of plasticine.

Plasticine	Time taken to drop
wide flat	0.67 seconds
long narrow	4.14 seconds

Conclusion - The wide flat one took longer to drop because it has a wider surface area. The long narrow one was quicker because it was streamlined. I can link this to the speed which sharks and submarines move through water.



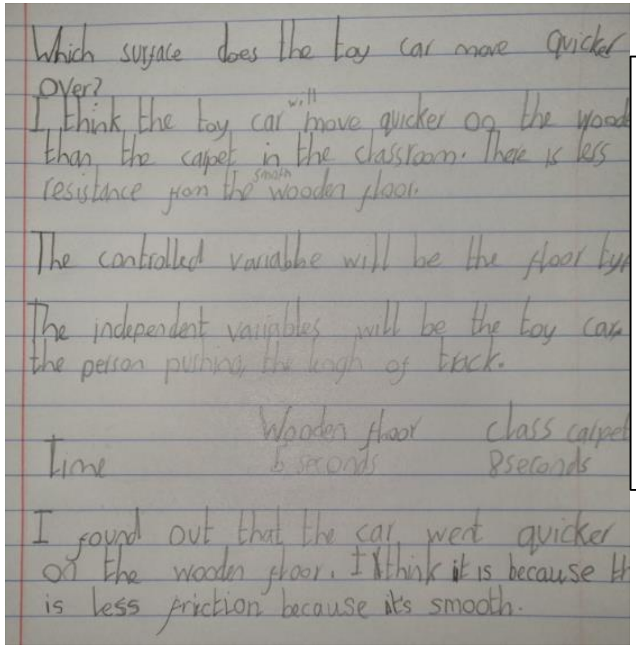
Do people chew on the same side that they write on?

I predict that people will chew and write on the same side because my whole family is right handed and chew on the right side.

Name of person.	Left or right handed?	Which side did you eat on?	Tick if eat on same side
Eri	Right	Right	✓
Jaida	Left	Left	✓
Ava	Right	Right	✓
Flynn	Left	Left	✓
Evie	Left	Left	✓
Emir	Right	Left	✗

To conclude, we found out that most people eat on the same side as they write but some don't.

Year 4 worked in small groups to generate questions after learning about human teeth. They planned and conducted their investigations using. In their conclusions they were able to acknowledge that their sample did not give them a definite answer to their question.



Which surface does the toy car move quicker over?

I think the toy car will move quicker on the wood than the carpet in the classroom. There is less resistance from the smooth wooden floor.

The controlled variable will be the floor type.

The independent variables will be the toy car, the person pushing, the length of track.

	Wooden floor	class carpet
Time	6 seconds	8 seconds

I found out that the car went quicker on the wooden floor. I think it is because there is less friction because it's smooth.

Year 3 asked their own questions about resistance and friction when learning about forces. They worked in small groups to plan and then complete their investigations. They then came to conclusions based on their findings and their prior learning about forces.

Science Learning- LB

Since September, KAGAN training has been provided to all staff. Staff were using some of the KAGAN strategies in their class family time to support collaborative learning.

During a staff meeting time was spent identifying which KAGAN strategies cold be used in science lessons to improve collaborative learning and ensuring that every child is an active learner.

Year 6 using Round Robin to recall the part of the circulatory system.

KAGAN activities are now planned into every science lesson. This has ensured that all children are active learners and that no one is opting out of learning. It has also supported the retrieval of knowledge and to help move learning from the short term working memory into the long term memory.

I have already used Rally Robin, Round Robin, Quiz-Quiz-Trade, Rally Coach and Timed Pair Share in my science lessons this term. It has meant that everyone has been involved, the children had fun while learning and I can listen to them to identify and misconceptions or further areas for investigation. Year 6 teacher

Teaching staff have continued to use timely interventions to address misconceptions in the moment of teaching.

In our everyday materials unit there were lots of misconceptions that I had to address: material does not only relate to fabric, that bricks are a type of rock and that anything shiny must be a metal. Lots of these misconceptions came from home, so I included information about this on their weekly homework. Year 1 teacher

Misconceptions are addressed immediately with individuals, groups of children or with the whole class. Children have not embedded the misconceptions that have been formed prior to the lesson or during the lesson.

Progression in knowledge

National Curriculum statements in red are from other linked topics.

Plants

Birth to three	• Explore natural materials, indoors and outside.
Nursery	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.
Reception	• Draw information from a simple map. (Reception – Living things and their habitats)

NB - The National Curriculum statements in italics in these tables indicate that they feature more than once.

Year 1 & 2	Year 3 & 4	Year 5 & 6
Asking questions and recognising that they can be answered in different ways		
Asking simple questions and recognising that they can be answered in different ways • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.	**Asking relevant questions and using different types of scientific enquiries to answer them** • The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.	***Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary*** • Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. • Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.

Resources that the subject lead has used from the PLAN website..

Teachers use a range of strategies to assess the pupils knowledge a working scientifically skills during each unit (approximately half termly). The subject leader then quality assures the judgements for accuracy.

After joining the ASE, the science lead identified and began to use the PLAN primary assessment resources to support the quality assurance of teacher judgements.

KS1 Science Study Summary Assessment:

End of Unit Summative Judgement

Teacher assessment of knowledge, skills and vocabulary applied and retained

Needs support	Keeping up	Standing out
TF, AW, OC, TG	AA, BB, EC, RC, OC, KD, AMET, CH, AH, OJ, RL, AM, TM, MM, BLMW, RN, ZO, AS, NS, HS	IW, GH, SC, IH, FA, SC

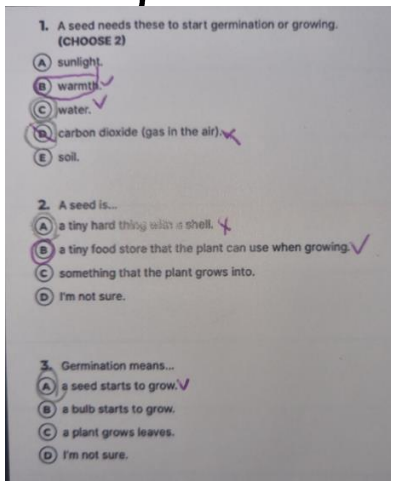
Year 1 end of unit assessment for "Everyday Materials". Summative and formative assessment all feed into the teacher assessment.

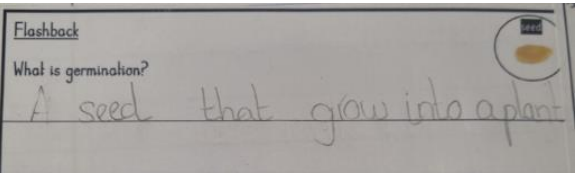
(Subject Leader to quality assure during pupil book study)

The subject leader is confident that the assessments made by the teachers are robust.

Science Learning- LB (formative assessment)

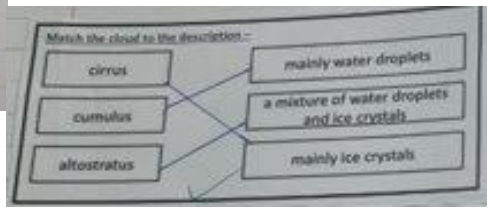
At the start of each lesson children complete a flashback activity. This allows the teacher to identify what the children have recalled and what they need to focus on during that lesson. It allows any misconceptions to be addressed. During this time the children often mark their own learning – low stakes

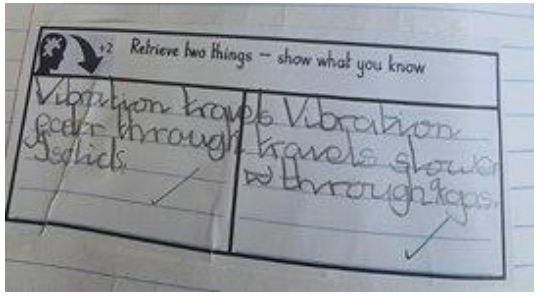




The end of each lesson the children "Retrieve 2 Things" which they have learnt which answer the lesson question. Again, teachers can identify and address any misconceptions that have developed during the lesson and identify who has achieved the learning objective.

After vocabulary has been explicitly taught, the children complete focused activities. The children are then able to apply their learning and the teachers are able to identify where vocabulary needs to be retaught for individuals, groups or the whole class.

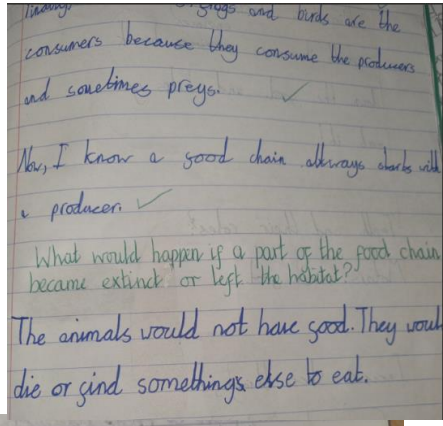


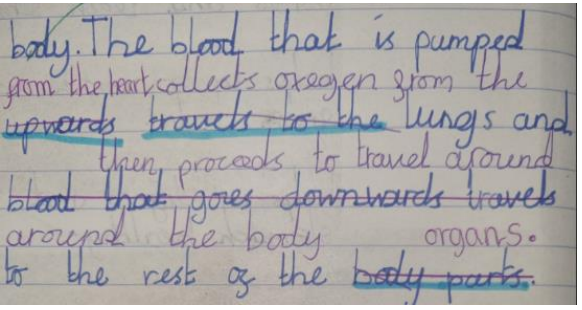


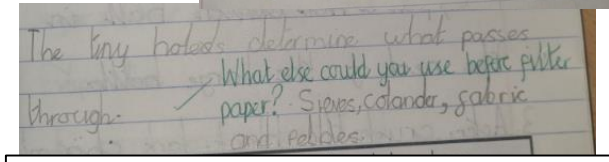
All teaching staff timely intervene during lessons. They identify any misconceptions that are held by the children. As feedback delivered in the lessons is more effective comments written and read at a later date. Children are able to immediately act upon feedback and ask any further questions to ensure that they understand.

Kagan collaborative learning strategies are used in all year groups. These can be used to articulate their knowledge/thinking and recall knowledge. During this time staff circulate the room to identify misconceptions and address them immediately. This also aids the teacher on knowing the path of the learning for that lesson.

Open and closed questioning is used in all classes and is used to target children who have misconceptions or to deepen their thinking. "If a question is worth asking, it's worth asking everyone" is a phrase across the school; we use personal white boards and Kagan pairs or groups to elicit responses from all children. We are then able to use further questioning to probe and deepen thinking for individuals or groups.







Distance marking invites the children to read and respond to the teachers comment or question. It used when teachers want children to explain their learning further or when they want to challenge the children to think deeper about their learning.

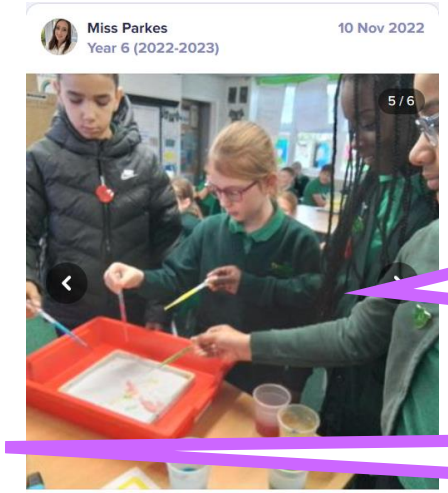
Science Learning- LC

As a school we celebrate national and international days and weeks which celebrate science and STEM.

This year the school celebrated World Science Day, British Science Week and International Women and Girls in Science Day.

The children were excited by the additional science experiments and activities that took place.

As part of National Science Day we discussed what scientists do. We learnt they make observations and look for changes. We set up an experiment and watched. The food colouring moved along the kitchen roll. We will look what happens tomorrow.



As part of World Science Day, we did a class science experiment. We mixed bicarbonate of soda (alkali) with white vinegar (acid) to create a chemical reaction. We saw lots of fizzing and bubbling!

That was amazing. I'm going to get the list from Miss, get my dad to buy the equipment and do this at home. Year 6 child

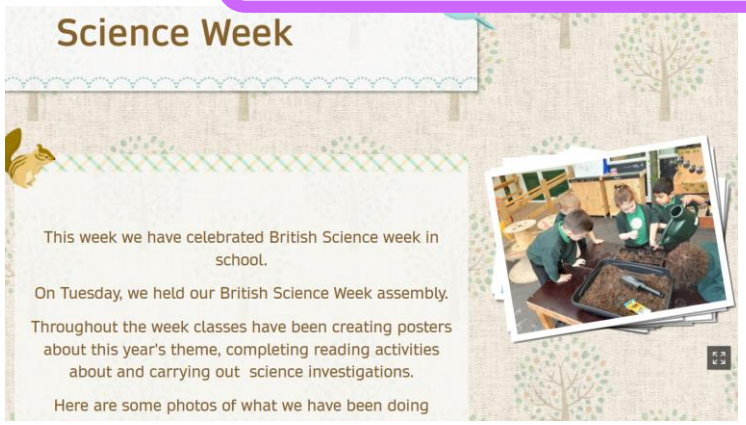
I think the colours will meet in the middle and change sides. Reception child

I want to be a vet when I grow up to look after sick animals. Year 3 female child.

What is International Day of Women and Girls in Science?

International Day of Women and Girls in Science (IDWGIS) is a day to recognise the gender gap that has developed over the years in many levels of science, technology, engineering and mathematics (STEM).

Did You Know...?
Only 22% of people working in cutting-edge fields, like artificial intelligence (AI), are women. This means for every five people, one is a woman.

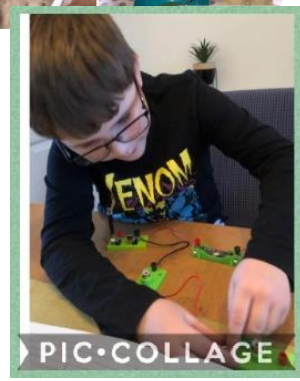


There was little engagement from families in STEM related activities.

SCIENCE SELFIES

Over the next few weeks, please take a photo of you using science or investigating science at home.. It could be: recreating an investigation that you have done in school; using a new science related gift; investigating what happened to something over a period of time to food; trying out this month's Crystal Snowflake activity; planting seeds; making slime; looking at the effects of exercise on your body; baking... use your imagination! Be creative— we can't wait to see them! We would like you to take a photograph and then, in one sentence, explain how it is science! We will be displaying all of your entries in school. Send them to Mrs Smith on Class Dojo or send a paper copy back into school.

The children were invited (via the Science Newsletter) to take part in a "Science Selfie" competition.



Children and their families engaged in science related activities at home. The children were able to talk about the activities that they had done and how they related to science. Although the activities were mainly cooking, science was taking place at home and we will build on this for next year's competition.

Science Learning- LC

Forest School takes place during school hours as an intervention (SMEH needs) and as an after school club for children from Reception up to Year 6.

My favourite time of the week is going to Forest School. I really like trying to get the zip wire to work. We have to work together to get it at the right height. We have to change it for everyone because they are different sizes.. Year 3 child

A child from Reception, Year 3 and Year 5 at Science Club.

Forest School intervention group

Some of the activities the children take part in at Forest School include: investigating habitats, make observations of animals (night cam), plants and insects. They can also use the classifying sheets to identify any unknown to them. In addition, they investigate forces by building rope swings and zip wires.

How can you make the car travel faster? You could wind the elastic band round more time and put it on a hard floor. Reception child at Science Club.

Children are able to select books relating to their science topic to read during their DEAR time.

Science Club ran every other half term and was only open to children from KS2 classes.

The science lead opened up the Science Club to KS1 and then to Reception children.

The children have grown in confidence when working as a pair or as a team. Their communication skills and use of vocabulary have improved. They are using science skills in real life situations.

Books taken from the school library and books which the children have bought in form home and the local libraries help to develop their science capital.

The number of children attending Science Club increased. Some children chose Science Club over Football Club. Children work collaboratively and drew on each others strengths. The profile of science rose in the school.

20

Science Learning- LC

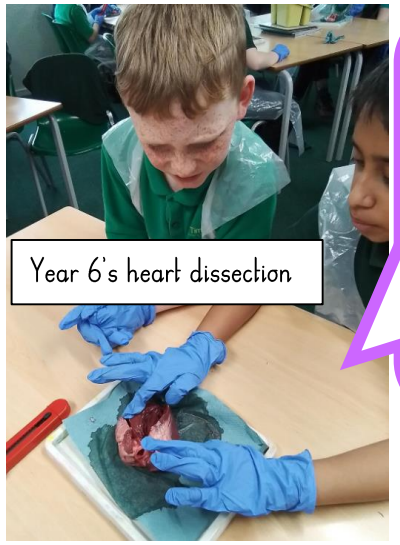
School visits and in school experiences focused mainly on history and geography.

Year 4's visitor from Seven Trent about the water cycle.

This afternoon, we have had a visit from Severn Trent. We have explored the water cycle, hydration, how we get water and even pollution. Our visitor was impressed with Y4's knowledge, especially about the water cycle (which we are currently learning about).
Well done Y4!

Year 3's visitor from the NHS about healthy eating.

Today two nurses came and taught year 4 about sugar intake. We were shocked about how much sugar foods contain. Some children have said that they would like to get the app to see how much sugar is in what they eat.



Year 6's heart dissection

I shocked myself that I touched the heart. I didn't think I would do it. I was shocked by how tiny the valves were. Year 6 child

EYFS's chicks

We watched a chick hatch today!!!

The children enthused about the experiences they had. They were able to transfer their knowledge into their classroom learning. Again the profile of science in school increased.

Teachers and the science lead arranged for in school science related experiences and educational visits..

The science newsletter, scientist of the month and STEM career of the month continue to be shared on the website. They are also now shared on the classroom science working walls and on the whole school science board (see slide 3).

That's great! The STEM career of the month will help me to know what I want to do when I get older. Year 4 child (member of Science Club)

The science newsletter, scientist of the month and STEM career of the month are on every science working wall.

Timbertree Academy

Educational Trips | Timbertree

Educational Visits

Year Nursery	Safari Park	Tuesday 27th June
Year Reception	Safari Park	Tuesday 27th June
Year 1	Dudley Zoo	Thursday 13th July
Year 2	Black Country Museum	Friday 21st April
Year 3	Corinium Museum	Thursday 18th May
Year 4	Thinktank	Thursday 20th April
Year 4	Frank Chapman residential	5th – 7th July
Year 5	The National Space Centre	Tuesday 25th April
Year 6	Kingswood residential	19th – 21st June

Year 4 at Birmingham's Think-tank

Year 5 at National Space Museum

Science Newsletter

- Science Newsletter Autumn 2022 611Kb
- Science Newsletter Spring 2023 712Kb
- Science Newsletter Summer 2023 1Mb

Scientist of the Month

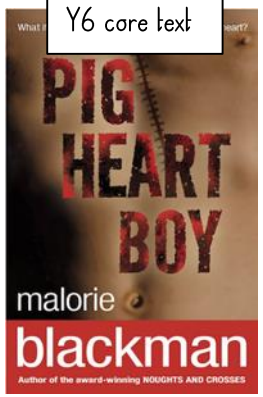
- SCIENTIST OF THE MONTH May 420Kb

STEM Career of the Month

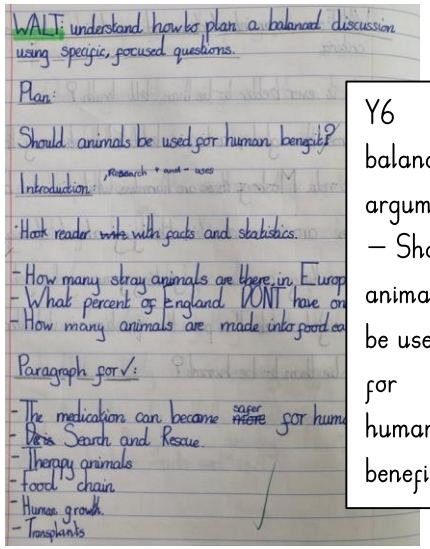
- STEM CAREER OF THE MONTH May 338Kb

Science Wider Opportunities- WOA

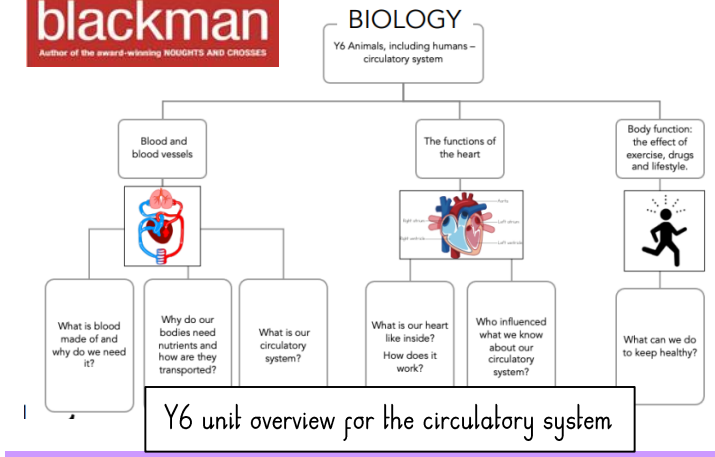
Clear links across the curriculum are made.



Y6 core text



Y6 balanced argument – Should animals be used for human benefit?



Y6 unit overview for the circulatory system

The children have a holistic view of the topic and can make links between the subjects. They are able to free up their working memory for new learning and retention of information.

Year 6 read Pig Heart Boy in whole class reading. They study the circulatory system in science. In PSHE they discuss whether or not they would have a transplant from an animal if it were their only hope. In English writing, they write a balanced discussion on the merits of using animal organs in humans.

Having all of the learning link has made it so much easier. I can understand parts of the Pig Heart Boy story because we have learnt about the circulatory system. Reading Pig Heart Boy also helped me write the balanced argument because I understand how Cameron and his family felt. It was their only hope. We have someone in our class who is waiting for a transplant, so it really helps us understand her situation as well. . Year 6 children

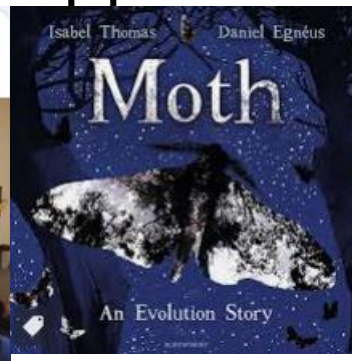
Our Junior Leadership Team (JLT) took part in the academy group's annual pupil leadership challenge. This year the theme was the environment. The JLT initiated a number of initiatives at school including: making the site more insect friendly by planting insect friendly plants, erecting bird houses and bug hotels; organising litter picks with our Eco Champions; informing the public of the care of local wildlife; arranging for the delivery of trees from the Woodland Trust and reducing waste by arranging a clothing bank with a local charity. They presented their project at a graduation day at Oxford University.

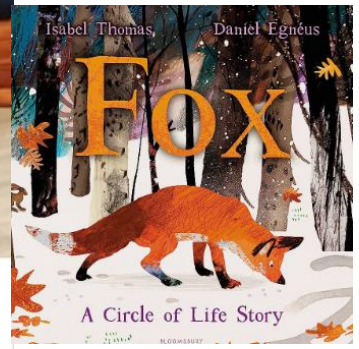
I have really enjoyed taking part in the project. I feel that we have really made a difference to the environment around our school I have learnt so much from the other schools too and I want to start some of those at our school especially the outdoor compostable toilet for Forest School. Member of JLT

JLT presenting their project at Oxford University

The children took the lead of initiatives in school that would help or local environment and the wider world. They are passionate about the cause and have enlisted others to join them

Science Wider Opportunities- WOA





Our Year 5 pupils took part in the academy groups annual Story Slam competition. They all took part in a workshop with science writer Isabel Thomas. She taught them how to use factual knowledge of science in a story. She shared with them her books Moth and Fox about their life cycles.

The children were enthused to write in a similar style to Isabel. From their writing they were able to show of their scientific knowledge as well as their writing skills. English leader.

The Year 5 children all wrote a story based on an element of science of their choice. The best story was entered into the national competition and one of the children came runner up in the Midlands final.

Isabel really inspired me. I have been writing more stories that include nature at home. I hope that she is part of the Story Slam again next year, so I can share my story with her. Year 5 pupil.

This year saw the start of our Eco School/Champions. They have been leading on a number of projects across the school independently and in collaboration with the JLT. They have been involved in litter picks, walk to school week and increasing the amount of recycling in school and at home.

The children have embraced the role of Eco Champion fully. They are active in their roles. They litter pick daily and check on the bins and recycling bins to make sure that nothing is going in the wrong place. Member of staff leading the Eco Champions.

Our Eco Schools whole school display celebrating the initiatives.

Children, adults in school and adults at home are more aware of their impact on the environment. More recycling is taking place in school and less litter is on the school site.

Science Wider Opportunities- WOB

Events including Story Slam and the Pupils Leadership challenge are arranged by the academy trust (see slides 18 and 19).

Children take ownership of the initiatives and lead the way with ideas that the adults in school would never have thought of.

In school clubs (science, gardening Forest School) continue to run throughout the year (see slide 16).

Science events (normally free or with a very low cost) in the local area are shared with parents and families on the science newsletter.

Children have the opportunity to experience areas of science outside of the classroom with experts (staff and governors). They have the opportunity to flourish in something they really enjoy doing.

Parents and families are aware of events that are available in the local area and will hopefully take the children along.

SCIENCE NEAR YOU

Climate Busking ThinkTank Birmingham Ever wondered what affect our changing ocean is having on its millions of fish shells? Join their Visitor Services team this May half term to discover what happens and find out more about what we can do for our climate.. This drop-in activity will run Monday 29 May to Friday 2 June at 10.30am - 12noon. Included within the price of admission.

ZooLab Climate Crusader's Show ThinkTank Birmingahm Join ZooLab in our Thinktank theatre this May half-term and get up close and hands on with exotic animals as we learn about our changing planet. They'll take a look at Snakes, Spiders and Giant Snails as you delve into what we're doing to our planet, how our climate is changing because of this and the things we can do to help.

45 minute shows will be running from Monday 29th May to Friday 2nd June at 11.30am and 1.30pm, on level 3 in the theatre. Included within the price of admission.

This event is included in the price of admission.

Our Forest School whole school display celebrating the club and interventions

Links were made with the local high school. Children and their families from Years 5 and 6 were invited to a Science Event at Ormiston Forge Academy, which was being led by the Royal Institution.

14 children and their families attended. The children returned to school and shared their enjoyment of the event with staff and children in school.

Timbertree Academy

Ormiston Forge Academy – Royal Institute Science Event
14th December 5:30pm – 6:30pm

Dear Parents and Carers of children in Year 5 and Year 6

I am pleased to inform you that our Year 5 and Year 6 pupils and their families are being given an amazing opportunity by Ormiston Forge Academy and The Royal Institution.

The Royal Institution is world-renowned charity who are dedicated to connecting people with the world of science and inspiring them to think more deeply about science and its place in our lives.

The Royal Institution are visiting Ormiston Forge Academy on the 14th December to deliver some exciting science shows to the Ormiston Forge pupils during the day. However, they will also be holding a community show in the evening from5:30pm until 6:30pm.

Timbertree Academy have been allocated 40 tickets. Please complete the slip below and return it to myself ASAP if you would like to secure tickets for a family member and your child.
The event is free.

Tickets will be issued on a first come first served basis and initially will be for one child (from Y5 or Y6) and a family member. If there are any tickets left over, then I will be able to offer more tickets to families who are attending.

This is a fantastic opportunity for your child to learn more about science from the experts!

Yours sincerely
Mrs E Smith

Ri The Royal Institution
Science Lives Here

Thank you for inviting us to this event. We have all absolutely loved it. My daughter is already planning what she will study at college and at university! If it's on again next year we will definitely go. Parent of children in Year 5 and Year 6.