

CADMORE END CE PRIMARY SCHOOL

PSQM AWARD



What is our vision for Science in our school?

SL1, SL2, SL3, SL4, SL5

Staff engagement during INSET on our 'vision' for Science helped us establish our principles for learning....in every subject!

Science - INSET 22.11.18

Our principles

- Maintain curiosity
- Make writing purposeful
- Health & Safety - CLEAPSS membership

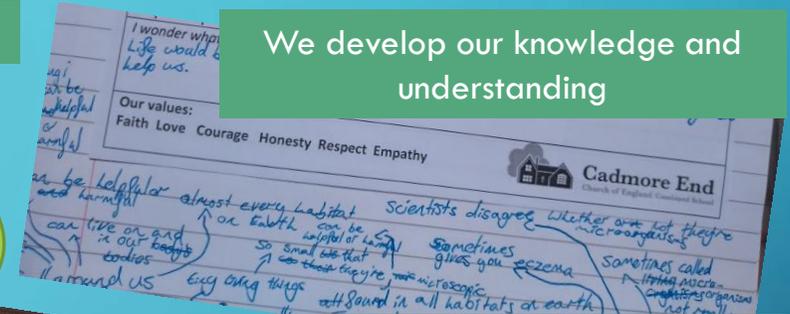
Establishing a vision

- Yellow - why is the subject important to you?
- Green - What do you believe it offers the children?
- Blue - Describe 2/3 teaching methods you think are an essential part of teaching science well
- Red - What do you want to see happen in this subject over the next two years?
- Purple - What is the main aim for you with regard to this subject?



We're Curious!

'I wonder what animal this skeleton would belong to?'



We develop our knowledge and understanding

We make connections



We ask questions!



We observe

'I can see the temperature changing!'



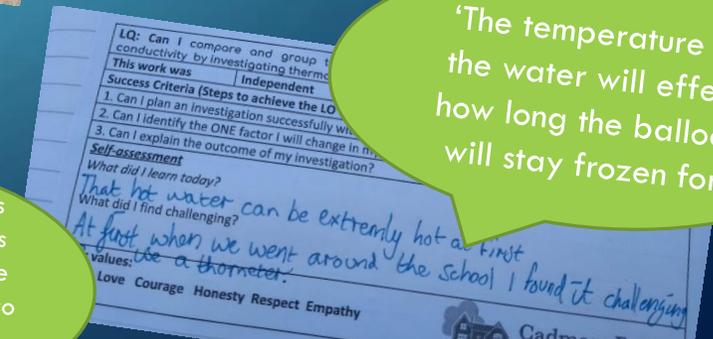
'The temperature of the water will effect how long the balloon will stay frozen for'

Science is good when....
 'Children become excited by what they discover'
 'Children take ownership of their learning and understanding'
 'Children ask questions because their learning has been captured'
 'The children can explain what they have found out, even if it's wrong'
 Teaching staff

Material	Prediction	Result
Kitchen paper	0	crack
chick peas	0	crack
matchbox	0	crack
Bubble wrap	0	crack
plastic	0	crack

We Reason

'If the egg cracks every time what is the same about the materials I'm using so what could I change?'



We Evaluate

How do we lead and manage Science effectively?

SL2, SL3, SL4, SL5, T1, T2

The Science link governor meets with the Science Leader every term to review progress towards identified actions and the impact initiatives and interventions are having on teaching and learning in Science

Governor visit report

Cadmore End CE Combined School Governing Body Visit Report

Name: Gen Owen
 Date: 21.11.18
 Purpose of visit:
 Meet with Science Lead GG.
 Review points from last visit.
 Link with School Improvement/Development Plan
 Monitoring of Science throughout school by Science Lead
 Account of Governor Visit
 The visit started with accompanying GG on science learning walk. GG observed science lessons led by RC Class 2, AW... Class 3 and will feed back observations. GG... Class 2 learning the maths skills to then... argument in English participated... Learning... EYFS... assess...
 Two beg... acti... scr... som... big in... with p... KS1 sc... and esta...

'Being part of the PSQM process with the Science subject lead has helped me to really consider my practise and in particular the way in which I facilitate scientific enquiry in my classroom' *Class 2 Teacher*

'Our 'Science Snapshot' enabled us to identify as a school areas we felt were a strength such as the use of our outdoor space and cross-curricular links and those areas we needed to develop which included extending our scientific vocabulary both visually and orally. I was then able to ensure that this became a priority on the school development plan going forward.'
Headteacher

'The leadership team, together with skilled governors, has high expectations for itself and for pupils. Leaders have an accurate view of the school's strengths and weaknesses and are taking appropriate action to bring about the required improvements.'
Ofsted 2018

'STEM learning has provided opportunities to network with other local Science leaders and offers superb online CPD'
Science Subject Leader

Science - INSET 22.11.18

pupil voice feedback (every term)
 More challenge in lessons
 More scientific investigations and experiments
 's fun
 Less writing.....

Staff feedback

- Improve resources to support teaching and learning
- Provide training opportunities - internal & external
- Gathering of ideas
- Teaching scientific enquiry

Regular INSET focussing on Science is delivered every term to help staff review practise, share ideas and resources, look at work in children's books and evaluate their feedback through the pupil voice questionnaires



Staff are aware of online resources and CPD that is available to them and are encouraged to draw on this wealth of support when needed.

How do we make sure our teaching is effective?

L1, L2, SL4 SL5, T1, T2

Monitoring procedures in school help us to reflect, evaluate and improve the way in which we teach

Cadmore End Book Scrutiny							
Date:		05.11.18		Class:		3	
Is there evidence of progression?	Is there evidence of differentiation?	Is the pitch of work appropriate?	Are children responding to marking appropriately?	Is the quality of presentation and level of achievement in line with year group expectations?	Is there evidence of curriculum coverage?	Is there evidence of progression?	Is there evidence of differentiation?
✓	→	✓	✓	→	✓	✓	→
Comments				Books need to be marked from 10.10.18 Differentiation evident by outcome but perhaps the scaffolding given could be differentiated? Differentiated RTMs There are a few occasions where children aren't responding to RTMs Children are self-assessing Could more opportunities be given for peer assessment?			
Names of children sampled: Rocky Kirkwood – Year 3 Chadliane Mauban – Year 3 Melanie Picasso-Klein – Year 4 Edward Lewis – Year 4				Rating: Good Requires improvement + Requires improvement Inadequate			
Points for improvement: <ul style="list-style-type: none"> Ensure books are marked up to date Consideration of how tasks can be differentiated in terms of support and not just through outcome More peer assessment opportunities 							

'We ensure science is practical with a purpose'
Class 2 Teacher

Our 'Science Snapshot' enabled us to look at books across the key stages to identify strengths and areas for development.

'It was so useful to carry out a 'science snapshot' across the school to identify our strengths and areas for development'
Class 4 Teacher

'We ensure questions are open-ended so the children can investigate'
Headteacher

'The curriculum is broad and balanced with a wide range of activities that enrich pupils' experiences. The forest school provides them with good opportunities to develop their social and emotional skills.'
Ofsted

The 'Learning Walk' during the Autumn term was carried out with the Science Governor and from observations, constructive feedback was given to make our teaching practises more effective

Cadmore End Learning Walk Science – November 2018						
Class	Focus	Strengths	Area for development	Time scale	Action met	Impact
Mis Craft	Write to seasonal observation Obj	Abi - how can we measure the amount of rainfall in the week Leka - steel rain Observation's encouraged Talia poses - How will we record temperature?	Do they have the materials they need to be able to access the lesson? Volume use of measuring	1:35 - Ch an carpet 1:45 - Bibby Handwriting		
Mis Craft	Write to seasonal observation Obj	Good use of worksheets to note key ideas/points T AS - getting ch to try with their own/good point a new device	Focus on activity or presentation - but should it be on the information/balance? It is important to include but also refer to outside language.	1:45		Correctly stepped in to address this. Should ch scientific vocabs. Could they have a word bank to help them?

How do we assess what we know in Science?

L2

We use diagnostic tests to establish what the children already know before we begin teaching a unit of work.

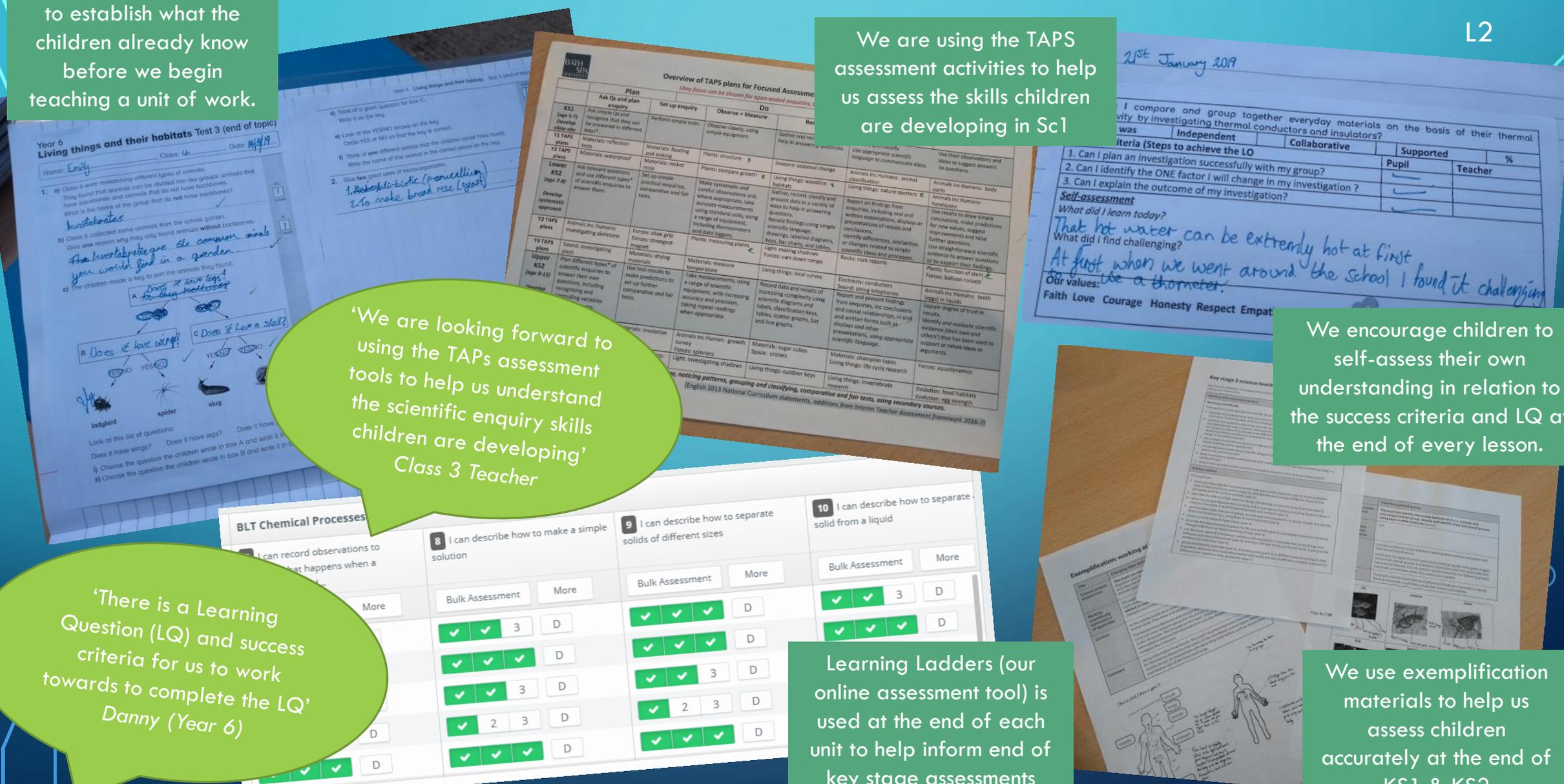
We are using the TAPS assessment activities to help us assess the skills children are developing in Sc1

'We are looking forward to using the TAPs assessment tools to help us understand the scientific enquiry skills children are developing'
Class 3 Teacher

'There is a Learning Question (LQ) and success criteria for us to work towards to complete the LQ'
Danny (Year 6)

Learning Ladders (our online assessment tool) is used at the end of each unit to help inform end of key stage assessments

We use exemplification materials to help us assess children accurately at the end of KS1 & KS2



How do we take ownership for our learning in Science?

L1, L2

"I'd like to know how acid works and why it dissolves most solids"
Josh (Year 6)

Children are given the opportunity at the end of the lesson to reflect on their learning through an 'I wonder question'. Sometimes this then initiates a conversation on the playground or at home or a request to 'Google' to find out!

During STEM week Class 2 were investigating their own 'I wonder question' about which material would make the best raft before testing their ideas

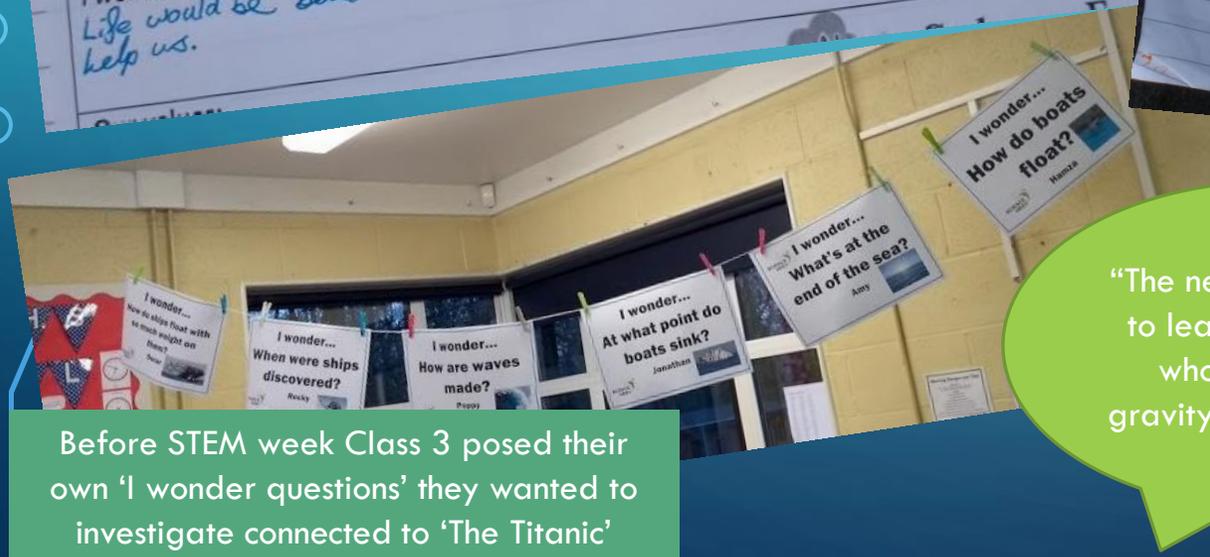
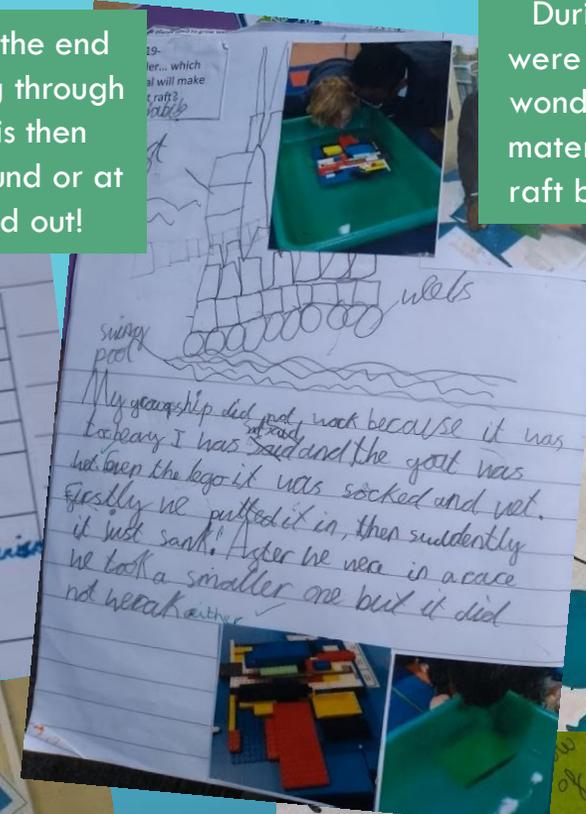
"How can a tiny seed turn into a huge tree? How can a seed hold so much inside? I wonder how I could find this out"
Charlotte (Year 5)

Wednesday 28th November 2018

LQ: Can I describe and investigate helpful and harmful micro-organisms?

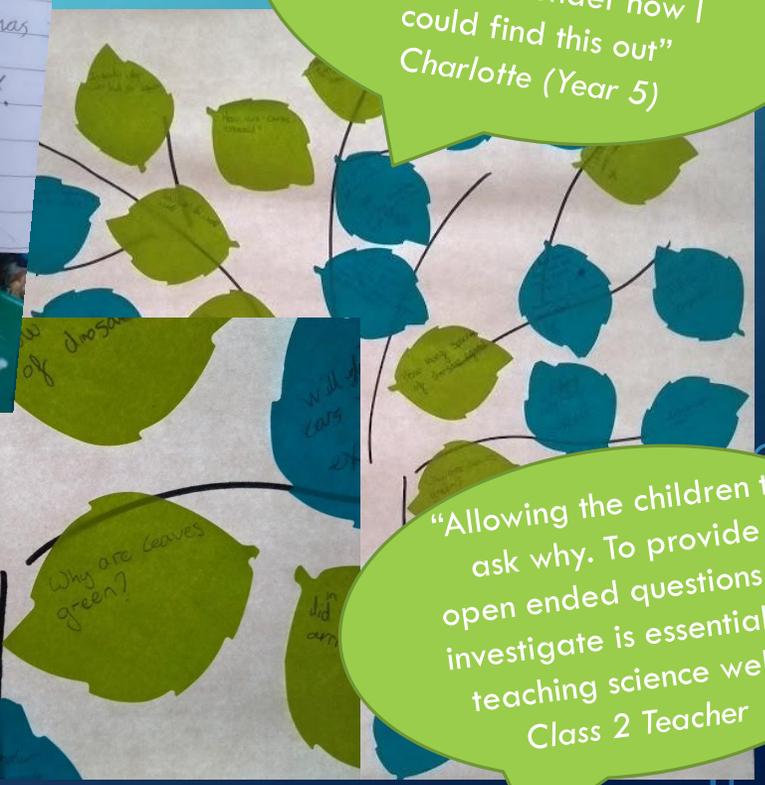
This work was	Independent	Collaborative	Supported	%
Success Criteria (Steps to achieve the LO)				
1. Can I identify different types of micro-organism?			✓	
2. Can I describe helpful and harmful micro-organisms?			✓	
3. Can I find out about Scientists who used micro-organisms in a helpful way?			✓	

I wonder what life would be like without micro-organisms?
Life would be better without certain micro-organisms but some micro-organisms help us.



Before STEM week Class 3 posed their own 'I wonder questions' they wanted to investigate connected to 'The Titanic'

"The next thing I'd like to learn in Science is who discovered gravity"
Fuad (Year 5)



"Allowing the children to ask why. To provide open ended questions to investigate is essential to teaching science well"
Class 2 Teacher

How do we scientifically 'enquire' at Cadmore End?



'It's important to only change one thing at a time otherwise our results can become confusing'
Rocky (Year 3)

21st November 18

How can we measure rainfall in a week?
Zac - Put a measuring Jug outside

Laila - Use a jar with measuring things on it.

How can we stop it falling over?
Isabella - put something heavy inside

Abhi - put stones inside to weigh it down.

Some of our predictions for this experiment are:
Grace - Put some Jug in the playground in the forest the different



'We found out from the internet that the Snow (Arctic) fox are white in the winter so predators find it hard to see them'
Charlie (Year 2)



Identifying, Classifying and Grouping

'The objects are in two groups. This group floated in the water when I tested them and these sunk'
Heath (Reception)



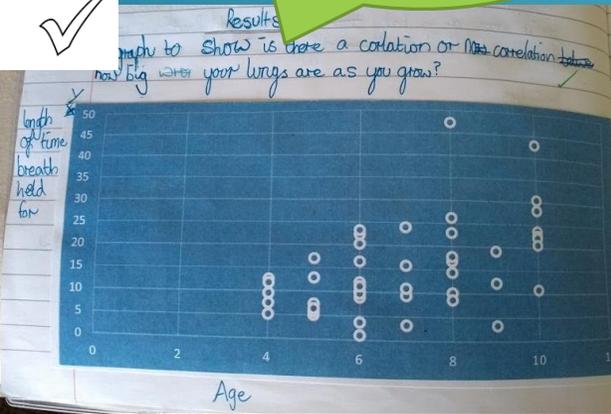
Comparative and Fair Testing

✓ ✓ ✓

'My results show a positive correlation. We can conclude that lung capacity increases with age through the childhood stage of development'
Paige (Year 6)



'The trees have lost their leaves but they'll grow new ones in the Spring. I can see the buds already!'
Phoenix (Year 1)



How do our Science resources help us to learn?

T3

'We love it when we get to use all the science equipment to help us explore'
Zach (Year 2)

Science Resources

Animals including humans



Plants



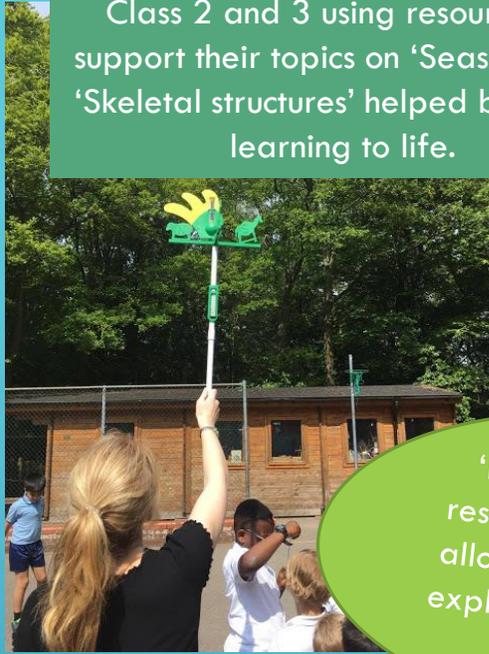
Living things & their habitats

Evolution & inheritance



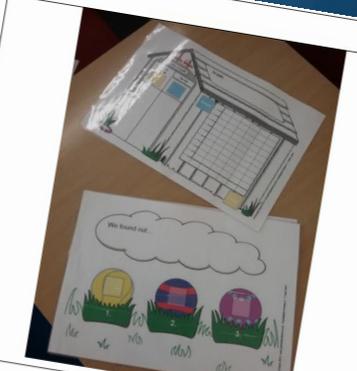
The audit of our Science resources have helped us understand what we have in school relating to each area of the curriculum making it much easier to access and use them.

Class 2 and 3 using resources to support their topics on 'Seasons' and 'Skeletal structures' helped bring the learning to life.



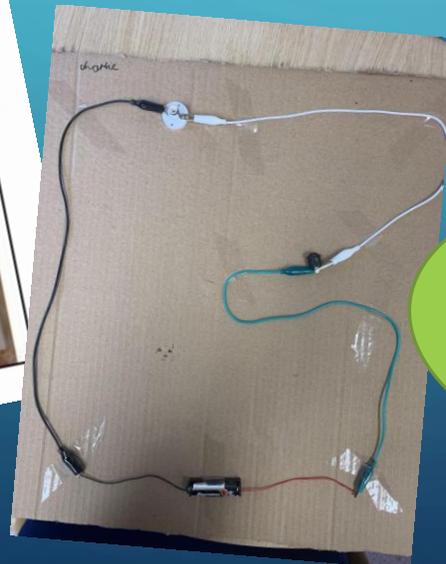
'Providing practical resources is essential to allowing the children to explore and investigate'
EYFS Teacher

Planning Sc1



Primary Science grids are used to help children in KS1 and KS2 plan and review in Sc1

'Science is more fun when we use the proper equipment'
Charlianne (Year 3)



How do we stay safe?

L1, T3

Class 3 investigating 'rotting food waste' ensured their hands were protected at all times 'because of the bacteria' Poppy



'Pupils have a good knowledge and understanding of how to stay safe.' Ofsted 2018



'At Hazard Alley, I learnt that if you see oil on the ground at a petrol station you have to tell a member of staff. Also you should under no circumstance touch electrical wires unless you have checked it is safe.' Oscar (Year 4)

'Safety first! An essential consideration for teaching Science well' Class 3 Teacher



'Our teacher makes sure that we understand the instructions we need to follow in order to stay safe when we are investigating.' James (Year 6)

'At Forest school we imagine we are in a 'bubble' when we are using equipment to keep ourselves safe' Emily (Year 5)



Class 3's visit to Hazard Alley gave them the opportunity to explore 'staying safe' in lots of different contexts

How do we challenge and support our pupils?

T2

LSAs scribe children's responses in Class 2 to the question 'Which material would make a good umbrella for Ted?' Each child was encouraged to share their ideas and the teacher was able to further question and challenge children from the evidence gathered.

'Teachers explain things to us but sometimes they ask us other questions to help us find the answers for ourselves.'
Emily (Year 5)

'I'm challenged when I investigate in science particularly when it goes wrong and I have to re-think my ideas.'
James (Year 6)

Word mats and scaffolded activities are used to help support children in their understanding and sharing of their ideas.

'The planning sheets help us to think about the different steps for our investigation.'
Summer (Year 5)

'I like being able to see and use the words I need to explain my ideas'
Kaolan (Year 5)

LQ: Can I compare and group together everyday materials on the basis of their conductivity by investigating thermal conductors and insulators?

This work was	Independent	Collaborative	Supported	Pupil	Teacher
Success Criteria (Steps to achieve the LO)					
1. Can I plan an investigation successfully with my group?					
2. Can I identify the ONE factor I will change in my investigation?					
3. Can I explain the outcome of my investigation?					

Self-assessment
What did I learn today?
That hot water can be extremely hot at first
What did I find challenging?
At first when we went around the school I found it challenging to use a thermometer.
Our values: use a thermometer.

What are we investigating? How fast should bread grow?

The variables we could change	The variables we could measure/observe
the conditions	How much mould
the temperature	that's on the bread
the amount of light	
the amount of water	

We will change the conditions
We will measure/observe how much mould grows

Our question is: what will happen to the bread if we change the conditions?

To make it a fair test we will keep these factors the same: keep it in darkness and add moisture

Our prediction: the bread will have more mould

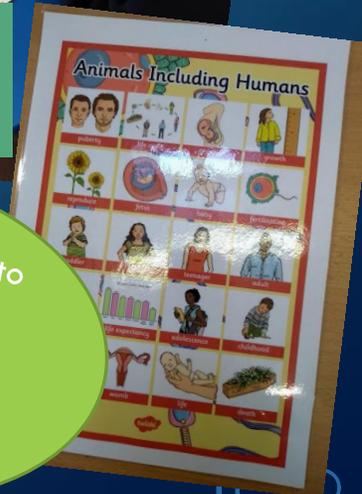
Primary Science
www.primaryscience.co.uk

What properties make a good umbrella?
Habib - Waterproof
Phoenix - Bendy
Eric - Flexible
Harry - Hard
Ryan - Soft
Max - Smooth
Archie - Rough

John - Opaque
Habib - Transparent
Ella - Stretchy
Shiny
Dull

What does the umbrella need to be?
Charlie - Smooth, so the water runs off easily.
Habib - Waterproof
Zac - Flexible

How can we test the material?
Ella - We can put water on the top to see if it's waterproof



How do we provide science learning opportunities 'beyond the classroom'?

L1, L3, SL2, T1, WO1, WO2

Children use the outdoor space to observe plants close-up helping them to identify all the different parts and their functions.



'Pupils thoroughly enjoy the opportunities they have to learn outdoors.... Forest-school activities support their personal and social development'
Ofsted Nov 2019

Food Technology visits to Great Marlow Secondary school and Pizza Express enabled the children to apply their knowledge of 'healthy eating' and the safe handling of food and equipment.



'Seeing children using the outdoor space/environment to support their learning is a privilege'
Class 4 Teacher

'At Pizza Express I learnt how to make pizza from scratch. We used mozzarella for the cheese and even made a gluten free one for Archie. I think it's better to make your own pizza because if you buy it from the shop there could be lots of chemicals in it'
Milia (Year 3)

Our knowledge of tree names; risk awareness; fungi awareness; habitats; hedgehogs; drawing detailed pictures of objects has improved through Forest School.' Forest school pupil questionnaire responses Spring 2018

Forest school newsletter February 2019

Welcome to the first newsletter of the New Year children that have joined us. It has been quite a cold start to the year but the children have enjoyed the weather particularly the snow & enjoyed inventing games to keep them warm.

Class 1 & Nursery

Class 1 & Nursery have been busy making bug hotels from recycled & natural materials; team games sheep's & wolves & predator & prey challenge appropriately. Team games sheep's & wolves & predator & prey have been enjoyed; creating treasure maps; bird feeders; making great imaginative things from a stick; writing a woodland inspired story.

Class 2

Class 2 have been very independent in sessions extending their given challenge appropriately. Team games sheep's & wolves & predator & prey have been enjoyed; creating treasure maps; bird feeders; making great imaginative things from a stick; writing a woodland inspired story.

Class 3

Class 3 have been busy making bug hotels from recycled & natural materials; team games sheep's & wolves & predator & prey challenge appropriately. Team games sheep's & wolves & predator & prey have been enjoyed; creating treasure maps; bird feeders; making great imaginative things from a stick; writing a woodland inspired story.

We have future learning opportunities planned for Autumn 2019
Science Subject Leader

SCIENCEOXFORD



How do we partner with our parents and local community?

L1, L3, SL2, WO2



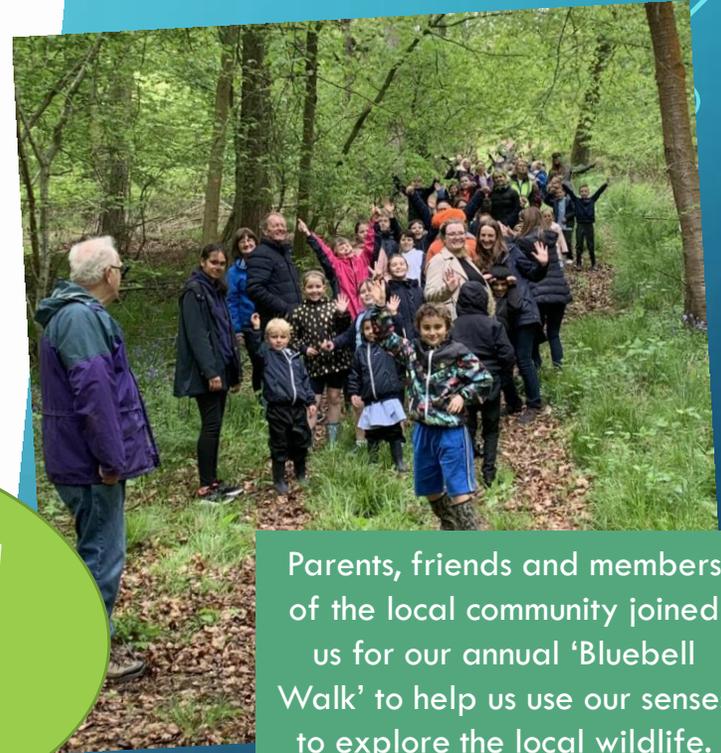
As a result of the pupil questionnaire results myself & Mrs Pattison will be running an after school Forest School club after half term to enable the children to experience the things that they suggested which are difficult to provide in their class session due to time constraints. (Separate letter to follow)

We have a "Cadmore End School Forest School" Facebook group should parents/carers wish to join (this is a closed group & only for immediate parent/carers) & is updated weekly.

Can parents that have not yet completed their questionnaire please return them ASAP to enable results to be calculated.

We will be holding another Community Forest School event before the Easter break
"Easter scavenger hunt"
year olds & their parents & carers.

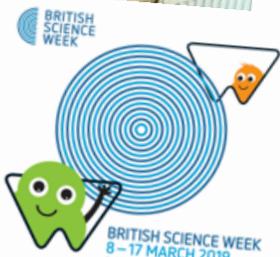
Many Thanks
Mrs



Parents, friends and members of the local community joined us for our annual 'Bluebell Walk' to help us use our senses to explore the local wildlife.

"Throughout the home-learning project it was lovely to hear my child ask, "I wonder....." parent EYFS child

"Before Science week, I didn't know about my Mum's old job and that she used to be a scientist!" Abi (Year 6)


BRITISH SCIENCE WEEK
8-17 MARCH 2019
A celebration of the best of British science, technology, engineering and mathematics.


Cadmore End
Church of England Combined School

STEM Week
11th March – 15th March

As part of British Science week, we will be holding our very own STEM (Science, Technology, Engineering, Maths) week in school. Teachers have been busy planning activities initiated from asking your children what they wonder about the world around them.

Please take time to talk to your child each day about what they have been learning through the STEM based activities and look out for photos and a short synopsis from each class on the newsletter.

Following on from our STEM week we would like the children to find out about a Scientist of their choice and to present their findings in any way they wish. We would like to display their work in school and ask that this is returned by Friday 29th March. This task is homework for years 1 to 5.

If there are any parents who use STEM subjects in their jobs we would like to come in to talk to their child's class about what they do. Please let the office or your child's class teacher know. This is not too late! Please let the office or your child's class teacher know.

Many thanks for all your support.
Staff @ Cadmore End

Our Forest school community events are well attended by local families and new parents and family and friends volunteered their time to talk to us about how they use STEM subjects in their jobs.

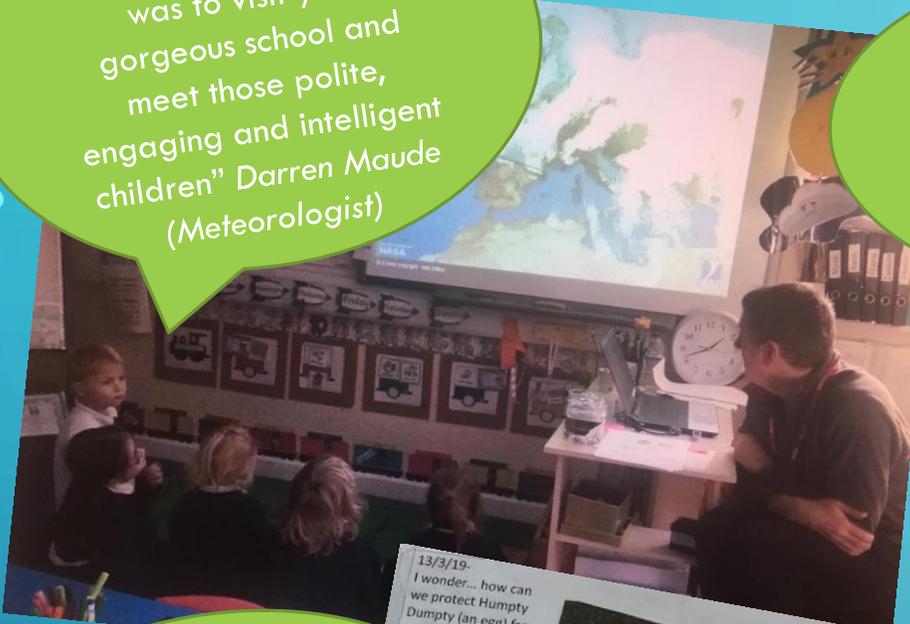
STEM Week
We will be holding our first STEM week - Monday 11th March - Friday 15th March, and would like to invite any parents who use STEM in their jobs - Science, Technology, Engineering or Maths to come in and talk to the children for 10/15 minutes at the start or end of the day about their job. If you are able to help, please let the office, or your child's class teacher know.



Our STEM week!

L1, L3, SL2, WO1, WO2

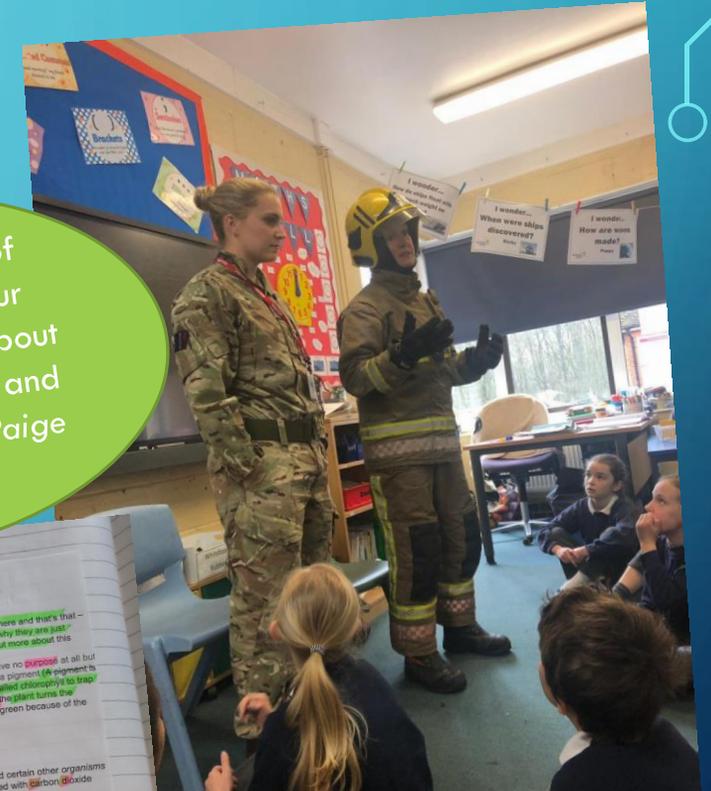
"Can I just say what a wonderful experience it was to visit your gorgeous school and meet those polite, engaging and intelligent children" Darren Maude (Meteorologist)



"Before Science week we didn't know that paper would be strong enough to build a bridge to hold a weight" Harry & Ella-Rose (Year 2)



"My favourite part of Science week was our visitors talking to us about how they use Science and Maths in their jobs" Paige (Year 6)



"My favourite part of Science week was trying new things in the egg experiment" Abhi (Year 2)

13/3/19- I wonder... how can we protect Humpty Dumpty (an egg) from cracking after a fall from a wall?

	Prediction	Result
Wisho paper	0	crack
chick peas	0	crack
matchles	0	crack
Bubble wrap	0	crack
zabbi's	0	crack

"Before Science week I didn't know that chlorophyll makes leaves green. I found this very interesting and I was glad that my question was answered" Emily (Year 5)

Why are leaves green?

Leaves are one of those that we take for granted they're just there and that's that - we don't give them a second thought. But have you ever considered why they are just green? When they could be a multitude of different colours. To find out more about this natural phenomenon keep on reading!

Leaves are on all plants, they just hang there and seem to have no purpose at all but they have a purpose - they keep the tree alive! Normally leaves use a pigment (a pigment is a material that changes the colour of reflected or transmitted light) called chlorophyll to trap energy from the sun. This, through a process called photosynthesis, the plant turns the energy into nutrients that the tree then absorbs. In short leaves are green because of the chlorophyll which is a green shade.

Photosynthesis

Photosynthesis is a process performed by green plants and certain other organisms (an organism is a living thing). It is when the energy of light is mixed with carbon dioxide (CO₂) and water (H₂O) creating the simple sugar glucose.

Parts of a leaf

Conclusion - Is there a relevant/suitable sub-heading? In conclusion leaves are green because of the pigment called chlorophyll which is used in the process of photosynthesis to soak up the sun's energy.

Two female RAF visitors during STEM week helped to raise the profile and awareness of how what we learn in Science can impact on our future careers. The fact they were female challenged gender stereo-types