

Science PSQM

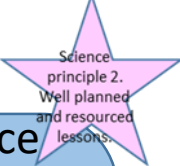
Evidence and impact power-point

Blue boxes explain the evidence obtained to meet the area of the PSQM.



The yellow boxes explain the impact that this has had on teaching and learning at Wirksworth Junior School and its community.

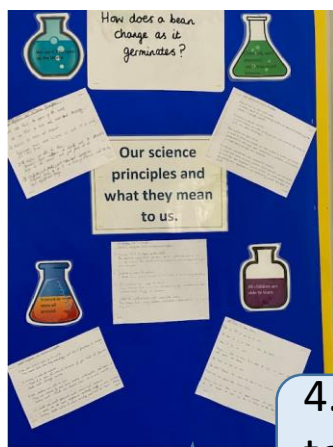
Subject leadership 1: There is a clear vision for the teaching and learning of science.



2. Evidence staff identified what this will look like in our science lessons. This became our success criteria.



1. Evidence: science principles created by staff and pupils. These are shared on display walls and on the school website. All stakeholders know the vision

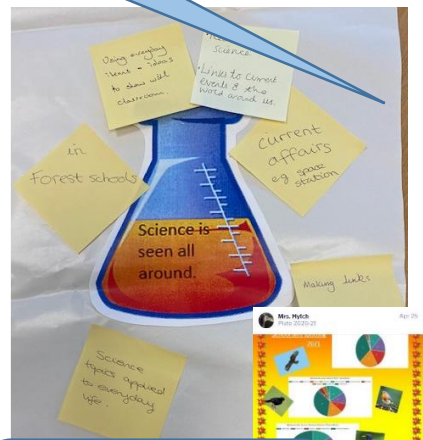


4. We use ICT to open up the world.

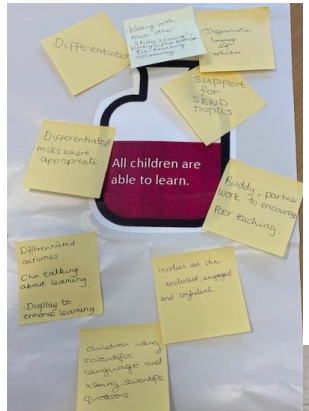
3. Evidence: pupil display board with big question and what the principles mean.



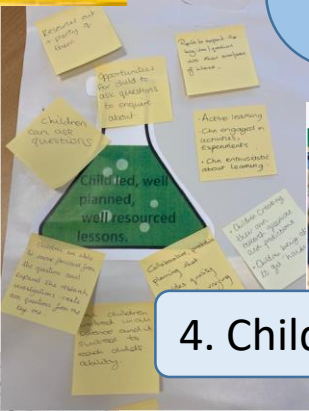
4. Science is seen all around.



4. All children are able to learn.



4. Evidence of principles in action.



4. Child led well planned lessons.

The impact on teaching and learning is we are now more likely to be successful in reaching our goals if we all know what they are and all share them. Planning is now centred around the pupils' interests and needs. Throughout the power-point, evidence of the principles can be seen in the pink stars.



Subject leadership 2 : There is a shared understanding of the importance and value of science.

Science principle 4. All children are able to learn.

Science principle 2. Well planned and resourced lessons.



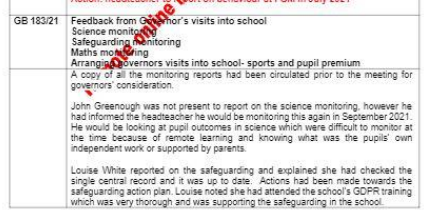
6. Evidence: science displays show science vocab and what our science principles are.



7. Evidence: science principles and assemblies shared with parents. This can be found on the school website.

2. Evidence: assemblies produced which are shared with parents. Science is being discussed at home.

1. Evidence: two science governors on our governing board ensuring science is a priority.



5. Science is on the School Improvement Plan, which is monitored by SLT and governors.

9. Evidence: science work shared with parents through Class Dojo.



8. Evidence: science element on the all newsletters sent to parents, showing curiosity in our learning.



4. Pupil Science Ambassadors in every classroom with a job description promoting science.

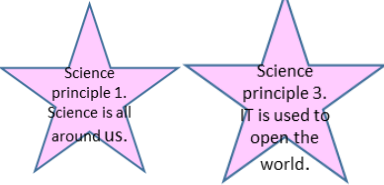
3. Evidence: display boards in all classrooms and around school, based on science. Science is seen as important to everyone in school.



Area	Lead	Start	End	Frequency	Impact
1.1	Senior Leaders	2021	2022	Quarterly	Staff training plan
1.2	Senior Leaders	2021	2022	Quarterly	Staff training plan

The impact on teaching and learning is that everyone knows the aims and vision of science. They understand what this will look like so they can: plan, support and learn with these principles in mind.

Subject leadership 3 : There are appropriate and active goals for developing science.



2. Evidence: Governors are monitoring science across the school, the actions and progress towards the School Improvement plan.

Wirksworth Junior School
Governors' monitoring Summary Report

Monitoring Activity: Discussion with Science Subject Leader on progress with Key Issue 4: To improve the quality of leadership and management in Science and Foundation subjects and ensure programmes of study are carefully designed and monitored to improve outcomes

Date of visit: January 14th 2020 **Report by:** Kris Scheinkonig

- Background/Context:**
- One of the key drivers in the SIP to improve the profile and provision of Science, is achieving the Primary Science Quality Mark (PSQM).
 - This is a year-long CPD programme to help schools achieve the quality mark by developing effective leadership. Subject Leaders receive training and support via a portal, mentorship and attending training sessions.
 - There are 13 criteria schools need to meet to achieve the quality mark and these focus on leadership, science teaching, science learning and the link between science and other curriculum areas.

- Progress so far:**
- After discussion with colleagues, interviews with pupils and a book trawl, the SL has identified 17 targets for improvement.
 - Key targets include: the introduction of different types of scientific enquiry into teachers' planning, improve assessment procedures, provide more opportunities for pupils to be involved in their own learning and more Science activities outside the classroom.
 - Action plan completed and evaluated by mentor. The school is moving into the implementation stage.

- Evaluation:**
- The PSQM provides a clearly defined supportive framework with significant potential to improve the provision of Science in the school
 - The SL is enthusiastic about the process and through the audit has identified key areas for improvement
 - Mentorship through the implementation stage will be invaluable as will the opportunities to reflect jointly on impact.
 - Planning for the Science Week is underway. Grants successfully applied for from STEM and science ambassadors identified.
 - Interesting strategies discussed with SL to involve pupils in their own learning using a range of ICT resources to make Science relevant to pupils

5. Say one thing you would like to improve about your science lessons:

22 Responses		
6	anonymous	multiple lessons on one subject/more in depth
7	anonymous	nothing
8	anonymous	I like them the way they are
9	anonymous	Do more research on computers about the subject of the lesson
10	anonymous	no writing
11	anonymous	To understand the work better
12	anonymous	More hands-on or practical science experiments
13	anonymous	I would like to do more on the computer
14	anonymous	Have more experiments
15	anonymous	I would like to have more practical science lessons.
16	anonymous	the IT
17	anonymous	Do experience using different chemicals.
18	anonymous	less writing

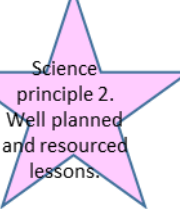
3. Evidence: pupils identified areas they would like to continue to improve in their science lessons. (January 2021).

1. Evidence: PSQM action plan makes SMART targets which have been achieved moving teaching and learning on in science.

SUBJECT LEADERSHIP: PSQM			
SL1: There is a clear vision for the teaching and learning of science			
<ul style="list-style-type: none"> • A clear vision for science is established. • School principles for science teaching and learning have been developed by teachers and children. 			
NEEDS ANALYSIS			
Where are we starting from?	How do we know?		
<ul style="list-style-type: none"> • Science is being taught weekly at school. • There isn't a clear vision for Science in school yet established. • Children are not involved in developing school principles 	<ul style="list-style-type: none"> • Book trawl. • Talking to teachers about Science teaching in school. • Pupil Voice 		
ACTIONS NEEDED			
What do I need to do to achieve the indicator?	Who?	When?	
<ul style="list-style-type: none"> • Set up School Principles and vision with Teachers at Staff Meeting. Completed • Meet up with (Ctri) - lice to discuss Principles. Completed • Display Principles in classrooms and talk in the staff meeting about how to use the principles in the classroom. Completed • Set a review date of May 2020 to review the use and effectiveness of the principles in the classroom. Completed 	SL SL All staff SL SL	Dec/19 Jan/20 Jan/20 May 20	
IMPACT ON TEACHING AND LEARNING			
What changes will I see?			
Teachers will feel more confident about teaching Science and allowing children to have more involvement in how they are taught. Children will develop a confidence in Science through being allowed to have more of a say in the way that they are taught.			

The impact on teaching and learning is teaching staff now have a success criteria would look like our science curriculum to look like. All stakeholders understand the aims and principles and the direction the curriculum is moving towards to have an exciting, well planned lessons, accessible to all.

Learning 1: There is a shared understanding of the purpose and process of science enquiry



4. Evidence: pupil science ambassadors in each class with job descriptions and promoting science to others including the feeder infant school.

The role of the Class STEM Ambassador

- To promote the love of science and share this with others in the classroom, school and community.
- Help others with their science learning.
- Bring interesting science knowledge to share with others.
- Promote the 4 key principles of science:
 - All children are able to learn in science lessons no matter what their ability. Equal access/fairness.
 - To know that science is seen all around us.
 - We use IT to open up the science world.
 - Science lessons are child led, well planned and well-resourced.
- To know what is good about science at our school.
- Work with the science coordinator to make science lessons even better at Wixworth Junior School.
- To challenge misconceptions of who scientists are and what they do.

Creative, Caring, Curious. We make every moment count.

Monday 29th March 2021
 Walk to compare how things move on different surfaces.
 I will test rough wood, soft wood, carpet and fabric.
 I think carpet will create the most friction.

1. Evidence: Comparisons

Which surface do you predict will create the most friction for that car? carpet

Measure how high the ramp needs to be for the car to start to move on each surface. Record your results below.

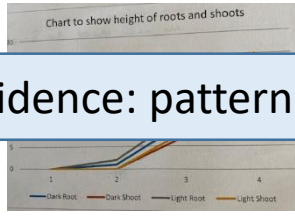
Surface	Height of ramp when car starts moving
carpet	77ms
rough wood	67ms
soft wood	44ms
fabric	46ms

1. Evidence: Children use different enquiry types to answer scientific questions about the world around them, which is seen in the books.

Solid	Liquid	Gas	Transparent	Opaque	Translucent
wood, brick, stone, marble, aluminium	water, milk, wine, beer, orange juice, honey	air, smoke	clear plastic, water	black, brown, red, green, blue, yellow, grey, white, black, brown, grey, white	frosted glass, tinted glass, wax paper

1. Evidence: groupings

1. Evidence: pattern seeking



roots

Week	plant in dark	plant in light	plant in light
week 1	quantitative data No visible roots visible shoot	quantitative data Bean has swollen and a beginning to crack	quantitative data Bean has swollen and a beginning to crack
week 2	shoot: 5cm root: 1cm	shoot: 5cm	shoot: 5cm
week 3	shoot: 3cm root: 3cm	shoot: 5cm	shoot: 5cm
week 4	shoot: 7cm root: 4cm	shoot: 5cm	shoot: 5cm

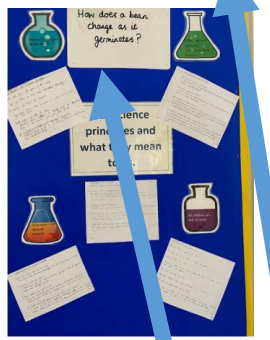
1. Evidence: Changing over time

Conclusion
 However, of our plant has died yet, whilst at our plant was less likely to die because it was in the dark. This happened because, plants need light to photosynthesise.

1. Evidence: secondary data

We learned about the gravitational field strength on different planets. On Jupiter it is really high so a cube of pineapple will fall really heavy. But on Mercury, gravity is really low.

Planet	Gravitational field strength	Weight of pineapple
Mercury	0.378	0.007
Venus	0.885	0.017
Earth	9.8	0.17
Mars	3.71	0.07
Jupiter	24.79	0.48
Saturn	9.8	0.17
Uranus	9.8	0.17
Neptune	11.0	0.20



The impact on teaching and learning is that there is now a clear plan on when and how science investigations is taught across the school. Planning is sequenced more carefully for pupils to embed their science knowledge and they are becoming more independent by asking their own questions.

3. Evidence: Big science question shared on display wall with children. Pupils asking own questions about the topic which they answer after the topic.

2. Evidence: Teachers mapped the science investigation skills across the school.

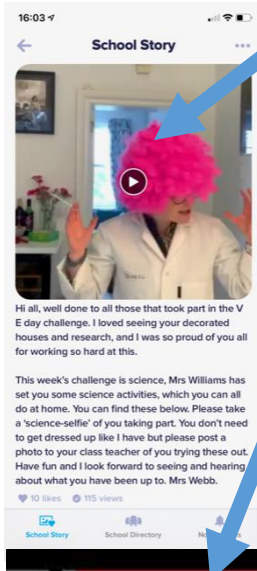
Working scientifically long-term plan

Investigation type	Year 3/4 Plan A 2020 to 2021 (Year 3 skills)	Year 3/4 Plan B 2021 to 2022 (Year 4 skills)	Year 5/6 Plan A 2020 to 2021 (Year 5 skills)	Year 5/6 Plan B 2021 to 2022 (Year 6 skills)
Comparative and fair testing	Light, Autumn Term 1 Plants, Autumn Term 2	States of Matter, Autumn Term 1 Sound, Autumn Term 2	Properties of materials and changes of matter, Autumn Term 1	
Identifying, classifying and grouping	Forces and Magnetics, Spring Term 2	Animals and digestive systems - food chains, Spring Term 2	Forces, Summer Term 2	Living things and their habitats, Spring Term 1 and 2
Observing over time	Plants, Autumn Term 2		Using things and their habitats, Summer Term 2	Light, Autumn Term 2
Pattern seeking	Animals including Humans, Summer Terms 1 and 2	Sound, Autumn Term 2	Earth and Space, Autumn Term 2	Animals including Humans, Autumn Term 1
Research using secondary sources		Animals and digestive systems - food chains, Spring Term 2		Evolution and inheritance, Summer Terms 1 and 2. Electricity, Spring Term 1. (made this is taught in year 6)

Creative, Caring, Curious. We make every moment count.

Learning 3: There is a commitment to developing all children's science capital.

Evidence 1: challenges presented to pupils and parents during lockdown. Pupils were asked to take science selfies taking part in science.

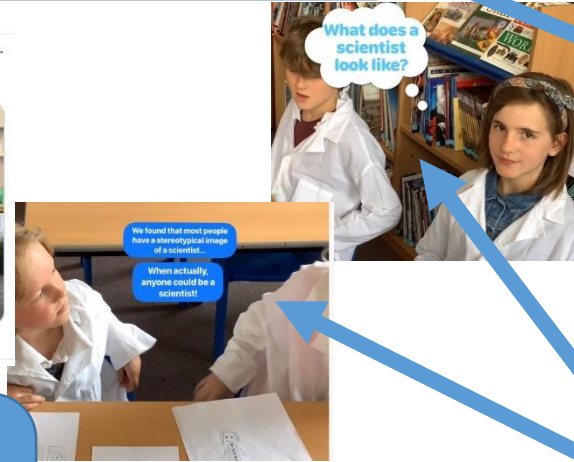


Science week in school. As well as exciting activities happening all week, there is also a science competition in school with prizes. Children have to name all the scientists on this sheet. This must be handed in to the pupil science ambassadors in the classroom by Thursday morning, where we will mark these and put them into a prize draw to win six fantastic prizes. Have a go, how many can you name? You may win a prize.



Evidence 4 : science week in school: 2019, 2020 and 2021.

Evidence 2: questions posed to pupils about science that is in the news. Display around the school and in assemblies.



Science principle 2. Science is all around us.

Science principle 3. It is used to open the world.



Evidence 3: pupil science ambassadors have been challenging what a scientist looks like.



The impact on teaching and learning is children are aware that science is all around them, which is one of our core science principles. Pupils say that science is enjoyable and are taking part in this at home as well as in school. They see science as a potential career direction for them.

1. Subtle that some people believe... 2. Write a list of 10 things you can do at home or in school to help you understand science better. 3. Write a list of 10 things you can do at home or in school to help you understand science better.	• Pupils will be given a list of 10 things to do at home or in school to help you understand science better. • Children are encouraged to think of ideas to understand they are important or interesting. • Write a list of 10 things you can do at home or in school to help you understand science better. • Write a list of 10 things you can do at home or in school to help you understand science better.	• Paper clip • Paper cup • Paper plate • Paper towel • Paper napkin • Paper bag • Paper envelope • Paper card • Paper folder • Paper bag
4. Complete a grid of 10 things you can do at home or in school to help you understand science better. Write a list of 10 things you can do at home or in school to help you understand science better. Write a list of 10 things you can do at home or in school to help you understand science better.	• Pupils will be given a list of 10 things to do at home or in school to help you understand science better. • Children are encouraged to think of ideas to understand they are important or interesting. • Write a list of 10 things you can do at home or in school to help you understand science better. • Write a list of 10 things you can do at home or in school to help you understand science better.	• Paper clip • Paper cup • Paper plate • Paper towel • Paper napkin • Paper bag • Paper envelope • Paper card • Paper folder • Paper bag
5. Describe magnets, how they work and what they can do. Write a list of 10 things you can do at home or in school to help you understand science better. Write a list of 10 things you can do at home or in school to help you understand science better.	• Pupils will be given a list of 10 things to do at home or in school to help you understand science better. • Children are encouraged to think of ideas to understand they are important or interesting. • Write a list of 10 things you can do at home or in school to help you understand science better. • Write a list of 10 things you can do at home or in school to help you understand science better.	• Paper clip • Paper cup • Paper plate • Paper towel • Paper napkin • Paper bag • Paper envelope • Paper card • Paper folder • Paper bag

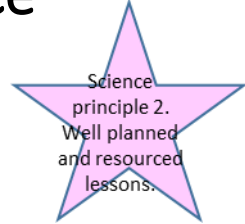
Evidence 5: Planning shows use of IT to make video links outside of school.

Teaching 1 : There is engagement with professional development to improve science teaching and learning

Evidence 4: science lead engages in training and independent learning.

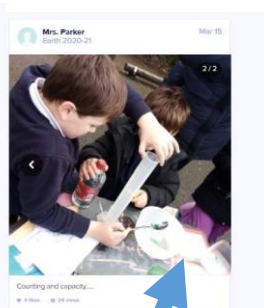
Evidence 5: science coordinator working with the infant school.

Evidence 1: cluster of schools science day training on using STEM ambassadors and creating challenges in the classroom, led by the subject lead.



PSQM subject lead and staff CPD log

Date	Activity	Who was involved?	Impact
Oct 2019	Subject lead attended the PSQM	SL	SL aware of the expectations in workload and what the vision of the training is.
Oct 19	SL discussed the limits of science in the SIP	SL and Head	SL aware of the SIP and the actions taken will be a whole school vision.
Oct 19	SL wrote subject action plan	SL	Whole SMAR targets for Action plan to ensure that actions were clear, measurable and able to be evaluated for impact.
Oct 19	SL shared science action plan with head	SL and Head	Discussed self-evaluation and agreed on current strengths and development needs for science. Identified specific targets for School Development Plan which will ensure whole school working towards same aim.
Oct 19	PSQM task for pupil voice	SL	Reflected on activity to plan own pupil voice interviews.
Oct 19	Conducted the pupil voice interview	SL	Children given opportunity to voice their opinions about science and insight gained into how children honestly feel about their science lessons. School council given responsibility. Children's views recorded and fed back to teachers to reflect on in staff meeting; they contributed to science principles.
Nov 19	Staff meeting lead by SL	Whole staff	Teachers are aware of PSQM journey. All teachers involved in creating new science principles; agreement on what makes good science 1 and 1. Principles considered when planning and teaching science. Teachers are aware of the term 'Science Capital' and beginning to consider how to promote this in lessons and planned activities.
Dec 19	SL applied for science grant	SL	Applied for grant to support purchasing of science resources.
January 2020	SL and governor	SL and governor	Governor monitoring the impact of training and the actions planned to take place.
February 2020	SL lead on science week in school	All staff	Successful science week which promoted science across school. Pupils and parents aware of the importance of science. STEM ambassadors in school.
May 2020	Staff trained	All staff	Staff aware of <i>Engage</i> and how they can use pupil centred activities.
June 2020	Audit of science resources	SL	School aware of resources and what needs to support teaching and learning in the classroom.



Evidence 3: pupils are now more actively engaged in lessons because of teachers' planning this into lessons.

From: Isabel Webb <[redacted]>
Sent: 25 January 2021 16:52
To: Catherine Birch <[redacted]>; Rachel Emery <[redacted]>
Subject: Science resources.

Great meeting you guys today. Here are the resources.
Please let me know if I have missed anything.
Regards,

Isabel Webb

5 Identify patterns in data and present findings.

Is there a pattern between the size of a planet and the time it takes to travel around the sun?

Draw your conclusion from your own graphs and compare their findings. Report and discuss scales and what patterns they can see. Review how well you are doing. Some may have to present and set up for the next lesson.

Answering the big Q for the term.
Data lesson – look at the secondary data on size of planets and time taken to orbit sun. Model how to identify patterns.
Can we plot this data on a scatter graph and identify patterns? Discuss scales and how to plot. Use graph paper. (Discuss with other 2 teachers so we are all doing this in exactly same way.)

I can draw valid conclusions from data about patterns and recognise their limitations.
I can report cause and effect patterns.
I can use above website for data on orbit times around sun.
I do not believe there is a pattern between planet size and time to sun, instead there is a pattern between distance from sun and orbit time – time focusing on this next lesson!

Is there an alternative way to present these findings using ICT?

<https://www.booths-lia.co.uk/solar-system-table.html>
Excellent website to use table for data!

<https://create-facts.com/online-periodic-table/>
Could use above website for data on orbit times around sun.

The impact on teaching and learning is that teachers' subject knowledge in science is stronger; they know where to go to improve this in school and online. There is greater range of science investigations taught across the school which is seen in planning and pupils' books. Staff are now more confident at teaching science.

Evidence 2: planning shows teachers' subject knowledge is strong as planning own lesson on the needs of the pupils, not using purchased schemes.

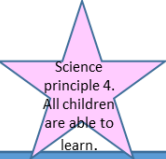
wirksworthjuniors @wir... · 06/01/2020 ...
Team TA, lighthouse building with Rolls Royce and money to spare! Mrs T, Mrs P, Mrs S and Miss Bech.



wirksworthjuniors @wir... · 06/01/2020 ...
Enjoying our STEM day with the cluster of Gell schools #RollsRoyce @RollsRoyce



Teaching 2: There is a range of effective strategies for teaching and learning science with challenge and support for the learning needs of all children.



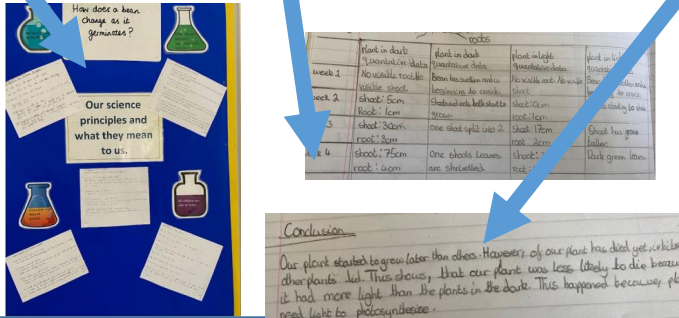
5. Evidence: outdoor science learning through Forest Schools Planning and skills progression.

Forest School Skills Progression

Year 1	Year 2	Year 3	Year 4	Year 5
Basic Skills	Year 1	Year 2	Year 3	Year 4
Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.
Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.

Year 1	Year 2	Year 3	Year 4	Year 5
Basic Skills	Year 1	Year 2	Year 3	Year 4
Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.
Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.	Use simple tools safely and effectively.

6. Evidence: displays and books show the big questions and the focus for the unit of work.

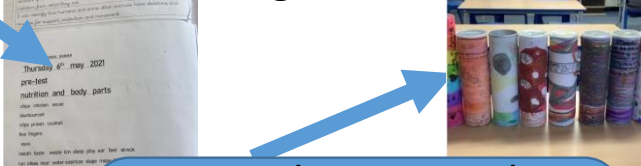


3. Evidence engaging activities through Twitter and Class Dojo for pupils to actively get involved in during COVID lockdown.

8. Evidence: Pupils say lessons are enjoyable and practical.



7. Evidence: pupils using laptops to write work up, if English skills are a barrier to their science learning.



1. Evidence: Investigations mapped across the school and big questions posed so we are questioning more in science lessons.

Wirworth Juniors Long Term Plan

	Autumn	Spring	Summer
School motto and overall theme	Caring and Discovery	Curiosity and Exploration	Creativity and Imagination
Main subject focus of our project	History (Stone Age, Neolithic Age and Roman achievements - buildings, colonisation and beliefs)	Geography (River water, sea, land and tourism - comparison between UK and its 'twin' cities, economy)	Music Art (Pattern and texture)
Key values	<ul style="list-style-type: none"> Respect Perseverance Teamwork Value Equality Community Trust 	<ul style="list-style-type: none"> Curiosity Teamwork Value Equality Community Trust 	<ul style="list-style-type: none"> Respect Trust Choice Individuality Rights Productivity
Big philosophical questions to answer (enquiry questions)	Why have buildings and structures become a significant part of civilisation?	Do we always appreciate what we've got?	Does gender influence art?
Books with issues related to the enquiry question or concept	The Wild Way Home - Sophie Kirtley	Floodland - Marcus Sedgwick	Julian is a Mermaid - Jessica Love

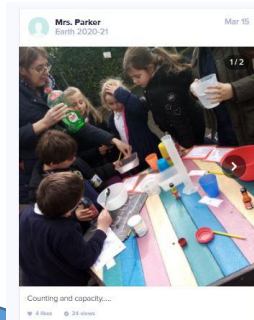
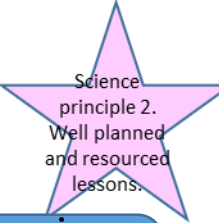
4. Evidence: pupils' work in the home learning work and drawing to explain their understanding.

9. Evidence: Pupils practically comparing weight of planets in tubes.

2. Evidence: teachers are planning different science investigation skills across the school

The impact on teaching and learning is that science is being taught across the curriculum. Teachers are ensuring all pupils can access the learning, differentiating to the needs of the children by using talking, laptops and practical activities such as Forest School. Science is more interesting and pupils say they enjoy the lessons more.

Teaching 3: There is a range of up-to date, quality resources for teaching and learning science which are used regularly and safely.



Mirksworth Junior School
Science Inventory May 2020

Forces	Ramp set with cars Newton Meters (50)
Animals and Humans	Food Health and the Planet resource kit. Bug magnifying set (50)
Electricity	Wire speech x 6 Concealed clips (over 30) Buzzer (10) Bulbs (20) Motors (50) Batteries (over 30) Solar Panels (14)
Light	Torches (7) Mirrors (10) Candles (8) Luminous Fabric pin (15) Kaleidoscope Light Fibres (class set)
General Science Equipment	Thermometers (15) Magnifying lenses (class set) Syringes (class set) Plastic tubs (with various)

1. Evidence: science audit completed.

2. Evidence: planning showing use of different high quality resources.

5. Evidence: pupils using torches and mirrors in lessons in and out of the classroom.

4. Evidence: pupils using the outdoor space to look at leaves, linking this to their science topic of plants.

3. Evidence: staff given a list of good quality online resources and using this in planning.

The impact on teaching and learning is that teachers know where the resources are in school and are using these in lessons. The subject lead knows what is needed to support pedagogy and has informed SLT of the budget needed for governors to agree. Teachers are using high quality resources to teach lessons and knows the H and S areas they should be aware of. Pupils are using resources in the classroom and outdoors to practically embed their learning.

5 Identify patterns in data and present findings.

Is there a pattern in the size of time it takes to orbit the sun?

Can we plot this data on a scatter graph and identify patterns? Discuss scales and how to plot. Use graph paper. (Discuss with other 2 teachers so we are all doing this in exactly same way. ☺)

*** I do not believe there is a pattern between planet size and time to orbit the sun, instead there is a pattern between distance from sun and orbit time = spend time focusing on this next lesson?

Is there an alternative way to present these findings using ICT?

I can draw valid conclusions from data about patterns and recognise their limitations.

I can report cause and effect patterns.

<http://www.boltonhelen.co.uk/solar-system-table.htm>
Excellent website to use table for data!

<https://space-facts.com/orbital-periods-planets/>
Could use above website for data on orbit times around sun.

Mirksworth Junior School Science Planning (Year 5 Class and Magnet). Which materials are suggested?

Lesson	SLT	Lesson Content	Resources	Assess
1	Force	Force Lesson - 10/11/2020 Magnet? (Name things that attract and repel) How to use a force meter (10/11/2020)		
2	Electricity	Electricity Lesson - 10/11/2020 How to use a circuit (10/11/2020)		
3	Light	Light Lesson - 10/11/2020 How to use a light meter (10/11/2020)		

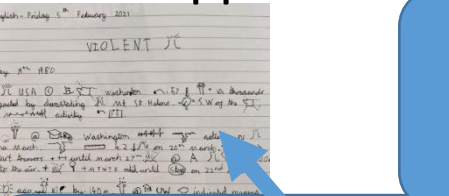
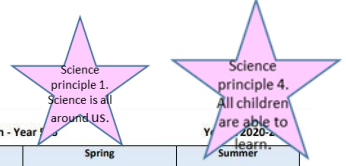
Mrs. Wadley
Neptune 2020-21
Nov 20, 2020

Neptune class were very interested in the Electric Orery that we were looking at in science today. It allows them to track the orbiting of the planets around the sun on any day. If they would like to access this at home the website is National Schools' Observatory and then search for Electric Orery.

Resources referred to during CSOM lessons 1 and 2

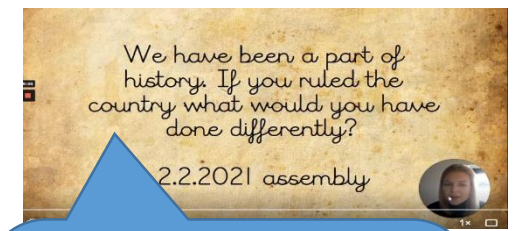
	PLAN (primary science assessment) resources support the planning and assessment of the science National Curriculum for England (2014) Learning	http://www.plan-uk.org/
	STEM Learning	http://www.stem.org.uk/
	Why3how? (Primary Science Teaching Trust online resource for the science National Curriculum for England)	http://www.why3how.com/
	Great Science Share (Science Share) June 15 th 2021	http://www.greatscience.org.uk/
	100 Open for Primary Teachers - General Practitioner September 2020 - contact @open to purchase directly or from Bloombury	http://www.100openforprimaryteachers.com/

Wider opportunities 1: There are appropriate links between science and other learning.



1. Evidence: staff are using information text on volcanoes and rocks (science topics) during English lessons.

Year	Topic	Learning Objectives	Activities	Resources
1	Describe in simple terms how volcanoes are formed and why they have been and are expected within our world.	<ul style="list-style-type: none"> Understand the different types of volcanoes. Know that volcanoes can be found all over the world. Understand the different types of rocks. 	<ul style="list-style-type: none"> Read information text on volcanoes. Watch a video about volcanoes. Draw a volcano. 	<ul style="list-style-type: none"> Information text on volcanoes. Video about volcanoes. Worksheet on volcanoes.



4. Evidence: assemblies on Awe and Wonder looking at the morale dilemmas of the impact of science.

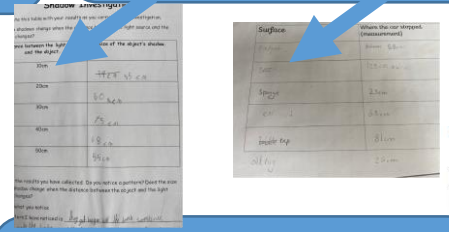
6. Evidence: science electricity links to DT topic of building a moving vehicle.



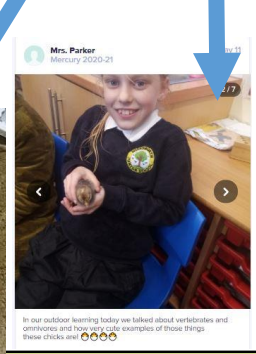
8. Evidence: planning making links to cross curricula learning.



7. Evidence: maths taught in science lessons-measuring and recording.



5. Evidence: Forest schools linking to science topics.



2. Evidence: science questions are built into our big project questions.

Forest School Skills Progression

Skills	Year 3	Year 4	Year 5	Year 6
Shelter Building <i>(links to DT and PSHE)</i>	Introduce basic shelter building. What does a basic shelter need to provide? Mini den building for small animals. To assist with the building of a basic shelter.	Create a tarpaulin shelter in the woodland – A frame structure. Work successfully as a group, having considered and evaluated each members' contributions. Compare and evaluate shelter in relation to their sturdiness, durability, weatherproofing and if it is fit for purpose.	Improve on shelter building, identifying good locations, incorporating natural materials. Working as a team, communicating together.	Create a small group shelter to have lunch in (Carrington). Identify a suitable safe area to hang a hammock with correct knots.
Geographical location <i>(links to PE, maths science)</i>	Follow rules and boundaries. Promote free exploration. Use simple compass directions (North, East, South, West). Use directional language (near and far, left and right). Describe the location of features and routes on a map. Recognise landmarks and human and physical features.	Understand how to orientate the map. Demonstrate understanding of a line orienteering course (short loop) and star orienteering. Build trust with a partner and group and work together when orienteering.	Demonstrate understanding of the concept of a basic map. Navigate your way around a simple orienteering course. Understand the term 'orientate' or 'setting' a map. Complete a simple 'star' orienteering activity in pairs/groups.	Create an orienteering course in teams for the rest of the group. Add into the orienteering facts and points of interests of the area, enabling the participants to learn/refresh about the environment.

Wirksworth Juniors Long Term Plan - Year 3

	Autumn	Spring	Summer
School motto and overall theme	Caring and Discovery	Curiosity and Exploration	Creativity and Imagination
Main subject focus of our projects	History (Vikings and Anglo Saxons)	Geography (Comparisons between Chiles - Derby & Amsterdam - global warming, sustainability, renewable energy, plastic, carbon emissions etc.) Design and technology (Designing and making with electricity)	Music Art Drama (Art and music that was controversial) Punk rock, expressionism, Bob Dylan, Blue music, the last judgement by Michelangelo
Values	<ul style="list-style-type: none"> Respect Trust Rights Conflict Survival Community 	<ul style="list-style-type: none"> Fairness Together Sustainability Responsibility Community Change 	<ul style="list-style-type: none"> Aspiration Persistence Identity Passion Productivity Choice
Concepts linked to the project	<ul style="list-style-type: none"> Does migration always lead to conflict? 	<ul style="list-style-type: none"> How might we live in the future? 	<ul style="list-style-type: none"> Is it better to stand out or fit in?
Big philosophical questions to answer (enquiry question)	A Story like the Wind - Gill Lewis	Varmints - Helen Ward	The Island - Armin Greder

Science running independently

How does the temperature of the effect how long it takes for a sugar cube to dissolve? Properties of materials and changes of state	Is there a pattern between the size of a planet and the time it takes to travel around the sun? Earth and space	How has our understanding of electricity changed over time? Electricity	How does a baby change as it grows? Living things and their habitats - Investigate reproduction	Can you identify all the stages in the human life cycle? Growth & Development Transition unit
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3. Evidence: science skills are linked to learning in other subject areas in school.

Wirksworth Juniors School. Science skills progression. Year 3, (2020-2021)

Year-Group	Light (Term 1)	Plants (Autumn Term 2)	Rocks (Spring Term 1)	Forces and Magnets (Spring Term 2)	Animals including humans Skeletal & Muscular (Summer Term 1 & 2)
Year 3 and 4	I can recognise that light is reflected from surfaces. I can notice that light is reflected from surfaces. I can recognise that light from the sun can be dangerous and that there are ways to protect our eyes.	I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.	I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. I can describe in simple terms how fossils are formed when things that have lived are trapped within rock.	I can compare how things move on different surfaces. I can notice that some forces need contact between two objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others.	I can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.
Year 4	I can recognise that shadows are formed when the light from a light source is blocked by an opaque object.	I can investigate the way in which water is transported within plants.	I can recognise that soils are made from rocks and organic matter.	I can compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.	
Year 5	I can find patterns in the way the speed of shadows change.	I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	History Geography	I can describe magnets as having two poles. I can predict whether two magnets will attract or repel each other, depending on which poles are facing.	

The impact on teaching and learning is that pupils know that science is all around them which is one of our school's science principles. Science is taught as a separate subject but the knowledge and skills learnt are used and applied across other subject areas. This evidence shows we are meeting our principles and vision.

Wider opportunities 2: There are appropriate links with families, other schools, communities and outside organisations to enrich science learning.



1. Evidence: staff have been trained on how to find a STEM ambassador to work in class. STEM ambassadors are being used in school regularly.



3. Evidence: science assemblies and challenges shared with parents at home during remote learning.

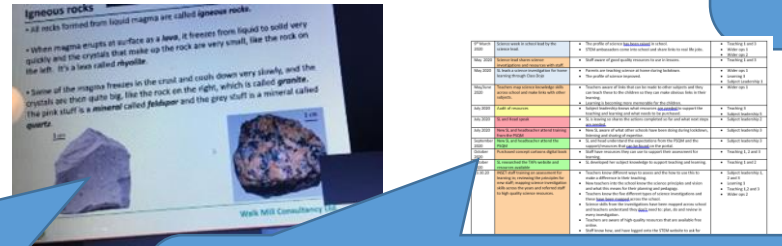


6. Evidence: parents invited in to talk about their role and how it links to science.

5. Evidence: links with the feeder infant schools during science week. A power-point was created and sent to our feeder infant school.

4. Evidence: science week in school for three years running. With STEM ambassadors, attending in everyone.

2. Evidence: STEM ambassadors came into school despite COVID restrictions, through a Microsoft Teams meeting.



7. Evidence: CPD log. staff given time to contact STEM ambassadors to enrich the learning



The impact on teaching and learning is that families are aware of how important science is in school, and are engaging in science at home, enriching their child's learning. Science week is now embedded in the school calendar. Pupils are aware of science is all around them and understand they can be a scientist when they grow up.

Science week



My favourite activity during science week was the boat experiment where I had to see how many objects a paper boat could hold.

This was my favourite activity because I found it exciting seeing how many objects it took to sink the boat.

In this photo, we were helping get the water ready for the boat.