SL A. **Pre-PSQM** | During PSQM | Impact

Children were not secure using scientific vocabulary in science lessons.

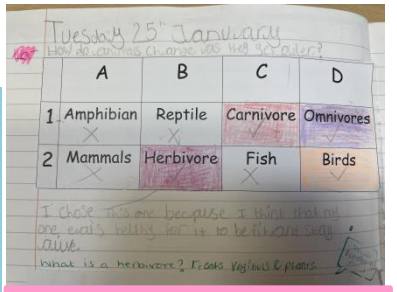
Teachers used Progression Document to identify age – appropriate science language and is displayed on the working wall during the topic . SL and SLT looked at medium term planning template to ensure coverage of skills can bee seen. Working Scientifically wheels implemented and updated consistently.

Spellings:

Spellings will be tested on Mondays and the new spelling pattern/rule introduced for the coming we… This week your child's spellings are linked to our Science topic. All children have been given a list of spellings to take home.

	LEARNING QUESTION	NC OBJECTIVE	WS LINK (if necessary)	SEN TASK	CONFERENCE	H&S - RISK ASSESSMENT
WEEK 1	Can I group living things in a range of ways?	To recognise that living things can be grouped in a variety of ways. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	Looking for patterns Identifying and classifying.	Sort large photos of different animals into groups with adult support. Start simple e.g. does this animal belong on land or sea? etc		
WEEK 2	Can I identify vertebrates by observing their similarities and differences?	To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Identifying differences, similarities or changes related to simple scientific ideas and processes.	Carefully observing Identifying and classifying	Sort photos of invertebrates.		
WEEK 3	Can I use evidence to identify an invertebrate?	To explore and use classification keys to help group, identify and name a variety of living things in their local and	Carefully observing Identifying and classifying	Use a magnifying glass to go hunting for insects outside.		and animals they should take care to avoid.

Y5

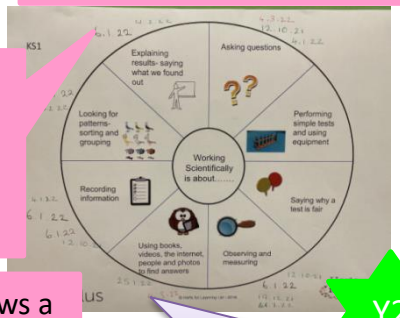


Children are able to talk more scientifically with understanding of the key ideas being covered.

Links with L.A / WO.A

Y2

SL monitoring shows that the subject specific vocabulary is being updated regularly and referred to in lessons.



Displays show Working Scientifically wheels in consistent use being updated. Showing skills are being covered.

Y4

Teachers planning now shows a number of opportunities to develop children's working Scientifically skills

Y2

SL can easily identify on the working scientifically wheel the coverage of skills that is being taught.

Here we were trying to make a complete circuit. I haven't done electricity before so it was good to have a go at making the circuit. Year 4

Pupils are demonstrating greater independence in WS skills

Y4

Y2

Through teacher voice and book looks it was evident that there were gaps in teacher understanding of working scientifically skills.

Action:
- Drop in LOD – Science
Heart and the functions:
- Effective questioning - Challenged answered and pushed learning on
- Targeted questions – LA and HA
- video to support understanding – support visual learners
- scientific vocabulary (used and on working wall)
- children engaged – nature of the lesson, all chn having a go at the activity and asking questions
- Chn asking questions about what they were doing (curious)
- Behaviour management great and addressing concerns with emotions (vegetarians/squeamish chn who were worried)
- Assessment for learning – plugging gaps
- addressing misconceptions – Chn used wrong vocabulary – addressed
-Recapping previous learning – "what part is this that we spoke about last week?"
- Really great lesson!

SL A.

As a staff, we created our vision and principle based on what we wanted science to like in our school. We had a big focus on children engaged in science through the 'awe and wonder' opportunities.

Links with WO.A

As a school we only had a vision but the children weren't aware nor the staff.

Y4

Recyclable Rhythms

Where does sound come from?
How does sound change?
The bigger the instrument the louder the sound?
Or
The smaller the instrument the smaller the sound?

Using recyclable objects, make a musical instrument and investigate further

Keeping Teeth Healthy!

We have just learnt all about different teeth.

Count how many teeth you and your family members have. Who has the most teeth? Who has the least teeth? Find a way to present your findings.
Create a poster to publish in your local dentists showing how to keep your teeth healthy.

Teachers are devising home learning activities to sparks children's curiosity

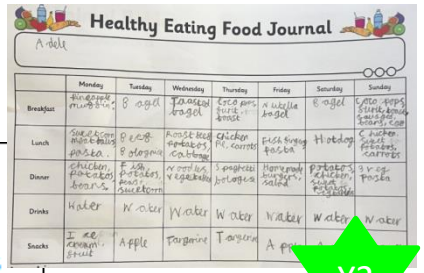
I picked this book because it's my favourite. I like space!'
Y1

Y5

Y1 + REC

Whole school impact – As a school we are raising the profile of Science though whole school competitions, homework, assemblies, school trips, Science Ambassadors.

Children are developing an awareness of Science in their everyday life and how Science impacts their lives

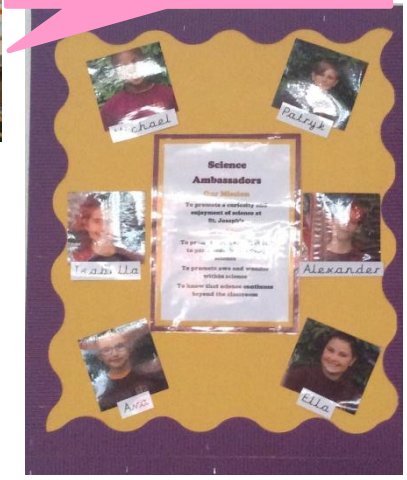


Y2

Science ambassadors are seen throughout the school, they are promoting science in different ways.

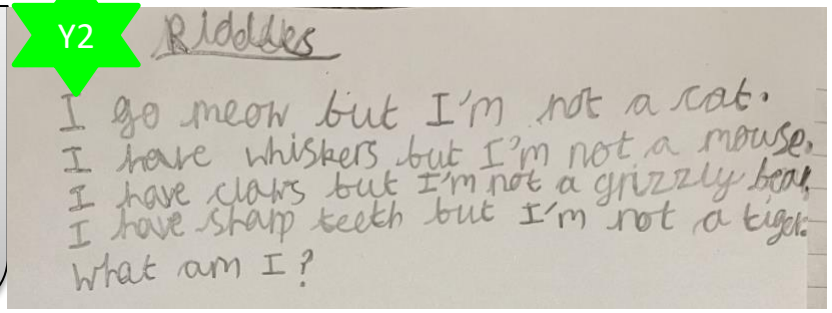
Y5

Try an activity based on our science topic of Properties and Changes of Materials. Try separating mixtures. Dissolve some salt in tall, clean glass of water. Leave in a warm place for a few days. Record (you can take ...otos) of how the salt is left behind ...en all the water has disappeared. What is this process called? Explain your findings using scientific language.



NEXT STEPS: To bring in real life examples. To ensure further learning is happening inside and outside the classroom and develop the independence of children's WS skills further.

Y2



SL B.

Additional release time was allocated to carry out more task around Science to ensure progression thought the school and start to introduce and look at the implementation of CPD ideas.

Links with SL.A / LB

Explorify

I really enjoy explorify. I really like zoom in, zoom out activity. We all discuss what we think it is, what it used for and what it might be made in to (materials). We find that we are asking more questions about what we are seeing because the pictures are really interesting. Year 5

1 hour per week was allocated as Science Leadership and was hard to have the chance to see implementation of CPD to staff. Our resources had not been updated to suit all areas of the curriculum.

Herts For Learning Primary Science Subject Leader Termly Updates has enabled the subject leader to share different websites with teachers for them to use in class such as PLAN, EXPLORIFY and PSTT.

Teachers are now using explorify as starters and gap fillers where possible to support children seeing that Science is all around us and not just within Science lessons. PSTT is now being used to support teachers in the planning of working scientifically coverage.

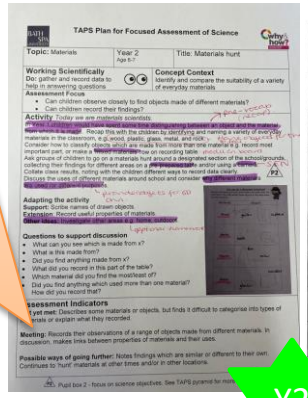
"I am much more confident with the planning process now that I have had the opportunity to sit down with PSTT advisor and subject leader. I understand the end points for each unit and find it easier to map out my learning questions after looking at the national curriculum and thinking about what the children have to know."

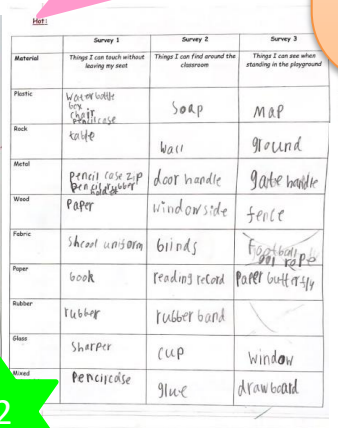
Y3 Teacher

Regular release time has allowed the SL to support the unqualified teacher who now understands the process of planning a unit and where to start a new unit therefore providing children with a journey in their learning allowing them to progress.

"I use PLAN to support with my planning process and assess effectively. I find it useful to see the annotated children's work that shows how it meets the expected level for the National Curriculum. I feel more confident now with the expectations and outcomes."

Y2 Teacher





Y2

Subject leader time

Subject: Science	Subject Lead: KE
Date: 25/02/22	Time: 10.15-11.00

Action:
Support SA with science and planning
Learning walk – science displays checking working scientifically wheels are updates – they are.
PLAN resources – added extra new ones to the drive and sent email asking to have a look.
Met with Science Ambassadors to Science Week and the launch

Next steps:
Learning walk
Pupil voice
PSQM – Evidence for Portfolio

Children have more opportunities to develop talking in science using their scientific vocabulary and develop their reasoning skills. Children are now also starting to asking more scientific questions.

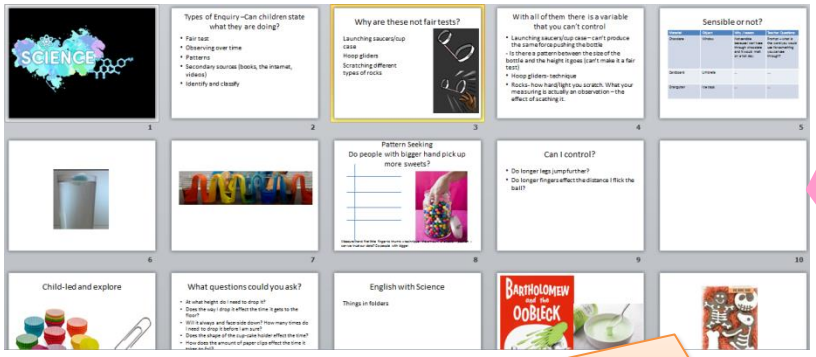
Discussion points from the meeting

- What is taught in Science in Primary
- Secondary school enquiring about the knowledge and skills that are taught in each Key stage? – National Curriculum
- Link to HfL wheel – Showing progression of skills
- Discussed different schemes of work from different schools
- Assessment and what this looks like at the end of the year and at the end of the year.
- How can we support children's learning to recall this at the end of the term in preparation for transition between ks2 and ks3
- Child – led enquiry is a big push within primary school – KS1/KS2.

Regular SLT meetings have identified the transition between KS2 and KS3 in science are wider due to COVID which has now provided the SL with a better understanding of the gaps and how to address. This is on-going with partnership with the local secondary school.

SL B.

This has supported the subject leaders knowledge across the curriculum by identifying different enquiry opportunities and sharing this with teachers.

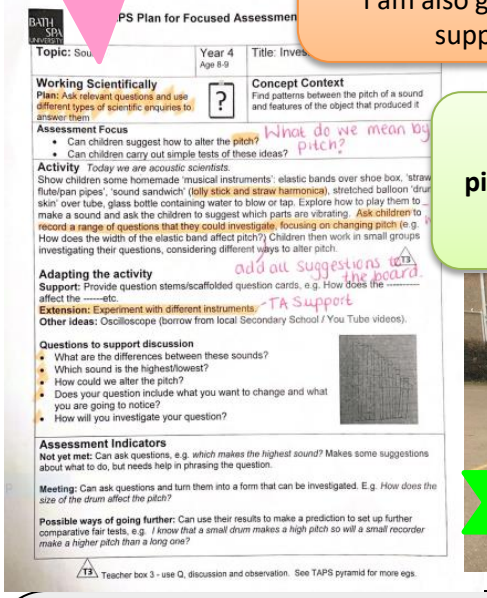


I have a better understanding how different investigations might be a different strand of the wheel. I need to make sure that I am covering fair tests properly and that they are not pattern seeking. I am also going to use the websites given in staff meeting to support my planning and outcomes. Y6 Teacher

Subject Leader has led staff meeting discussing the different parts of working scientifically. Looking at different questions and how the link to the wheel has helped staff understand what type of enquiry and skill they are doing.

Links with SLB

Updated resources has allowed teachers to plan wider opportunities of hands on practical activities


PS Plan for Focused Assessmen

Topic: Sou | Year 4 Age 8-9 | Title: Inves

Working Scientifically
Plan: Ask relevant questions and use different types of scientific enquiries to answer them

Concept Context
Find patterns between the pitch of a sound and features of the object that produced it

Assessment Focus
- Can children suggest how to alter the pitch?
- Can children carry out simple tests of these ideas?

What do we mean by pitch?

Activity *Today we are acoustic scientists.*
Show children some homemade 'musical instruments': elastic bands over shoe box, 'straw flute/pan pipes', 'sound sandwich' (lolly stick and straw harmonica), stretched balloon 'drum skin' over tube, glass bottle containing water to blow or tap. Explore how to play them to make a sound and ask the children to suggest which parts are vibrating. Ask children to record a range of questions that they could investigate, focusing on changing pitch (e.g. How does the width of the elastic band affect pitch?) Children then work in small groups investigating their questions, considering different ways to alter pitch.

Adapting the activity
Support: Provide question stems/scaffolded question cards, e.g. How does the ------ affect the ------etc.
Extension: Experiment with different instruments.
Other ideas: Oscilloscope (borrow from local Secondary School / You Tube videos).

add all suggestions to the board
TA Support

Questions to support discussion
- What are the differences between these sounds?
- Which sound is the highest/lowest?
- How could we alter the pitch?
- Does your question include what you want to change and what you are going to notice?
- How will you investigate your question?

Assessment Indicators
Not yet met: Can ask questions, e.g. *which makes the highest sound?* Makes some suggestions about what to do, but needs help in phrasing the question.

Meeting: Can ask questions and turn them into a form that can be investigated. E.g. *How does the size of the drum affect the pitch?*

Possible ways of going further: Can use their results to make a prediction to set up further comparative fair tests, e.g. *I know that a small drum makes a high pitch so will a small recorder make a higher pitch than a long one?*

Teacher box 3 - use Q, discussion and observation. See TAPS pyramid for more egs.

My question I investigated was 'How does the length of the pipe affect the pitch?'. I found out that the shorter the pipe the higher the pitch. This lesson was fun! Year 4

We have been using new equipment in science like stop watches, thermometers and newton meters. I like using the equipment because I learn more by doing it than just seeing it on a PowerPoint.
Year 5

NEXT STEPS:
Continue to meet with SLT to embed and implement actions from action plan.
To continue to implement any affective CPD and share with staff.

Children are demonstrating different skills using new equipment allowing them to working more scientifically

SL C.

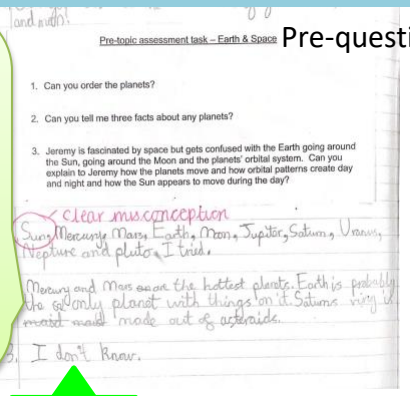
In December 2021, we took advantage of a inset day and quarantined three books from each year group to do a book look with SLT using the PLAN resources to support with the our judgements of assessment. We focused on our planning format to ensure progression can be seen and with clear start points that build on prior learning and end points including SEN chn.

Links with SLB

Due to COVID and returning back in September 2021 to current, strict guidelines have been in place to reduce books and the mixing of classes not allowing for effective monitoring to take place by SLT or subject leader.

Children are now being taught in a sequence, starting and ending with questions that show progression from what they can recall in previous learning and what they will learn in this topic .

I learnt a lot over this topic. I didn't know anything about the planets in the entry task but after learning about them in the exit task you can see how much more I learnt.
Year 5.


Pre-topic assessment task – Earth & Space

1. Can you order the planets?
2. Can you tell me three facts about any planets?
3. Jeremy is fascinated by space but gets confused with the Earth going around the Sun, going around the Moon and the planets' orbital system. Can you explain to Jeremy how the planets move and how orbital patterns create day and night and how the Sun appears to move during the day?

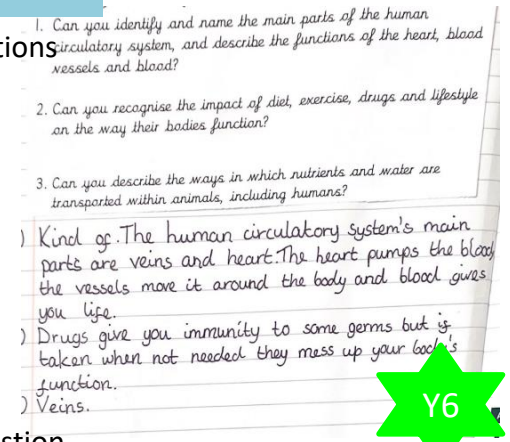
clear misconception

Sun, Mercury, Mars, Earth, Moon, Jupiter, Saturn, Uranus, Neptune and pluto. I tried.

Mercury and Mars are the hottest planets. Earth is probably the only planet with things on it. Saturn's ring is meant made made out of asteroids.

I don't know.

Pre-questions

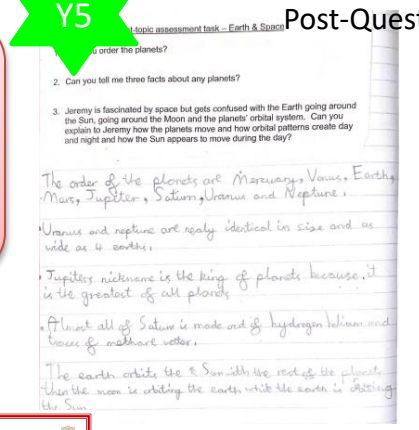

1. Can you identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood?
2. Can you recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function?
3. Can you describe the ways in which nutrients and water are transported within animals, including humans?

) Kind of. The human circulatory system's main parts are veins and heart. The heart pumps the blood the vessels move it around the body and blood gives you life.
) Drugs give you immunity to some germs but is taken when not needed they mess up your body's function.
) Veins.

Y5

Y6

Post-Question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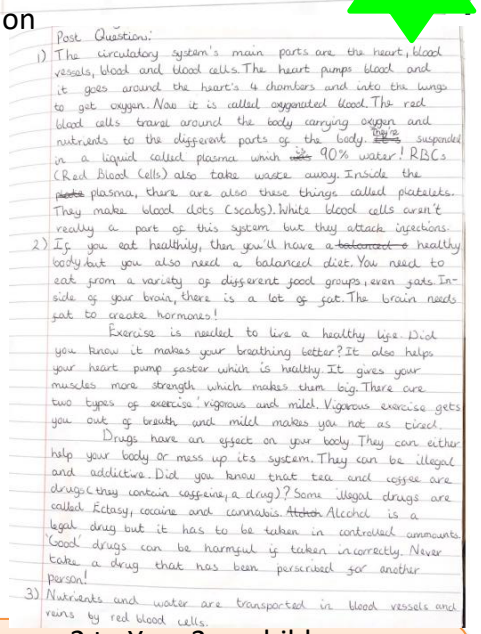
The order of the planets are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

Uranus and neptune are really identical in size and as wide as 4 earths.

Jupiters nickname is the king of planets because it is the greatest of all planets

Almost all of Saturn is made out of hydrogen helium and traces of methane water.

The earth orbits the Sun with the rest of the planets. Then the moon is orbiting the earth, while the earth is orbiting the Sun.


Post Question:

1) The circulatory system's main parts are the heart, blood vessels, blood and blood cells. The heart pumps blood and it goes around the heart's 4 chambers and into the lungs to get oxygen. Now it is called oxygenated blood. The red blood cells travel around the body carrying oxygen and nutrients to the different parts of the body. ~~Drugs~~ suspended in a liquid called plasma which ~~is~~ 90% water! RBCs (Red blood cells) also take waste away. Inside the ~~blood~~ plasma, there are also these things called platelets. They make blood clots (scabs). White blood cells aren't really a part of this system but they attack injections.

2) If you eat healthily, then you'll have a ~~balanced~~ healthy body but you also need a balanced diet. You need to eat from a variety of different food groups, even fats. Inside of your brain, there is a lot of fat. The brain needs fat to create hormones!

Exercise is needed to live a healthy life. Did you know it makes your breathing better? It also helps your heart pump faster which is healthy. It gives your muscles more strength which makes them big. There are two types of exercise: vigorous and mild. Vigorous exercise gets you out of breath and mild makes you not as tired.

Drugs have an effect on your body. They can either help your body or mess up its system. They can be illegal and addictive. Did you know that tea and coffee are drugs (they contain caffeine, a drug)? Some illegal drugs are called Ecstasy, cocaine and cannabis. ~~Alcohol~~ Alcohol is a legal drug but it has to be taken in controlled ammounts. 'Good' drugs can be harmful if taken incorrectly. Never take a drug that has been prescribed for another person!

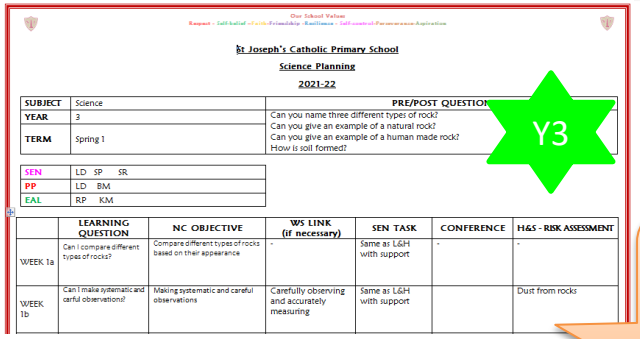
3) Nutrients and water are transported in blood vessels and veins by red blood cells.

HIP observation

In Year 6, pupils conducted research to find out about the human circulatory system. Pupils interviewed in Year 6 demonstrated a good understanding of previous learning. They recalled previous learning about the digestive system and healthy eating and living.

Teachers are using the devised medium term planning template to show progression within knowledge and working scientifically skills in a unit therefore skills can be seen and can now ensure effective tracking .

SL with SLT devised a new template to show the planning progression in Science.


Our School Values

Respect - Self-belief - Faith - Friendship - Resilience - Self-control - Perseverance - Aspiration

St Joseph's Catholic Primary School

Science Planning

2021-22

SUBJECT	Science	PRE/POST QUESTION
YEAR	3	Can you name three different types of rock?
TERM	Spring 1	Can you give an example of a natural rock?
		Can you give an example of a human made rock?
		How is soil formed?

SEN	LD SP SR
PP	LD BM
EAL	RP KM

	LEARNING QUESTION	NC OBJECTIVE	WS LINK (if necessary)	SEN TASK	CONFERENCE	H&S - RISK ASSESSMENT
WEEK 1a	Can I compare different types of rocks?	Compare different types of rocks based on their appearance	-	Same as L&H with support	-	-
WEEK 1b	Can I make systematic and carful observations?	Making systematic and careful observations	Carefully observing and accurately measuring	Same as L&H with support		Dust from rocks

Y3

I see progression from year 2 to Year 3 as children were able to explain what plants need to survive confidently . The children were also able to recall properties of materials from Year 2 which meant that I could build on this learning . - Y3 Teacher

SL C.

SLT and SL implementing new medium term planning template has made it much more easier and clearer to monitor and see progression with SEN children's work which is differentiated to them.

This allows teachers to consider and plan for children who are working below the National Curriculum, still allowing them to access Science at a level tailored to them and provide them with a level of curiosity which they may wish to have a profession in , in the future.

NEXT STEPS: SL to carry out 'Knowing about science in your school' to find out about other monitoring strategies which could be used and implemented

Y2

Our School Values
Respect - Self-belief - Faith-Friendship - Resilience - Self-control-Perseverance-Aspiration

St Joseph's Catholic Primary School

Science Planning

2021-22

SUBJECT	Science
YEAR	2
TERM	Autumn

PRE/POST QUESTION

Can you design and make a dolls/toy house for a toy company. In order to [illegible] the house, the toy company would like to know what material you use and why you choose the materials for the walls, windows, roof, etc..

SEN	IO, RNI, EA, EA, JLP, KD,
PP	
EAL	ERS,

	LEARNING QUESTION	NC OBJECTIVE	WS LINK (if necessary)	SEN TASK	CONFERENCE	H&S - RISK ASSESSMENT
WEEK 1	Assesment: of prior learning: Can I identify different materials and sort them according to a variety of criteria?	Y1- Identify and name a variety of everyday materials, including wood, plastic, glass, water and rock.	Classifying and grouping	Provide a variety of simple materials. Can chn sort into two piles? IE – wood/plastic	Where there any materials that you found difficult to group? Why?	NA
WEEK 2	Can I explore a range of materials in the environment?	Y2 - identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	Cather and record data to help in answering questions	Materials hunt. 1:1 Scribe materials that are pointed out. Picture and sentence Or Use picture cards of different materials and chn have to go and find them on their materials hunt.	What materials do we use most of? Why do you think this is? What material do we use least of? Why do you think this is?	Outside – See CLEAPSS H+S guidance of all things considered.

At St. Joseph's we live, love and learn by the example of Jesus.
Aspiring for excellence for all, together as a catholic community.

Teachers are more aware of the health and safety aspects of Science. We are using CLEAPSS to support and prepare before the lessons so that we are keeping children safe in their lessons with objects/ tools they might not be familiar with.

Now that 'SEN task' box Is on the planning, I am thinking more about what these children can do. Especially my children on he P-Scales and how they are accessing my Science lessons. Y1 Teacher

Science Book Look
17.1.22

Year 3

WWW	EBI	NEXT STEPS
• Good variety of activities • Recording results in their own way • Clear starting point from pre-questions – can see the progress they will make in unit • Progress seen in unit so far • WS skills evident in books • Clear differentiation in lessons	• Make sure LQ in books matches LQ on top sheet plan • Don't need to write up whole experiments	• Choose a strand to write up after an experiment – prediction OR method OR results OR conclusion and really focus on how to write that aspect.

Y3

Book looks have shown that we are seeing progression . Children are able to recall prior learning and have clear starting points to that are built on. Staff meeting has supported teachers with the children's independence recording results in their own way.

Children are more aware of the risk factors in lessons and therefore are safer and have clear expectations about what they should and should not do during practical or hands on lessons.

Children to understand how to use electricity safely.

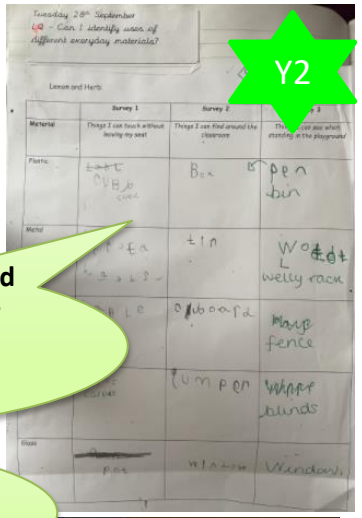
Check there are no open wires

Check that all wires have crocodile clips attached.

All equipment to be tested prior to use by children.

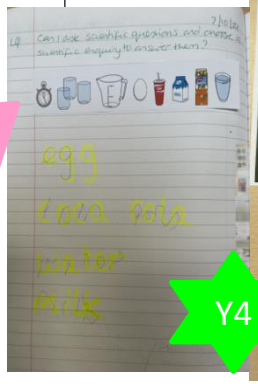
Tailored SEN planning has enabled **all** children to access Science at a level in which is suitable for them allowing them to participate , progress and find out things for themselves.

Links with T.C

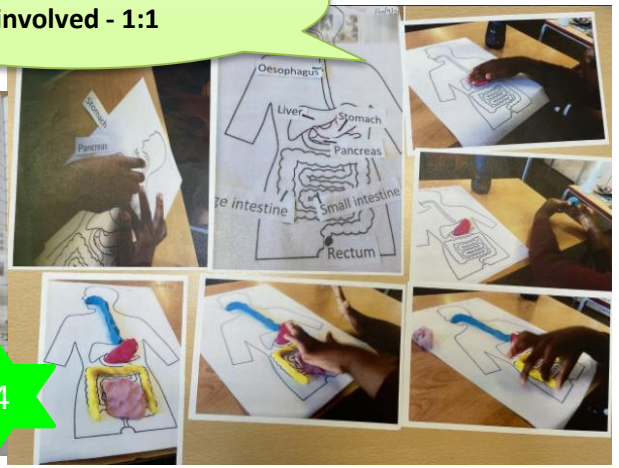


I liked the material work we did looking around the school for materials. I found rock, glass and wood. - Year 2

Child A really enjoys science and gets really involved - 1:1



Y4



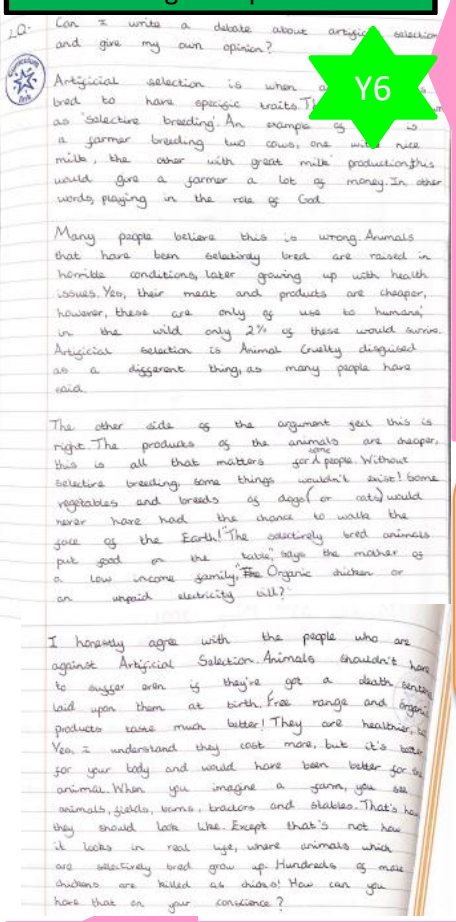
T A.

During staff meetings, every other week, we had a science spotlight where one person would share what worked well in their class that got children talking about Science . The focus was on vocabulary.

Links to T.B And T.C

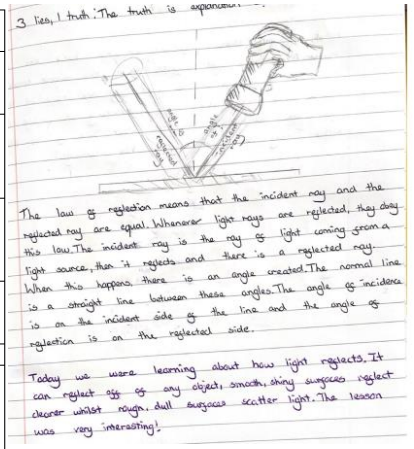
Most staff had not had science training. Science had a staff meeting once per term.

Having science updates has supported teachers in the planning of cross curricular links with English and Maths. Having the HfL genre and topic map has provided wider opportunities to plan meaningful lessons which the children can demonstrate their knowledge in different ways.



Science strategies:

Name	What did you do?
Year 5	Explorify - chn really like the zoom in and zoom out! I find that the children are always shocked at what they object actually is and they always want to do more.
EYFS	Curiosity cube - inside a cube we put different objects in with questions around. Children really like talking about it. The first day chn just look, the second they write their own questions, the third day they can touch and then the fourth day we all share our ideas.
Year 4	Two truths and a lie. Chn needed to talk about which one would be true and the other would be the lie, however sometimes I put some in to try and see if they could see if the lie is actually the lie. Children enjoy trying to prove me wrong or right.
Year 2	Vocabulary battleships. Chn plays the game of battleships were they describe the definition of the word and they have to guess and take out the ship (vocabulary in this case).
Year 5	Definition flip-flap game.
Year 6	Word bubble - have loads of different words on a slide in different colours. Chn would need to pick one of the definitions and describe it to the class and then the class would need to find the words being described. There are three tiers of vocabulary. New tier three words would be picked by the teacher and [illegible]



The law of reflection means that the incident ray and the reflected ray are equal. Whenever light rays are reflected, they obey this law. The incident ray is the ray of light coming from a light source, then it reflects and there is a reflected ray. When this happens, there is an angle created. The normal line is a straight line between these angles. The angle of incidence is on the incident side of the line and the angle of reflection is on the reflected side.

Today we were learning about how light reflects. It can reflect off of any object, smooth, shiny surfaces reflect clearer whilst rough, dull surfaces scatter light. The lesson was very interesting!

I have really enjoyed doing the year 6 word bubble. The children find it really competitive and like going against me. It's a great game even though we are recapping vocabulary or introducing new words.
Y1 Teacher.

SL has started to developed a bank of different strategies from staff meeting which supports other teachers within class which has provided staff with a bank of talking opportunities for children in an engaging way.

I honestly agree with the people who are against Artificial Selection. Animals shouldn't have to suffer even if they've got a death sentence laid upon them at birth. Free range and organic products taste much better! They are healthier, too. Yes, I understand they cost more, but it's better for your body and would have been better for the animals. When you imagine a farm, you see animals, fields, barns, tractors and stables. That's how they should look like. Except that's not how it looks in real life, where animals which are selectively bred grow up. Hundreds of more animals are killed as chicks! How can you live that on your conscience?

Subject leader time

Subject: Science	Subject Lead: KE
Date: 1/03/22	Time: 1.15-1.35

Action:
Drop in in year 5 have shown engaging starters - explorify. Talk was seen thought out the lesson even within input. CT clearly challenging chn's thoughts which made chn more engaged. Debated started – clear behaviour expectations addressed. Pace was effective. Chn will come back to the starter again at the end and address.

Next steps :
- Ensure this can be seen in books – even as a reflection. Chn can share what they thought at the start of the lessons compared to the end.
- When chn using scientific vocabulary, check to make sure all chn are aware with the definition (SEN)

tigtag | Imperial College London

ReachOut CPD

Congratulations to:
Kate Entwisle
from
St Josephs Catholic Primary School

I didn't know about this website. It has enabled me to think of different strategies for teaching a new topic and how it might differ slightly from LKS2 as I am new to KS1. I also like the cross curricular ideas it has given me for the summer term outdoors.
Y2 Teacher

Children are able to discuss science through different opportunities such as drama, explorify etc. Chn are able to talk about and recap previous learning and ask questions that they would like to find out.

Teachers have been using peer drop ins (best practice) and implementing different strategies to support the progression of talk and seeing starting points so that children have the opportunity to back track on what they have already learnt. It is also allowing teaches to find out misconceptions and address on the spot.

Regular CPD during staff meetings and peer observations have given teachers different ideas which can be implemented within their lessons so children are having the opportunities to talk more science.

T A.

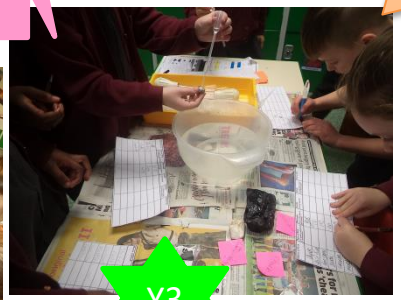
Our unqualified teacher has been supported through internal and external support by PSTT which has developed her confidence of the teaching of Science.

"I am able to now plan appropriately and it has now became a topic and not just stand alone lessons. Children were much more engaged in lessons and my knowledge was better which in turned passed on to the children." Year 3 Teacher.

Unqualified teacher can now independently plan a unit of work knowing where to start and what the end point s are. Teacher also used Reach out CPD to develop knowledge of Rocks and Fossils enabling to teach this topic confidently

Links to T.B And T.C

Children were taught a unit of work with progression which was clearly outlined starting with what the children already knew and what they wanted to find out



Y3

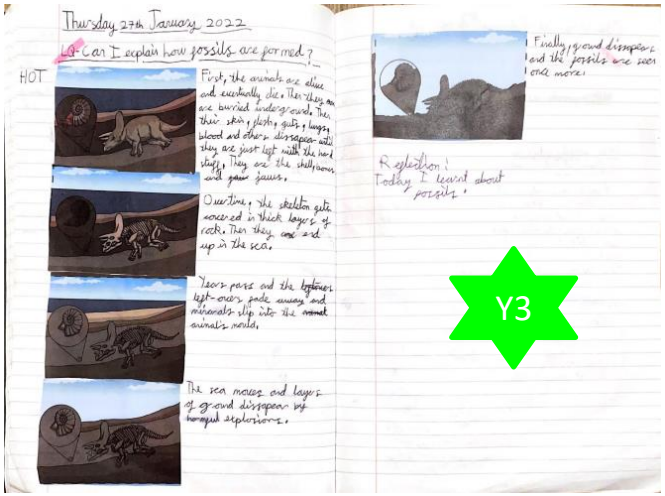
As a Subject Leader and supporting in staff meetings, I now have a better understanding of the Science Curriculum across KS1 and KS2. Having the opportunity to research and support teachers has enabled me to become more familiar with year groups that I have not yet taught and support teachers within science.

HOW DO FOSSILS FORM?

This section focuses on some of the KS2 science content taught through the context of the Jurassic Coast. It links with the history work about Mary Anning and the work in Fossil Detectives.

Key Stage 2	Timing: 2 Lessons	Science, Geography, English

ACTIVITY	LEARNING OUTCOMES	RESOURCES
Fossils of the future Using the picture cards, ask the children to sort the pictures into categories of "will become fossils" and those that will not. Can they guess correctly which ones will fossilise? Distribute the answers, how many did they guess correctly? In most cases, fossils are formed form the hard body parts (teeth, bones, shells) of animals. One exception to this rule are trace fossils. These fossils tell us about how these animals used to live, how they moved or what their environment used to be like. As soon as the mark or burrow has been formed, the feature must be buried immediately in order to preserve its structure. **Ichthyosaur fossilisation cartoon** Distribute the set of 7 cards (with empty speech bubbles) to the children in small groups showing the life story of an Ichthyosaur. Can they put the cards in order of what they think is happening? What do they think the speech bubbles might be saying? Distribute the 7 transparent cards with the speech bubbles. Can the children match what the Ichthyosaur is saying to what is happening in the pictures? Once all the cards are in correct order, read through the story with the children. How much time do they think passes between when the Ichthyosaur dies and when it appears on the beach? (about 180 million years!)	• Express simple views and opinions • Respond to simple questions • Make simple observations • Select basic but appropriate information • Use simple scientific vocabulary • Describe observations • Compare and contrast • Reason • Communicate views and opinions appropriately • Make simple explanations for observations • Demonstrate understanding through explanation • Make links and identify relationships between servations and tcomes e appropriate ientific language	Worksheet 1: Fossils of the future game Worksheet 2: Story of an Ichthyosaur Worksheet 3: Captions for story of an Ichthyosaur (copied onto transparencies)



NEXT STEPS: Concept Cartoons have been trailed in Year 2 and 4 and will be rolled out to the rest of the school next term.

We need to think about our Health and Safety after SL attended an OFSTED CPD session.

Sharing websites such as CLEAPSS and additional information from r4ecent CPD training has enabled me to become a more competent leader, supporting staff with up-to-date information in science.

T B.

We had daily marking before hand and changed our policy so that it is more effective. Meetings with the SENCO and class teachers have enabled us to see what Science looks like for our SEN children and adapt where necessary.

Links to T.A and SLC

Y6

Scientists have to check their tests twice because if they made a medicine that makes kids healthy but makes adults very sick they'd have to check on different conditions to get a best result.

I chose the bar graph because we only did a little bit of exercise which would have made a tiny line graph and it's all based on one thing so a pie chart wouldn't make sense.

Conclusion: My prediction was right! Your heart rate does increase because you need more oxygen for your heart because your muscles need more blood to help them exercise with you. The lowest pulse was obviously when we were resting because we hadn't just done exercise. The time our pulse was highest was when we were exercising the most.

Y2

Scientist Recommendation Slip:

I would recommend that you use rubber

This is because...

Rubber wasn't slippy it was hard to pull I would not recommend tin foil because it will make you slip fast when you are running you can fall, hurt yourself or slip.

Conference:

What is the rubber doing to stop it slipping?

I hope we have helped.

From Adele

When two things start rubbing together it's called friction if you went into the hall you wouldn't slip but if you ride ice skate you will slip. When you are on the carpet you can't really move.

Changing our marking policy has allowed opportunities to deepen and stretch children's understanding about why or how things happen and allow them to think about other concepts that challenge their ideas.

Ensuring that a curriculum is tailored to children will give them the opportunity to be curious about the world in which they live in and engages them allowing to link practical science to scientific ideas.

Book looks in October show that there are good pre-questions that match the national curriculum and progression can be seen throughout topics so that children make progression throughout Science.

When I rub my hands together they get really hot. This is called friction. This is why the grip was better with this material. Year 2

Teacher: Where are dinosaurs?
Child: Dinosaurs are extinct now. They aren't alive.

Ife played with his class magnets. Ife tried to make each negatives together. Ife then said "Magnet pull".

We differentiate lessons to our children as stated in our policy however, for our children with SEN on P-Scales, planning was not evident enough.

Year 4

Roarrr!!!

WWW

- Good variety of activities
- Clear starting point from pre-questions – can see the progress they will make in unit
- Progress seen in unit so far
- WS skills evident in books
- Clear differentiation in lessons
- Conferencing evident and fits into unit

REC

SEN T

L1 – Match the animal with their young and name animals.

L2 - Grow a cress head and watch it grow. It grows quickly so needs to be looked at every day. Ask the children to describe the changes their cress heads go through over time.
Discuss how we are similar to a plant.

L3 - Take part in the class investigation.

L4 - Using toy animals, explain how to pick up or handle it correctly so that neither they nor the animal gets scared or hurt. Explain that they aren't well. What can he do to make them better? **Be a vet for the afternoon.**

L5 - Take a photo of every lunch for a week. Sick in book and discuss if it is healthy or not by putting a tick or cross.

L6 - Do different types of exercise with the class and measure the breaths taken.

L7 - Photos of each stage of washing hand. After ask NAME what he was doing in each picture and scribe.

"Magnets" "pull"
Year 2

Teachers are more aware of the P scales and SEN children that need more differentiation so that every child can access Science tailored to them.

Using the PLAN Knowledge matrices has highlighted and pre-empted misconceptions that pupils may have. This has aided teachers within their planning to ensure effective strategies so that they are pre-empted and explicitly addressed.

Using the new medium term planning has ensured that all children are accessing science and we can see what this looks like in each year group .

T C.

During the summer holiday term, the subject leader did an audit of resources and updated and replaced if broken. As a staff we also looked at planning and added anything that we thought might be necessary for each topic. New books(fiction and non-fiction) were brought and science areas were added to the library with small stations set up in school that were separate to the topic being taught.

Links to SLA / SLB / LC

Science text books and resources are outdated and not have books that cover a range of scientists for children to discover.

Outdoor learning has been planned for in each year group and is now well-resourced. Children are also experiencing Forest School and have first hand experiences of the natural world. It provides them with opportunities to relate real life contexts therefore developing their science capital.

"In EYFS, books were put out about teeth and children were talking about how they look after their teeth."
Reception Teacher

Books are regularly updated which relate to topics taught and also other interesting Science books so that children are immersed and engaged in areas of science outside their lessons.

I counted 8 legs on the octopus.
Did you know that fishes live in the sea!
Nursery

We started this topic with a walk through the school so that we could hear different sounds. I didn't think about how sound were made before like the wind.
Year 4

Provision	Resources	Question prompts/chilli challenge/support ideas	Skills/Area of Learning
Construction	Tyres, shoots, reels, crates, hard hats, blocks Clipboards, caddies and books	What have you made? Can you draw what you have made?	Gross motor skills Imagination Writing
Investigation	Magnifying glasses, Wooden sensory blocks	What shapes can you see? What happens when you use the magnifying glass?	Communication Investigation Shape
Water	Water wall, large buckets, bottles Paint brushes. pots and pans	Which bucket has the most water in it? Can you pour the water slowly? How can you make the water travel fast?	Fine motor Gross motor EAD UW

Teachers are able to plan effective and engaging lessons with resources which are in a working order, are well-organised allowing easy access to equipment which is stored based on curriculum areas..

Children are able to have the opportunity to have hands on practical lessons which provide them with a different context to their learning.

Having resources that are easily accessible makes planning an easy process
Year 6 teacher

Getting outdoors provided different dimension for learning. It provide first-hand experiences of the local environment that allow children to observe science taking place in the real world.
Forest School Teacher

Early years have implemented more opportunities to explore the natural world around them so that chn are exposed to scientific concepts at a younger age in a practical environment so that they develop skills and continue to build on these throughout their school life and in the wider world.

T C.

Our resources had not been update in a couple of years and some essential equipment for topics were broken and unusable.

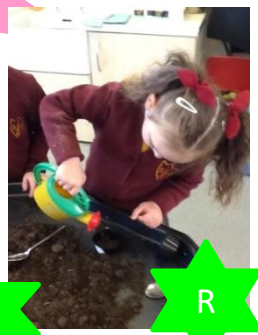
Children are able to have the opportunity to have hands on practical lessons (inside and outside) so that they can answer scientific questions in a variety of ways. In addition, it gives children the chance to test theories for them selves and come up with their own conclusion or find solutions to others.

Links to SLA / LA /SLC

Subject leaders can remind staff that there is equipment for all areas of the national curriculum and can support in the planning process for teachers so that children are experiencing a range of equipment for each working scientifically skill and are engage in the process of science.


Y2


Y1


R


Y3


Y5

We are doing different practical lessons. Some lessons we are researching and others we are doing fair tests. Y6


Y6

I like the reading corner because it the books keep changing.
Year 2

I really like reading about animals and train books
Year 2

Actually doing the investigation makes me remember the lesson more. I remember doing the experiment showing how the digestive system works in Year 4.
Y6

We don't have any additional areas in the school that you can see science.

NEXT STEPS: To plan for more opportunities to explore the environment both within science lessons and outside of them with a focus on KS2.

Having resources that are easily accessible and easy to view makes planning an easy process. I am able to see what we have at a glance and plan accordingly.
Year 6 teacher

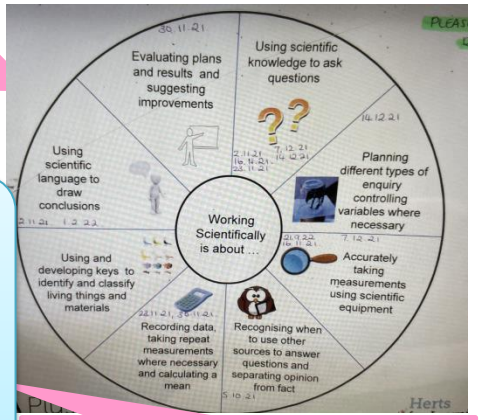
L A.

During the PSQM, we have done a lot of staff meetings, pupil voice and CPD on what Working Scientifically means and how we cover these skills. We are developing a working scientifically map to ensure that all yea groups have enough coverage of each enquiry.

Links to SLA

From teacher voice and pupil voice, it was evident that there were gaps in working scientifically.

Across the school, including EYFS, working scientifically wheels are on the working walls and regularly updated .



Y2

Sorting and grouping

Y4

When my children comes home they are able to discuss what they are doing especially if it is practical.. **Parents of Y5 child**

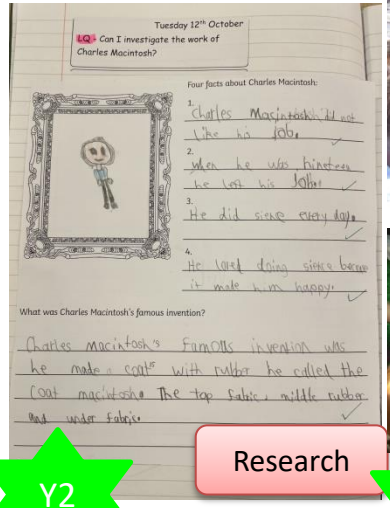
Pupils are now aware of the working scientifically skills and can are able to talk more about them in class so that they can apply there knowledge to different types of enquiry.

We uses these skills to find things outs answers to questions about the world. We use at least one skill in lessons if not more. - Y6

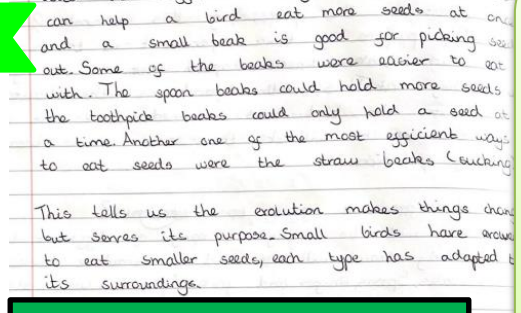
Teachers are now using the medium term planning to ensure working scientifically skills are being planned for and taught

Y1

Using scientific language to draw Conclusions.



Y6



Pupils are now aware of the working scientifically skills and can are able to talk more about them in class so that they can apply there knowledge to different types of enquiry.

We are setting up a science club to start off with Year 2 in summer term. We are going to look at different enquiries to help the lower years understand more about the skills they need. **Year 5 / 6 Science Ambassadors**

Y2

Research

Y3

Carefully observing

Working Scientifically was not visible around the school.

NEXT STEPS: Start to look a way of assessing working scientifically skills
Science Ambassadors to set up science club with KS1.

During a book scrutiny, it shows that children are using different enquiry types and are beginning to embed working scientific skills into their learning.

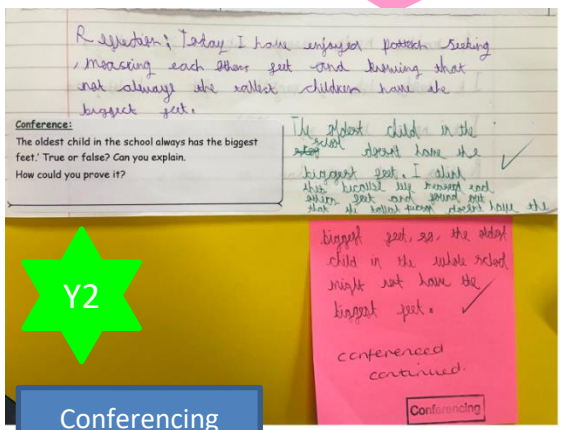
L.B

During PSQM, SLT and SL arranged dates for science to be discussed in staff meetings to discuss AfL strategies, formative and summative assessments.

Links to SLC

Teachers are able to plan for progression so that children can develop on knowledge that they already have. It has also allowed teachers to consider planning for challenges to deepen understanding so that children can think deeper about scientific concepts. It is also a good tool for teachers to address any misconceptions on the spot.

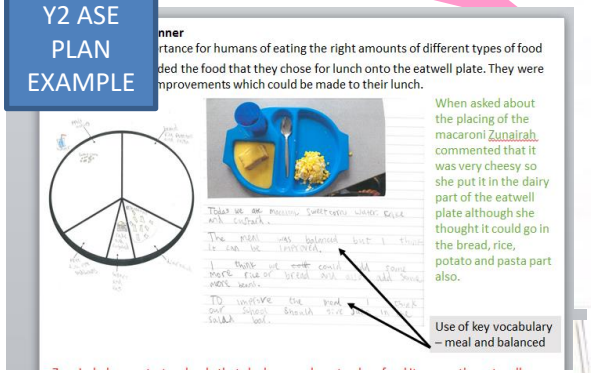
Sharing ASE PLAN in staff meetings have shown teachers what the expectation is for children working at age related expectation. Teachers are using this to support their planning for outcomes.

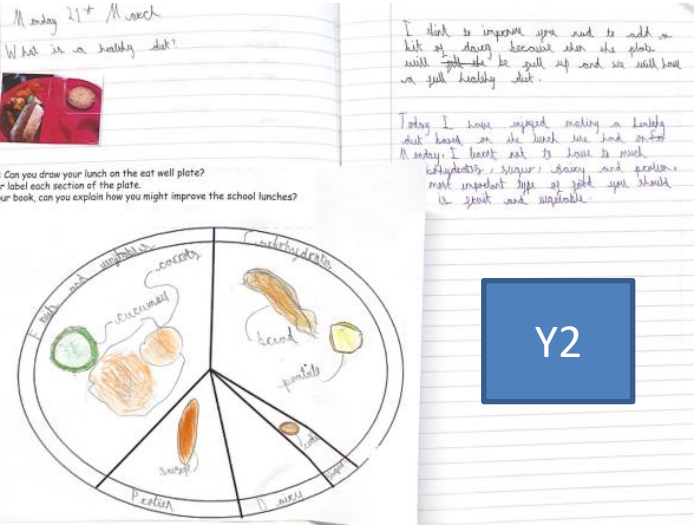


Y2

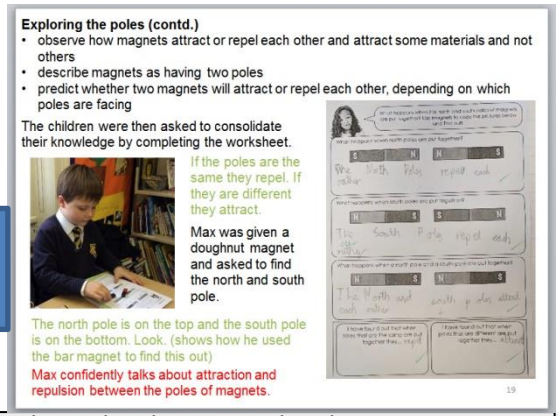
Conferencing

Y2 ASE PLAN EXAMPLE

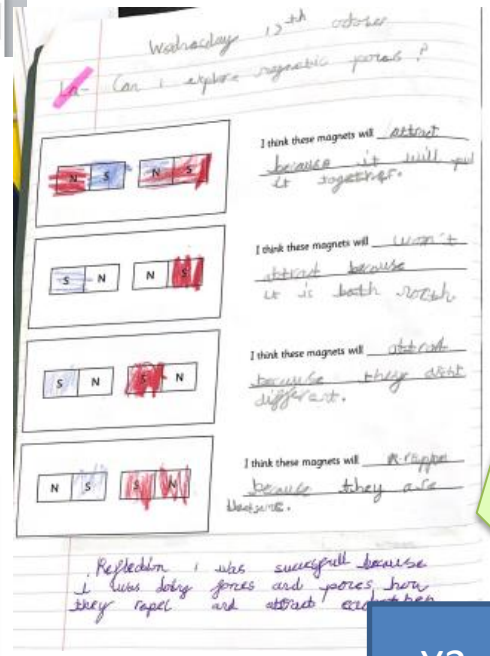




Y2



Y3 ASE PLAN EXAMPLE



I played with the magnets before and found that you need a S+N Or N+S These attract. The other repel.

Y3

Y3

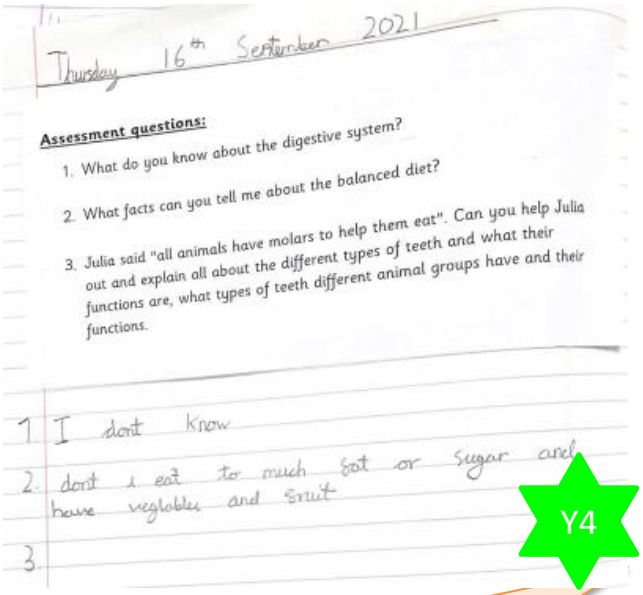
Before PSQM, we didn't have an assessment structure that was fully embedded for science knowledge or working scientifically. We do not have staff meetings for science moderations.

As the subject leader, I can clearly see stating points that link to the national curriculum through book looks which is allowing for progression throughout each topic understanding where children are starting and what their journey is going to look like.

L.B

During PSQM, SLT and SL arranged dates for science to be discussed in staff meetings to discuss AfL strategies, formative and summative assessments.

Links to SLC



Thursday 16th September 2021

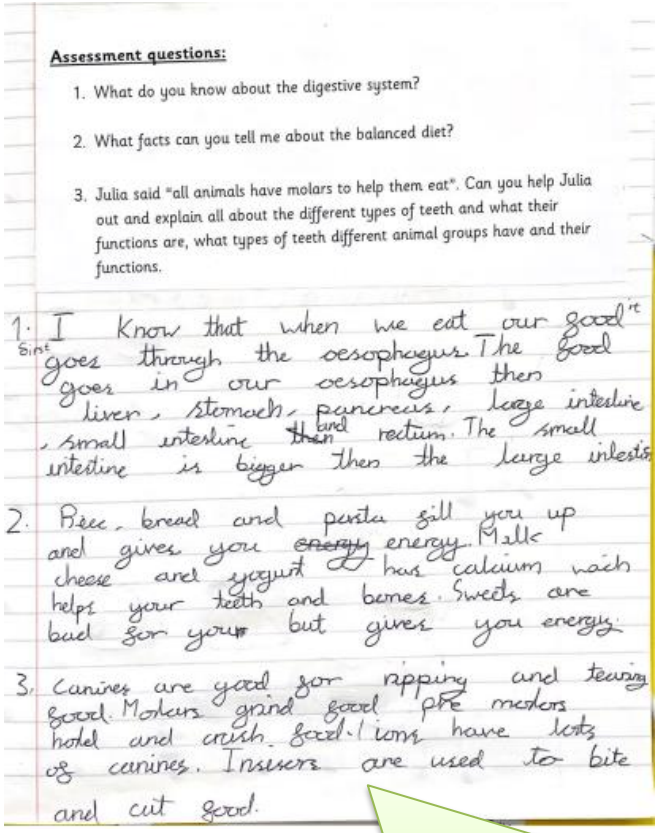
Assessment questions:

1. What do you know about the digestive system?
2. What facts can you tell me about the balanced diet?
3. Julia said "all animals have molars to help them eat". Can you help Julia out and explain all about the different types of teeth and what their functions are, what types of teeth different animal groups have and their functions.

1. I dont Know
2. dont i eat to much fat or sugar and have veglables and fruit
3.

Y4

"I like looking at the beginning questions at the start in comparison to the end because I can see what they children have learnt and see their science journey. –
Year 3 Teacher



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1. First I Know that when we eat our food it goes through the oesophagus. The food goes in our oesophagus then liver, stomach, pancreas, large intestine, small intestine then and rectum. The small intestine is bigger then the large intestine
2. Rice, bread and pasta fill you up and gives you ~~energy~~ energy. Milk cheese and yogurt has calcium wich helps your teeth and bones. Sweets are bad for your but gives you energy.
3. Canines are good for ripping and tearing food. Molars grind food pre molars hold and crush food. Lions have lots of canines. Insesors are used to bite and cut food.

I can see that I have learnt so much more now because I was able to answer the questions in much more detail whereas before I didn't know the answer. Y4 child

Next step : We have set a date for summer 1 for a external moderation with another local school and as an academy.

Concept cartoons as a formative assessment tool

Chn are now using self assessment to evaluate learning against the success criteria and also their reflections.

Working scientifically links:	Achieved
Using scientific language to draw conclusions	
Success Criteria	
I can explain how light is reflected.	✓
I can use my understanding of reflection to create a working periscope.	✓
I can explain how the periscope allows me to see objects I would not usually be able to see.	✓

Y6

I know what things I need to improve on and can explain what I have learnt. Y5 child

Year 3

WWW

- Good variety of activities
- Recording results in their own way
- Clear starting point from pre-questions – can see the progress they will make in unit
- Progress seen in unit which is evident in pre and post questions.
- WS skills evident in books
- Clear differentiation in lessons

Pupils are able to identify what they already know about a topic and ask questions that they would like to find out so that they are engaged within a topic but also curious about the wider world.

L C.

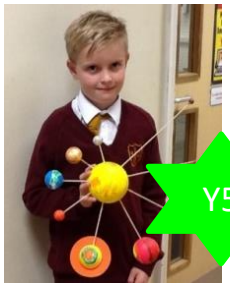
Lockdown gave the children a great opportunity to be immersed within science which we have continued in school. We have provided children with opportunities to look at science in the wider world with current scientific news and to get involved.

Links to SLA

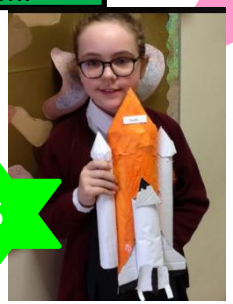
Other than Science lessons, children didn't complete or interact with science regularly outside of the classroom.

Teachers are giving children a science homework, which may or may not link to topics so that teachers are exposing children to the wider world and emerge them in this awe and wonder experiences.

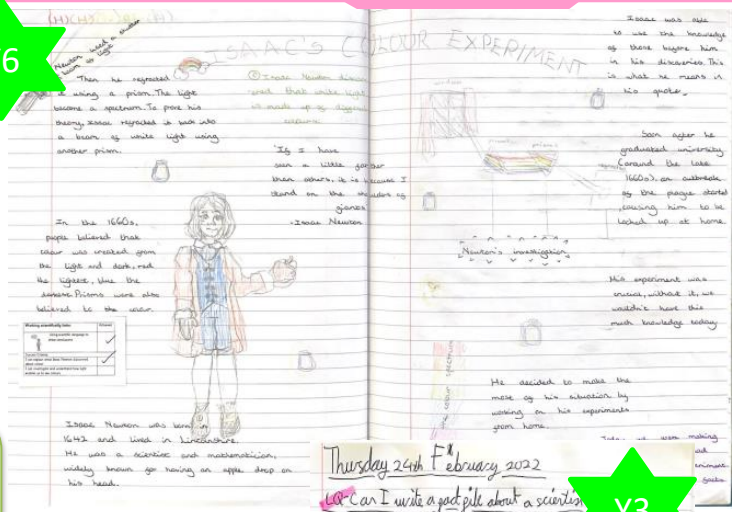
It is significant that children know that science has a history and that it is always changing. Learning about different scientists develop children's engagement and support abstract ideas . This supports their understanding of different scientific jobs and can relate these to real life and the world around them.



Y5



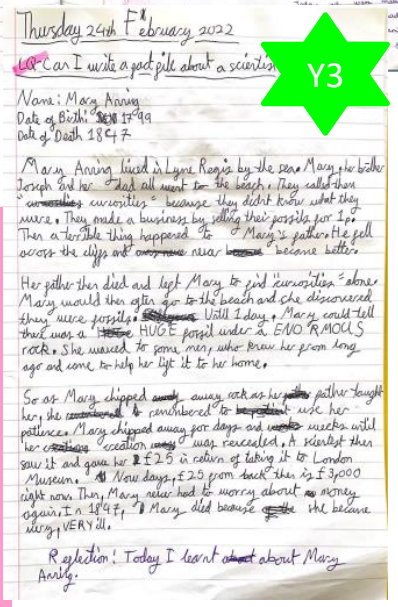
Y6



Raising the engagement of parents has allowed parents to engage with their child's learning and recognise that Science is a core subject and has the same value as English and Maths.

I enjoyed making my project. I learnt a lot about space like the order of the planets and that Jupiter is the biggest planet in our solar system and has more moons orbiting it than any other planet!
Year 5 child

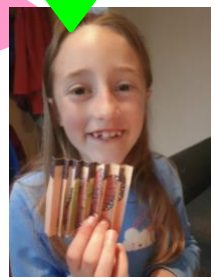
Y3



My children liked doing the activities on the science magazine because it was interesting and different to what they were doing in class. They also enjoy making things so this was perfect for them!
Rec / Year 3 parents

Children have the opportunity to see science out of context with magazines, and topics outside of the curriculum and enjoy different areas of science so that they can engage in the wider world.

Y3



After mapping out different scientist, teachers are now more aware of the importance of children learning about scientist so children feel represented through different genders and ethnicity. Children feel more inspired in science as they are able to see 'themselves' within their learning and the content covered.

L C.

Children participated in a whole school competition. Over 120 children were involved in the competition therefore raising the profile of science.

Y5

Y3

Y1

Parental involvement was increased with this homework as it gave parents the opportunity to have a discussion about what satellites where and what they are used for. Spellings were also focused on Science.

Children were able to interact with animals that had come from a farm. Children had a different experience due to COVID restrictions not being able to go on school trips.

Links to SLA

I enjoyed going in the ambulance because I haven't been in one before. I got to try on different things. I learnt that you have to know about how to treat people but also that a a lot of maths if you want to be a paramedic.
Year2

Y3

Y2

I hope that Science homework continues in the future as it is a topic my child engages with more than English and Maths.

Parent

Due to COVID, I haven't been able to see a lot of science other than what goes on class news. This was a great insight to the science teaching and learning at St Joseph's.
Discussing the vocabulary from the spelling list has shown me how much my child has learnt.
Parent of a child in Y4

Y5

Y1

NEXT STEPS:
Further develop Science capital across the school

Inviting different professions from a science background show children the different science professions that they could do in the future. This has given the children an insight into different sciences aspirations and the work that it entails so that they are enthused about science professions and consider them.

WO A.

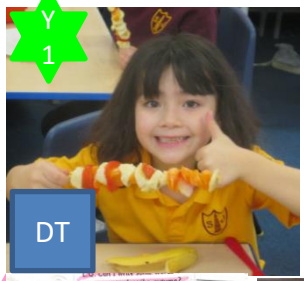
Making links with other subjects has been a long journey and we are currently starting to see a balance between English and Science. We have been mapping out where cross curricular opportunities can occur ensuring that it provides the opportunity for children to show their understanding both written and verbally.

Links to LC

Due to COVID restrictions, developing enrichment opportunities have been limited due to strict COVID rules within school.

Teachers have been provided with different links between Science and English genres. This has supported the planning of science to ensure that cross curricular links have been made and are meaningful. It has also suggested misconceptions that have arisen from sustained writing where teacher have been able to address quickly and efficiently.

Y1



DT

N

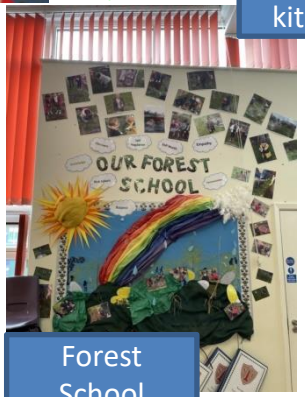
Mud kitchen

Cross curricular learning offers the opportunity to demonstrate skills from other subjects and apply this in different contexts therefore, leading to further discovery and deepening understanding of different aspects of the curriculum.

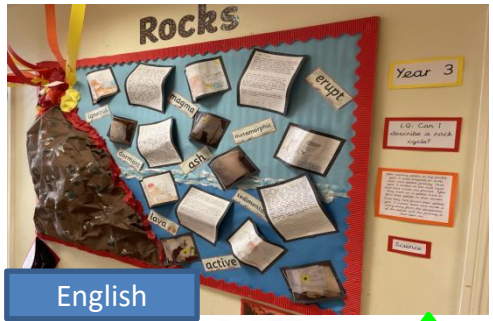
Pupil are able to show science knowledge through English skills. Pupils are also showing a consistent awareness of key vocabulary taught within science lessons and applying it to other subjects.

Y1

Computing



Forest School



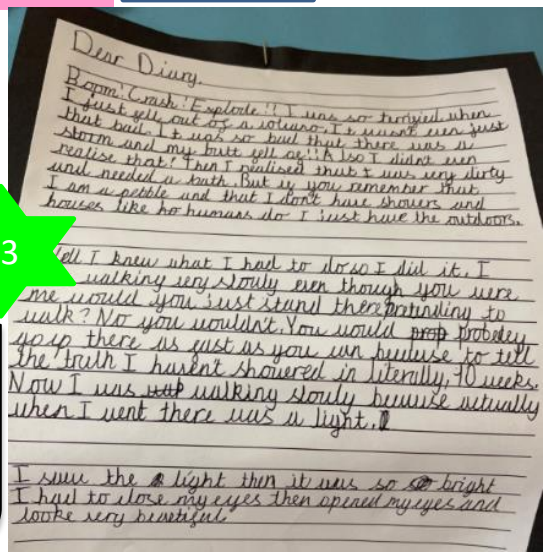
English

After the children learnt skills in other subjects like Maths, we are able to transfer these into other science related activities such as plants. We are growing our own plants at home and have been able to apply these skills.

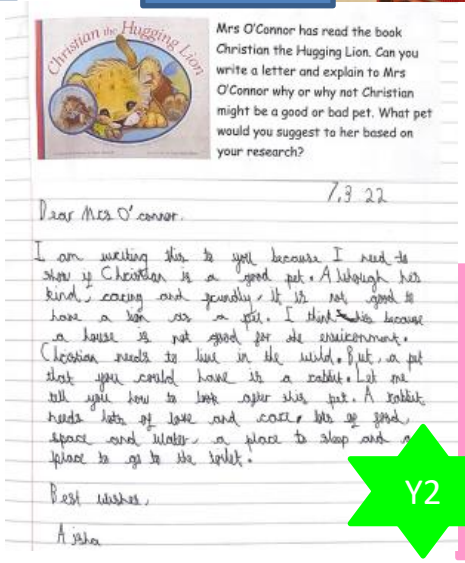
Parent Voice – Year 3

By mapping out other science to other areas of the curriculum science is being recognised as a core subject.

Y3



Y3



Y2

Next step : Develop stronger links within mathematics

Through book looks, it is evident that Science links have become more cross curricular with reading and English . This has provided English with a purpose for writing. Using high quality science books as part of reading in English reinforces and broadens science learning.

WO B.

Aspirations day has raised aspirations within Science and children are starting to consider careers in science. Teachers are mindful when using explorfiy by providing more information about the different skills children would need for particular careers.

Y3

I came dressed as a palaeontologist. This is a person who looks at fossils. I learnt about fossils in year 3 and this is when I thought that this was a really fun job. I also learnt about a lady called Mary Anning which I really liked doing because she had the job I would like to do. Ava – **Year 4**

Y6

Science has some links to other subjects but it isn't clear.

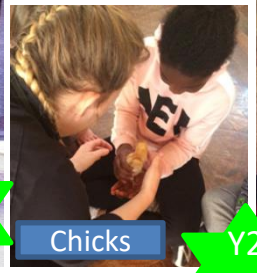
I enjoy doing the bird watch. I haven't seen some of these birds before. – Y2

We took part in the RSPB Great British Bird Watch. Lots of children took part in each year group and it was an opportunity for parents to get involved in a whole school activity so children can see science at school, home and all around them.

"Taking part in the innovative Science lessons in St Joseph's has instilled a sense of curiosity and determination in my children, to realise the reasons for things happening in the world around us." **Parent of year 4 and 5.**

During INSET, staff received copies of links between topics and writing genres. Set time has been given that every 4 weeks an English sustained write will have a link with science.

Links to SL.A



Chicks

Y2 /3

We learnt about the different types of life cycles and we watched the chicks hatch and kept them for a couple of days to observe the growth. We watched the life cycle of chickens and then we sore more photos of them when they were grown up into a full chicken in the garden. **Year 3**

Fossils workshop

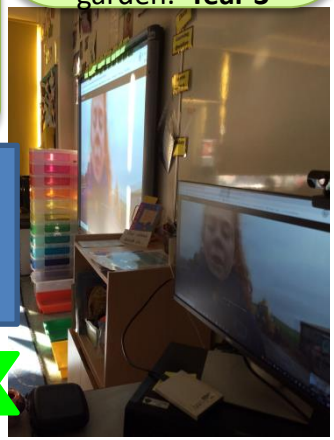
N/ R

We were digging for fossils! REC

Zoom call with Farmer Amy

Y2

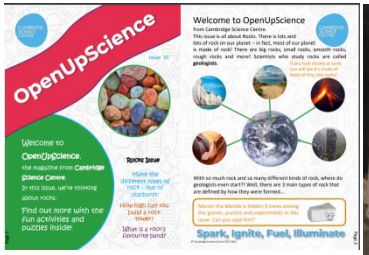
All children have had the opportunity to have a discussion with a farmer online. Children were able to find out about how science is incorporated into the farmers job and linked to the wider world such as COP26. This has given children the opportunity to ask questions about high profile science topics and find out more information on them.



WO B.

During BSW, children had the opportunity to have a forensic science workshop. This has engaged all children from Y1 to Y6. Children have learnt about a new area of Science that some said they would consider as a potential career in the future.

I liked looking at the finger prints. I didn't know everyone's prints were different. When I'm older I could do this job.
Year 1



Science Ambassadors have led their first assembly introducing the whole school homework. As a result we have had applications from Y3 to also join them promoting science .

Links to SL.A

Optional science investigations on class dojo have increased parental engagement within science. This has developed some children's love for science as they are completing investigations which they might not have the opportunity to do in school.

I like STEM days because I have the time to work things out by actually doing the project by myself. I have time to think through what might work and test it out. **Year 6**

Having termly STEM days have enabled children to be flexible in their thinking, make connections, challenge ideas and evaluate information.

Science Ambassadors are more confident with the working scientifically skills , as a result they are going to support the younger years and set up their own science club to show different year groups different enquiries and skills they can do with support from Subject Leader.

We really want to set up our own science club to do experiments with the younger years.
Isabella – **Year 5**

STEM has enabled us to link other skills with a hands on approach which children remember because they are doing and are independently problem solving.

Next Steps: Competition within our CAT including all the primary schools and involvement with the secondary school Although parental involvement with science has increased we would like to do some science sharing days.