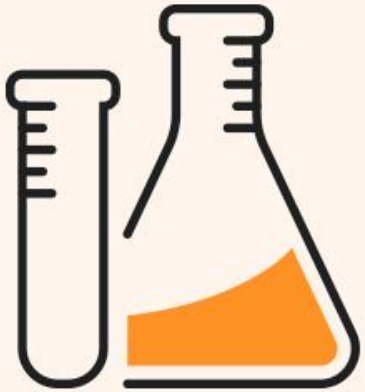
Southway Junior School

Science



Intent

At Southway Junior School, we aim to equip our children with the skills and knowledge to enable them to explore, understand, engage with and question an increasingly scientific world. Our ambition is for children to be curious to find out answers to their own questions and develop an increased understanding of the world around them.

Our coherently planned and sequenced curriculum intends to:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics;
- Build **resilience** whilst equipping children with a range of scientific skills, including; observing, measuring, predicting, explaining, communicating and evaluating;
- Enable children to explore and solve problems through active, hands-on learning, where **teamwork** and **kindness** is often a priority;
- Develop progressive use of scientific language to support children's understanding of scientific concepts and **respect** for the world around them;
- Develop positive attitudes and a passion for science.

Implementation

In science, we implement an inclusive curriculum that meets the statutory requirements of the National Curriculum. We have sequenced the curriculum to ensure that progression is made year on year and that it fits in with the topics where appropriate. Scientific enquiry skills, along with progressively challenging vocabulary and concepts, will be explicitly taught in lessons throughout the children's school career.

Through careful planning, we incorporate the school's pedagogical approach of inside out, interactive and independence, allowing children to find out for themselves how to answer questions in a variety of ways. Children are encouraged to ask their own questions and will be given appropriate equipment to use their scientific skills to discover the answers.

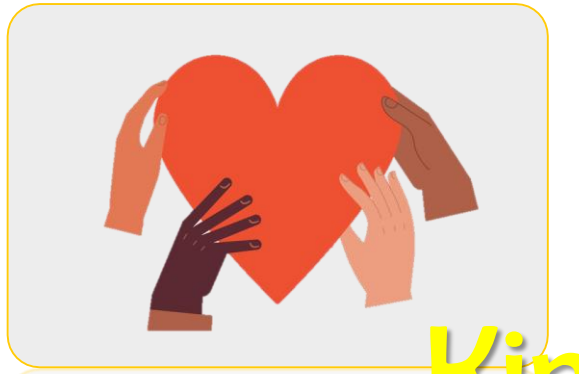
At the beginning of each science unit, the children complete an assessment grid, where they record their current knowledge on the topic. This is then used by teachers to inform and prioritise planning. At the end of the unit, children return to their original assessment grid and add to it in a different colour to demonstrate progression.

Impact

Science books will demonstrate a progressive knowledge and skills in a variety of ways. Sometimes, children will record in a traditional scientific written report style, including using prediction, method and conclusion. However, other recording methods can be used, including photos of practical work, drama with captions, writing scientifically for a purpose (e.g. letters or diaries), factual non-chronological reports. The work presented in books is to a high standard which shows the love and passion for the subject.

At the beginning and end of each unit, every child will complete an assessment grid. The assessment grid will show progression of knowledge and that common misconceptions have been addressed through careful planning. Individual progress will also be evident from the end of unit summative 'quizzes' which will involve children applying their scientific understanding to a variety of real life contexts. These summative assessments are recorded on a whole-school assessment grid from years 3 to 6.

Southway's Values



Kindness

Respect

Resilience

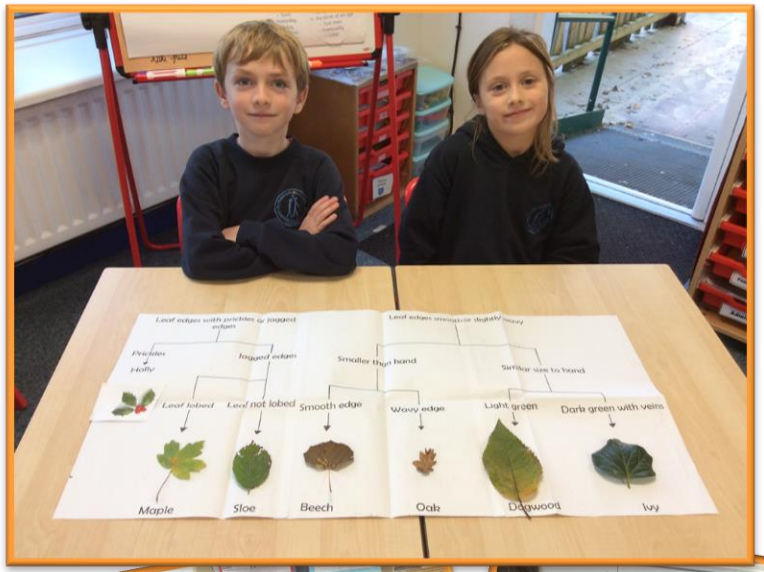
Teamwork

Curriculum Overview

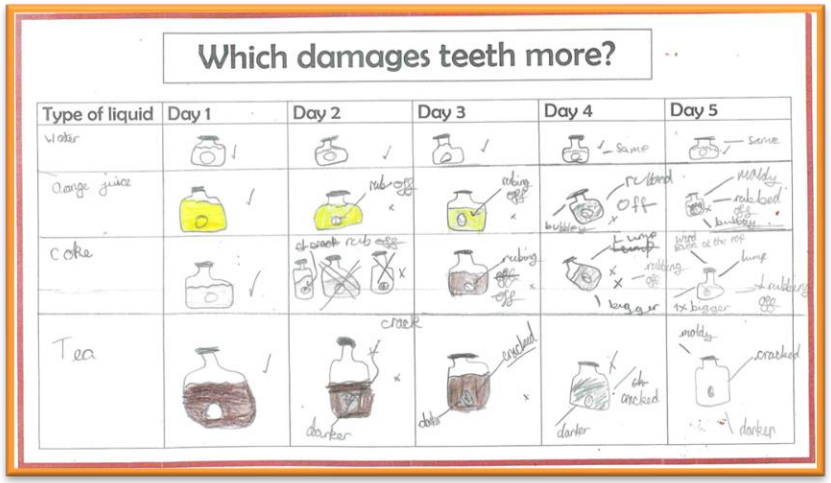
A high-quality science education provides the foundations for **understanding the world** through the specific disciplines of **biology, chemistry** and **physics**. Science has changed our lives and is vital to the world's **future prosperity**, and all pupils should be taught essential aspects of the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

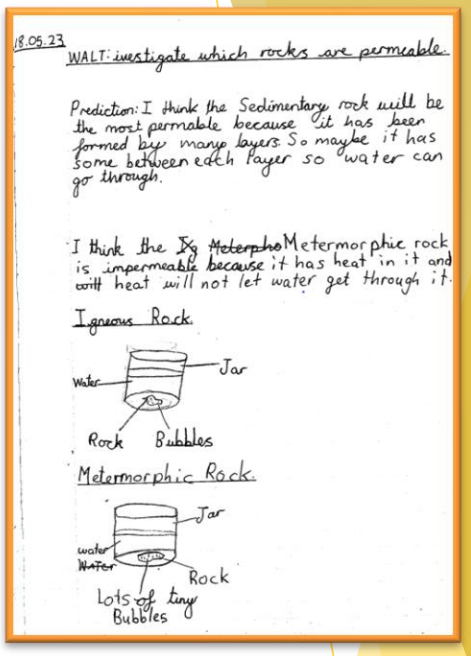
Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	Plants	Living things and their habitats	Animals, including humans - teeth and healthy eating	Animals, including humans – the skeleton	Rocks and soils	Rocks and soils
Year 4	Electricity	Forces and magnets	Light	Light	States of Matter, Earth and Space	States of matter, Earth and Space
Year 5	Sound	Sound	Properties and changes of materials	Properties and changes of materials	Living things and their habitats	Living things and their habitats
Year 6	Evolution and inheritance Animals, including humans – food chain	Forces	Light	Electricity	Animals, including humans – growth, life cycles, healthy living	Animals, including humans – growth, life cycles, healthy living

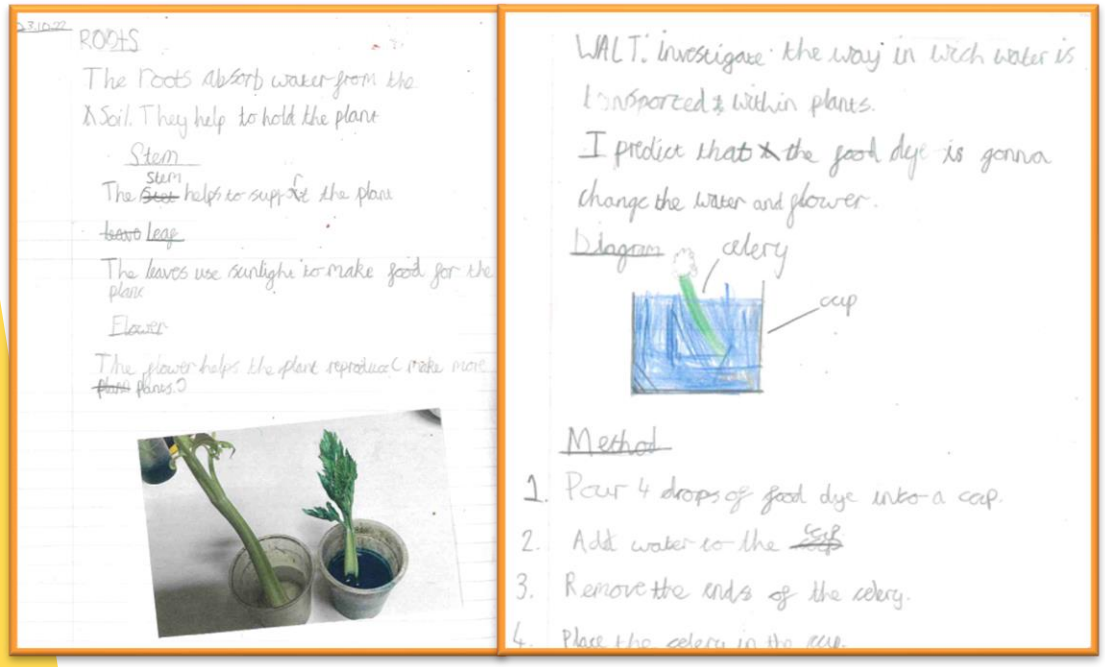
STANDARDS IN YEAR 3

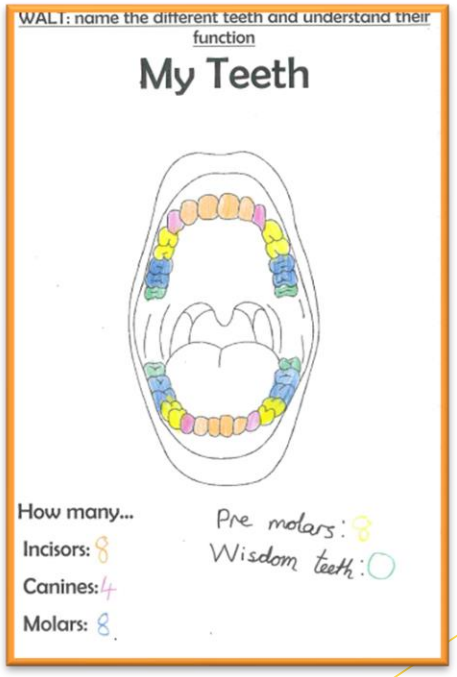


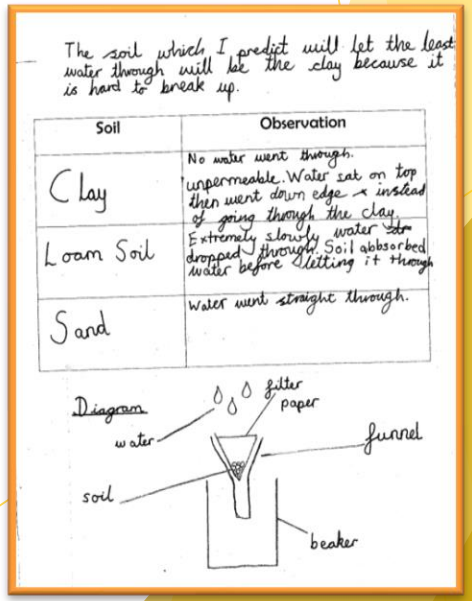
STANDARDS IN YEAR 3



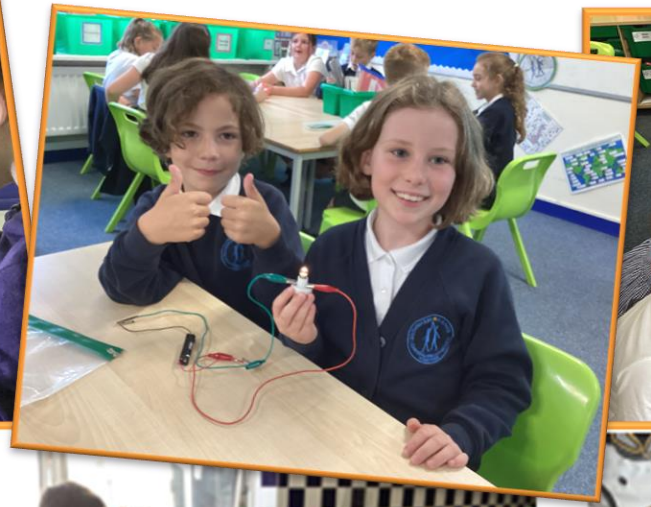








STANDARDS IN YEAR 4

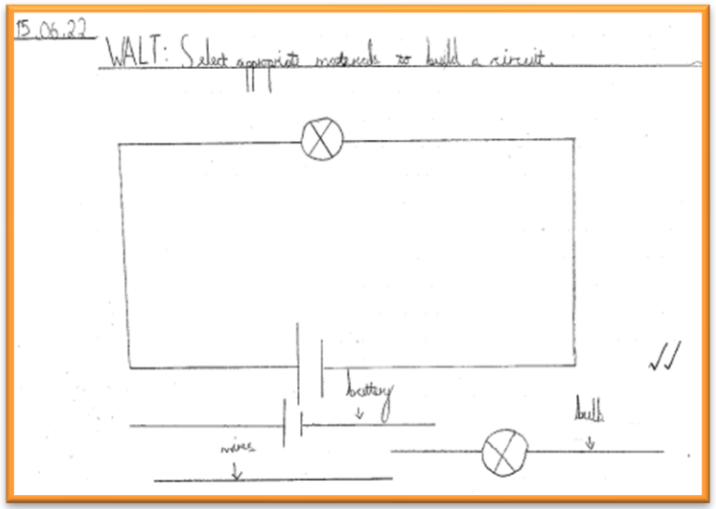


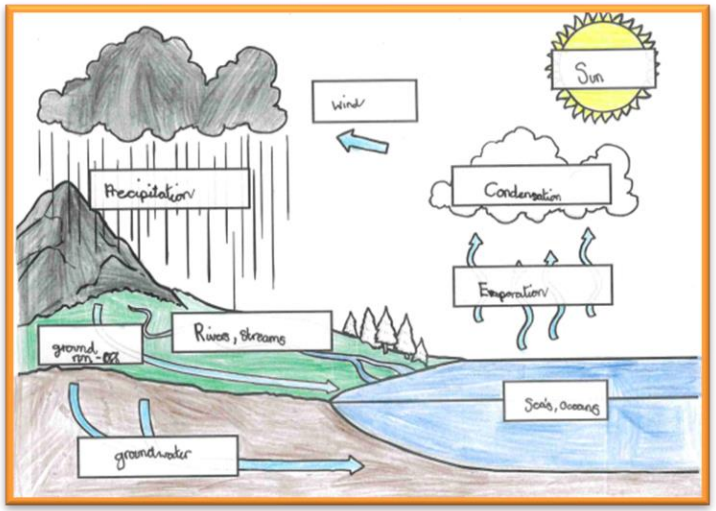
Solid

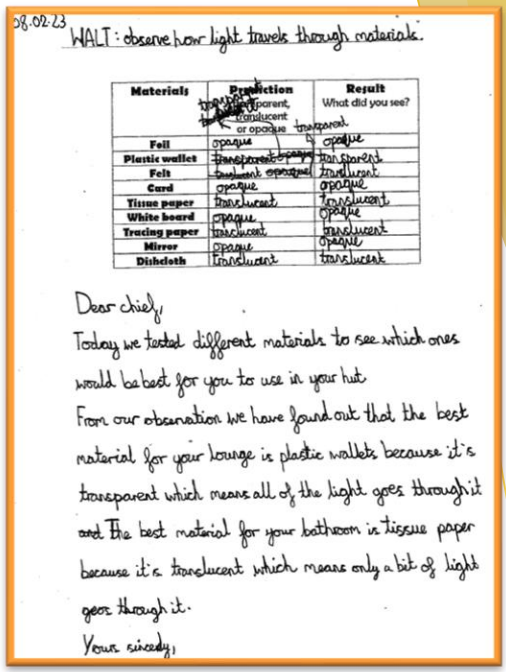
Liquid

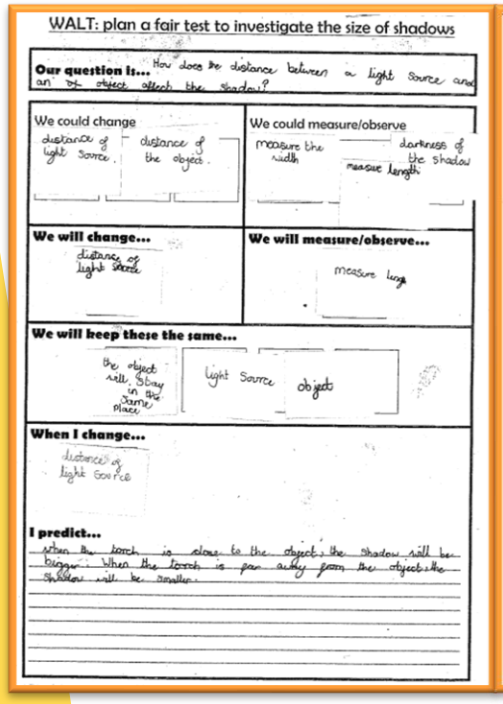
Gas

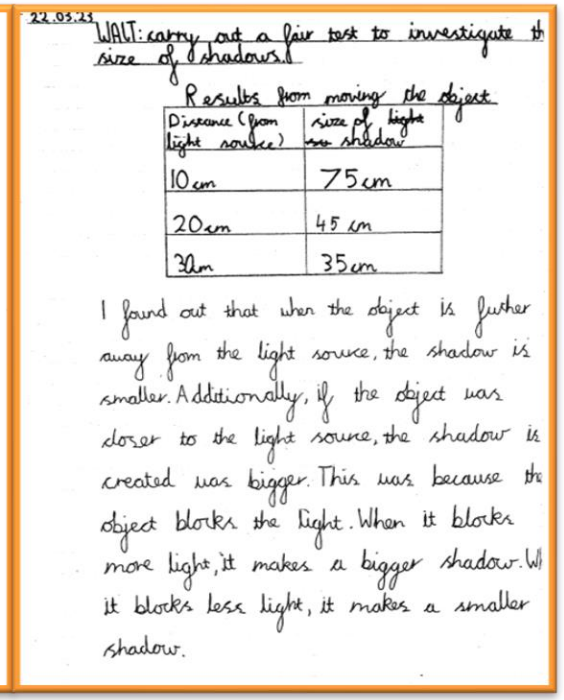
STANDARDS IN YEAR 4

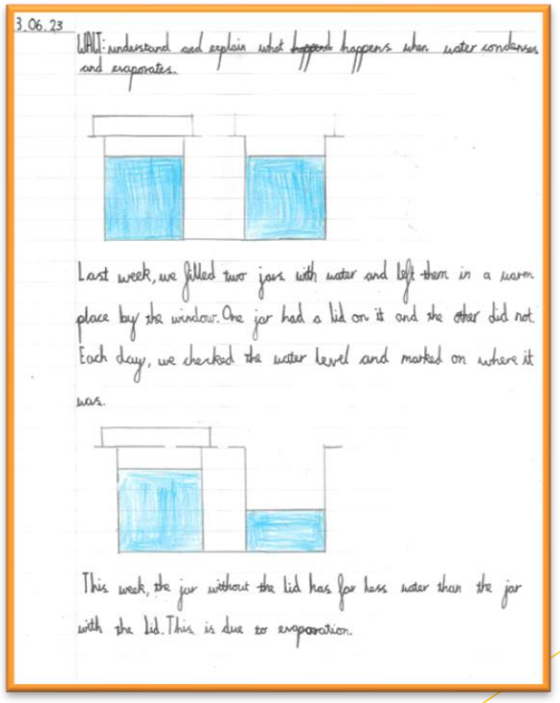


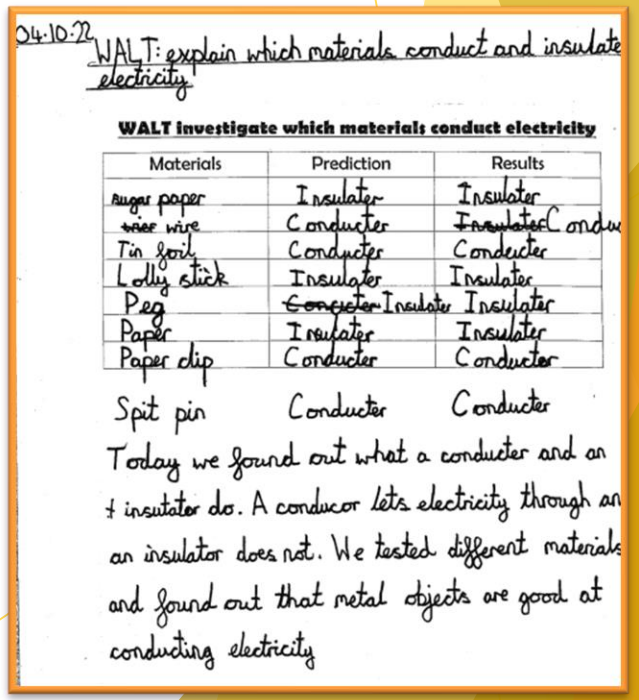




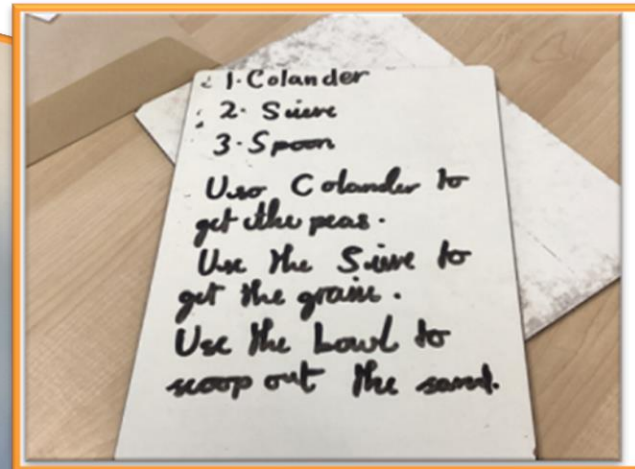




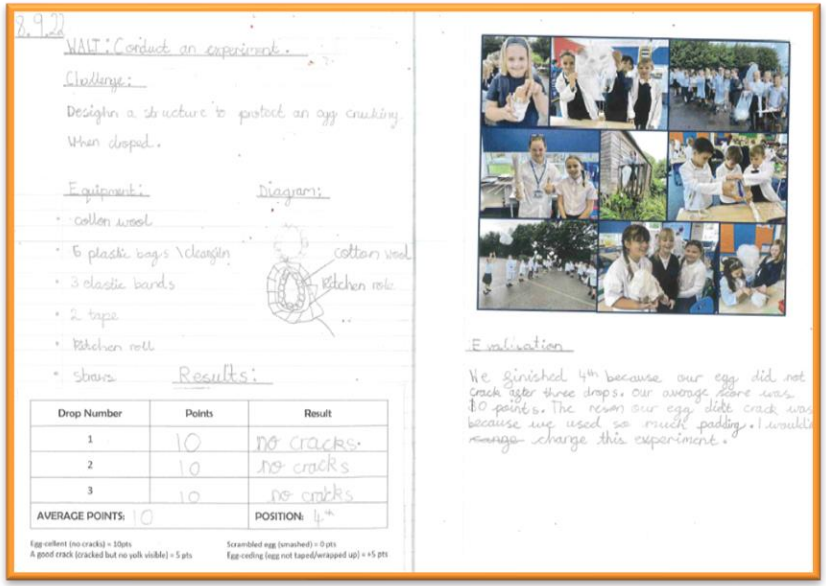




STANDARDS IN YEAR 5



STANDARDS IN YEAR 5



2.9.22

WALT: Conduct an experiment.

Challenge:

Design a structure to protect an egg cracking when droped.

Equipment:

- cotton wool
- 6 plastic bags \cleargin
- 3 elastic bands
- 2 tape
- Kitchen roll
- shears

Diagram:

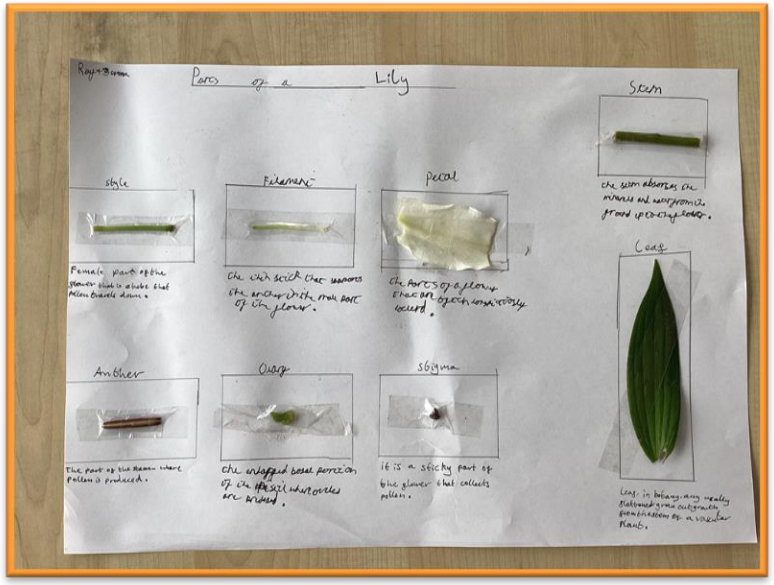
Results:

Drop Number	Points	Result
1	10	no cracks.
2	10	no cracks
3	10	no cracks
AVERAGE POINTS:	10	POSITION: 4th

Egg-cellent (no cracks) = 10pts
A good crack (cracked but no yolk visible) = 5 pts
Scrambled egg (smashed) = 0 pts
Egg-ceding (egg not taped/wrapped up) = +5 pts

Evaluation

We finished 4th because our egg did not crack after three drops. our average score was 10 points. The reson our egg didn't crack was because we used so much padding. I would change change this experiment.



Roy + Brian

Parts of a Lily

Stem

The stem absorbs the minerals and water from the ground up to the flower.

style

Female part of the flower that is where the pollen travels down.

Filament

The thin stick that supports the anther with male part of the flower.

Petal

The parts of a flower that are usually brightly coloured.

Leaf

Leaf: in botany, any usually flattened green outgrowth from the side of a vascular plant.

Anther

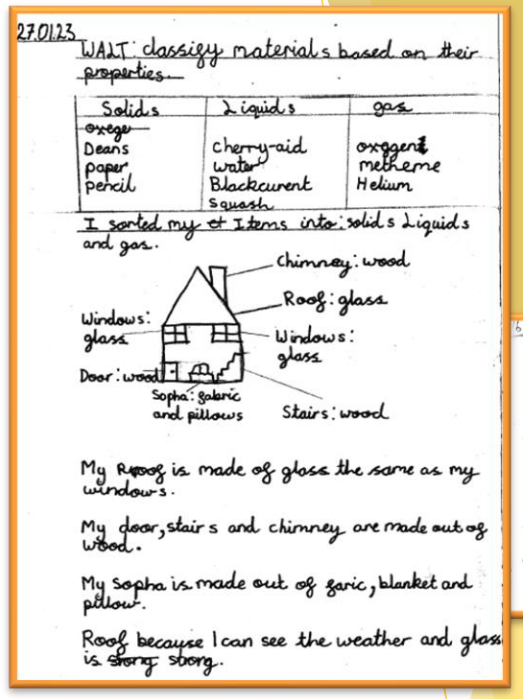
The part of the flower where pollen is produced.

Ovary

The enlarged base portion of the pistil where ovules are formed.

Stigma

It is a sticky part of the flower that collects pollen.



27.01.23

WALT: classify materials based on their properties.

Solids	Liquids	gas
~~exege~~		
Beans	cherry-aid	oxygen
paper	water	methane
pencil	Blackcurent squash	Helium

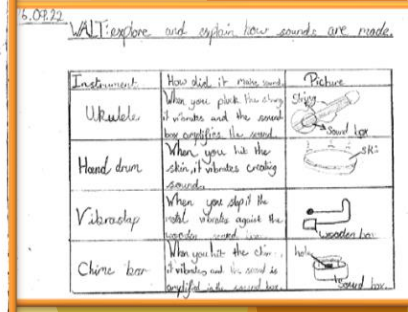
I sorted my ~~et~~ items into: solids liquids and gas.

My ~~Roog~~ Roof is made of glass the same as my windows.

My door, stairs and chimney are made out of wood.

My sopha is made out of faric, blanket and pillow.

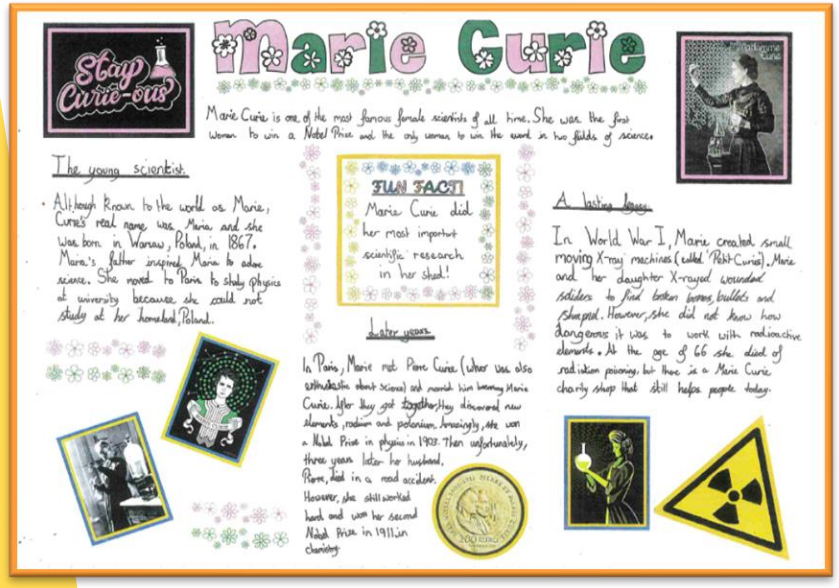
Roof because I can see the weather and glass is ~~strong~~ strong.



16.02.22

WALT: explore and explain how sounds are made.

Instrument	How did it make sound	Picture
Ukulele	When you pluck the string it vibrates and the sound box amplifies the sound	string, Sound box
Hand drum	When you hit the skin, it vibrates creating sounds.	skin
Vibraslap	When you slap it the metal vibrates against the wooden sound box	wooden box
Chime bar	When you hit the chime it vibrates and the sound is amplified inside sound box	hit, sound box



Stay Curie-ous

Marie Curie

Marie Curie is one of the most famous female scientists of all time. She was the first woman to win a Nobel Prize and the only women to win the award in two fields of science.

The young scientist

- Although known to the world as Marie, Curie's real name was Maria and she was born in Warsaw, Poland, in 1867. Marie's father inspired Maria to adore science. She moved to Paris to study physics at university because she could not study at her homeland, Poland.

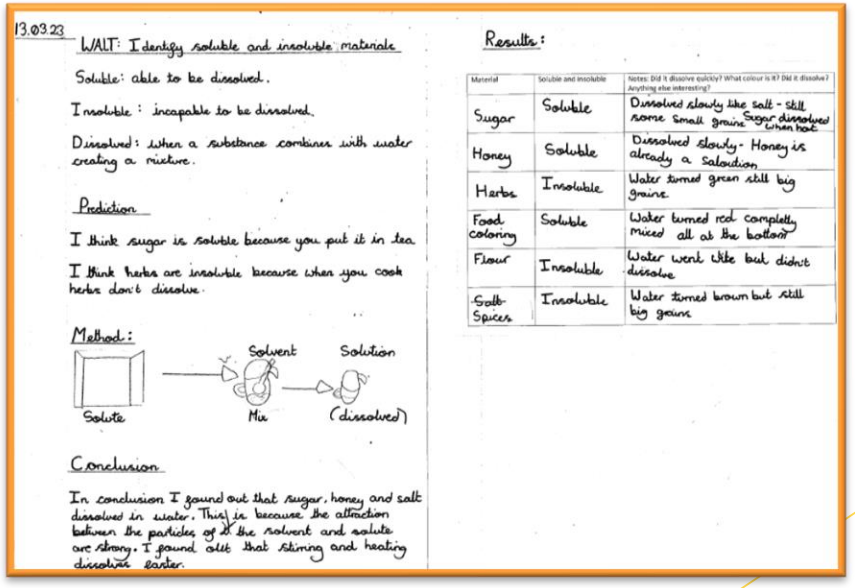
FUN FACT!
Marie Curie did her most important scientific research in her shed!

Later years

In Paris, Marie met Pierre Curie. (Who was also enthusiastic about science) and married him becoming Marie Curie. After they got together they discovered new elements, radium and polonium. Amazingly, she won a Nobel Prize in physics in 1903. Then unfortunately, three years later her husband, Pierre, died in a road accident. However, she still worked hard and won her second Nobel Prize in 1911 in chemistry.

A lasting legacy

In World War I, Marie created small moving X-ray machines (called 'Petit-Curies'). Marie and her daughter X-rayed wounded soldiers to find broken bones, bullets and shrapnel. However, she did not know how dangerous it was to work with radioactive elements. At the age of 66 she died of radiation poisoning, but there is a Marie Curie charity shop that still helps people today.



13.03.23

WALT: Identify soluble and insoluble materials

Soluble: able to be dissolved.

Insoluble: incapable to be dissolved.

Dissolved: when a substance combines with water creating a mixture.

Prediction

I think sugar is soluble because you put it in tea.

I think herbs are insoluble because when you cook herbs don't dissolve.

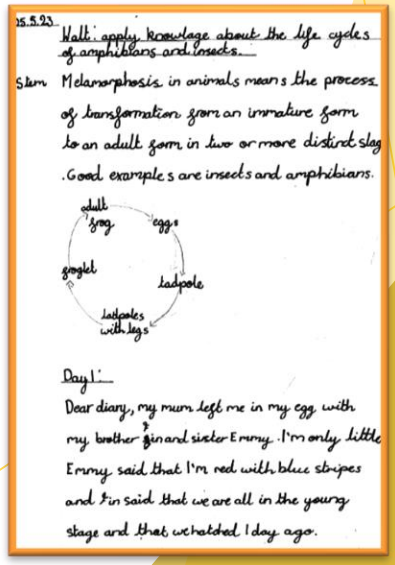
Method:

Conclusion

In conclusion I found out that sugar, honey and salt dissolved in water. This is because the attraction between the particles of the solvent and solute are strong. I found out that stirring and heating dissolves faster.

Results:

Material	Soluble and insoluble	Notes: Did it dissolve quickly? What colour is it? Did it dissolve? Anything else interesting?
Sugar	Soluble	Dissolved slowly like salt - still some small grains Sugar dissolved when hot
Honey	Soluble	Dissolved slowly - Honey is already a saloution
Herbs	Insoluble	Water turned green still big grains
Food coloring	Soluble	Water turned red completly mixed all at the bottom
Flour	Insoluble	Water went like but didn't dissolve
~~Salt~~ Spices	Insoluble	Water turned brown but still big grains



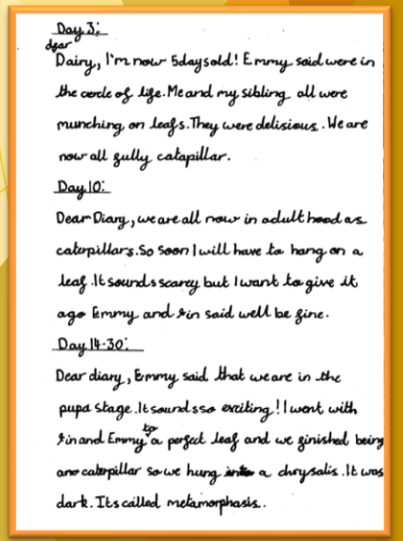
15.5.23

Walt: apply knowledge about the life cycles of amphibians and insects.

Stem Metamorphosis in animals means the process of transformation from an immature form to an adult form in two or more distinct stag .Good examples are insects and amphibians.

Day 1:

Dear diary, my mum left me in my egg with my brother Jin and sister Emmy. I'm only little Emmy said that I'm red with blue stripes and Jin said that we are all in the young stage and that we hatched 1 day ago.



Day 3:

dear

Dairy, I'm now 5 days old! Emmy said were in the circle of life. Me and my sibling all were munching on leafs. They were delisious. We are now all fully caterpillar.

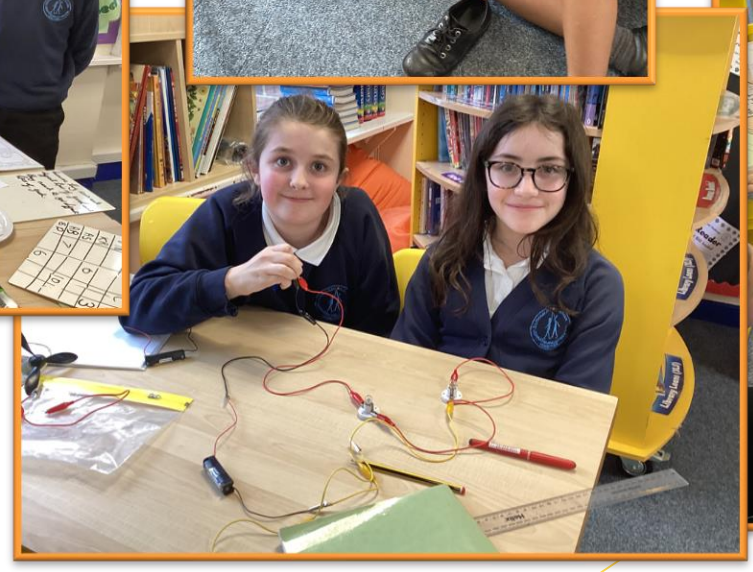
Day 10:

Dear Diary, we are all now in adult hood as caterpillars. So soon I will have to hang on a leaf. It sounds scarey but I want to give it ago Emmy and Jin said well be fine.

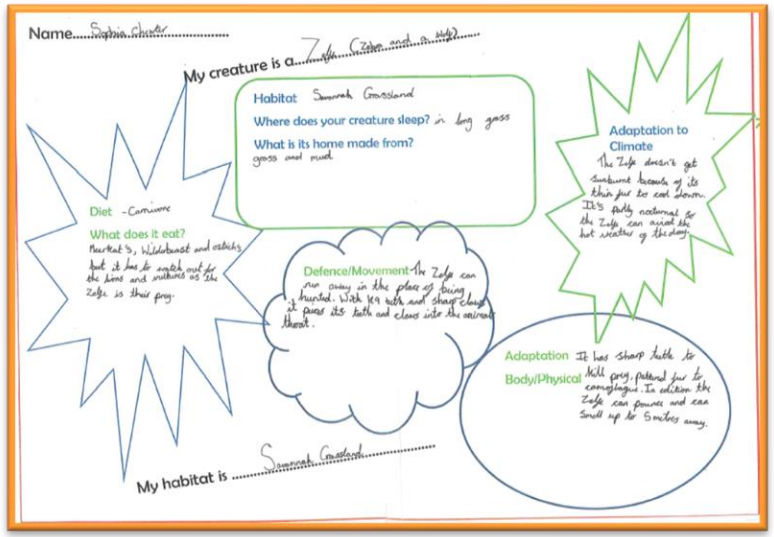
Day 14-30:

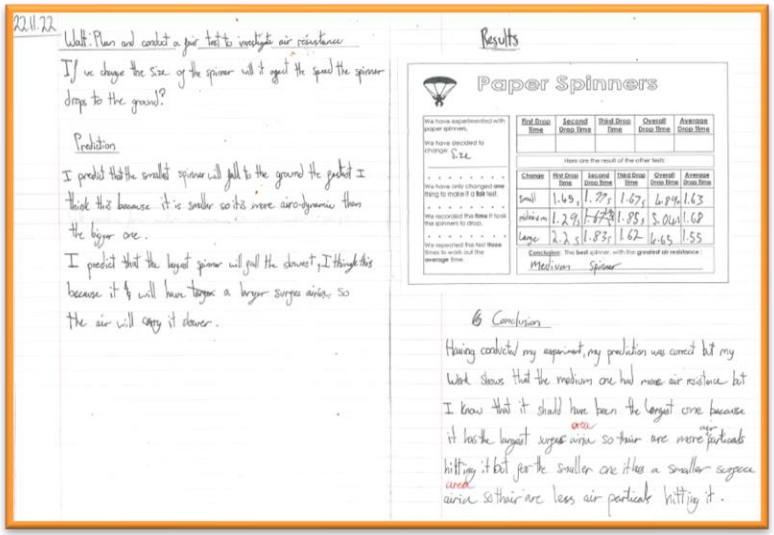
Dear diary, Emmy said that we are in the pupa stage. It sounds so exciting! I went with Jin and Emmy to a forget leaf and we finished being are caterpillar so we hung into a chrysalis. It was dark. Its called metamorphasis.

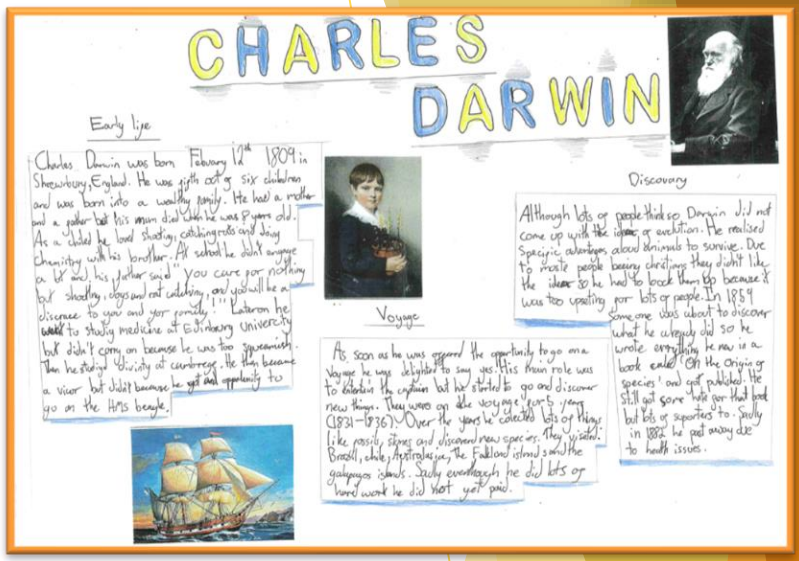
STANDARDS IN YEAR 6

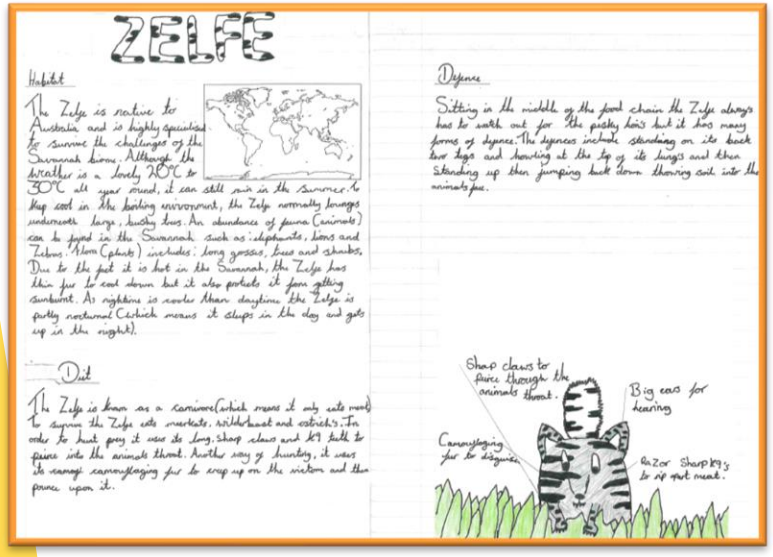


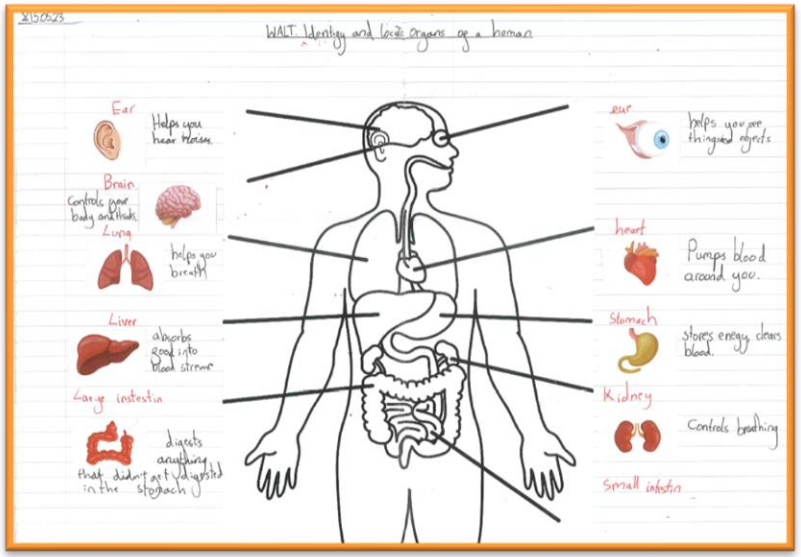
STANDARDS IN YEAR 6

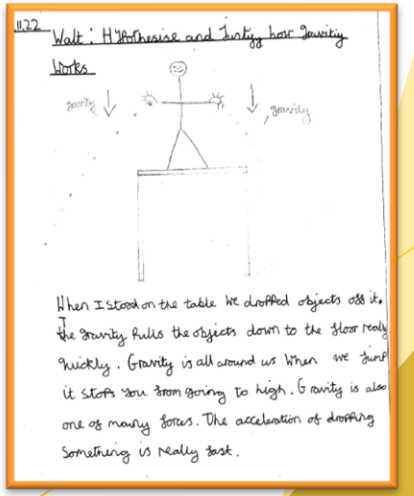


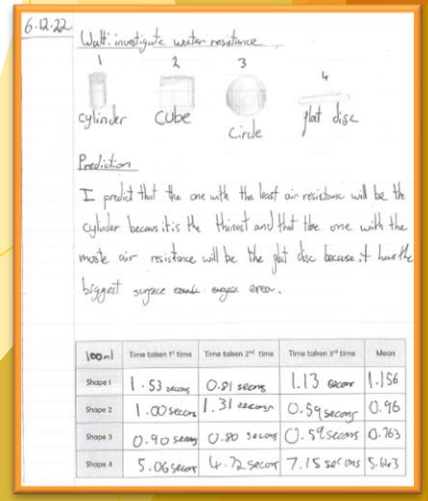












WRITING ABOUT SCIENCE:

At Southway Junior, each year group dedicates a unit of English, where children complete an extended piece of writing, linked to their science learning.

Year 3 – Non-chronological page about volcanoes, linked with rocks and soils learning.
Year 4 – Non-chronological page about planets, linked with space learning.
Year 5 – Fact pages about Class names
Year 6 – Evolution – creating animal

Pupil Voice

"I really enjoy it when we record how much something does over a period of time."

"My favourite kind of science lessons are when we get to do experiments."

"I loved creating my own animal after we learnt about evolution."

"My favourite piece of work is when we presented our science learning on fact pages."

"I learn best in science when we are working in groups."

"I learn most when I am using resources."

"I like learning science outdoors."

Science trips:

Throughout their time at Southway, the children get the opportunity to attend multiple school trips with a focus on their science learning.

The Booth Museum

South Downs Planetarium

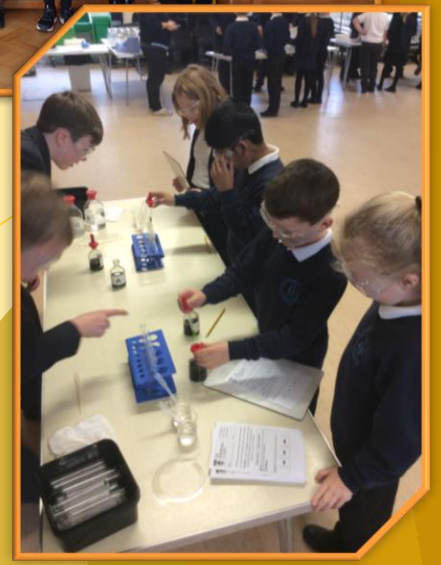
Drusillas Zoo

Enrichment Opportunities

Each year, we run a science week and it is themed in line with British Science Week.

Throughout this week, the children take part in a variety of science activities, including the following:

- Whole school science experiment.
- A science quiz, resulting in a winning team per year group.
- A science focused assembly.
- Visits from the local secondary school, where the children join in with a variety of different experiments.
- Science reading activities.



Each year we have the opportunity to take part in the Mid Sussex Science Week.

Mid Sussex Science Week 2022:

As a school, we were teamed up with local company, Edwards Vacuum, to complete a science project, which was decided between us and the company. Each teacher chose 2 children who had a special interest in science, technology, engineering and maths (STEM) to take part.
This year, our project was to use engineering skills to build rockets, which were made out of durable materials.

To start the week, the children tested a variety of materials against water, wind, strength when dropping from a height and how aerodynamic they were. They then used this information to design and build the rockets.
During the building stage, ambassadors from Edwards came in to help support the children and offer their expertise.
Finally, the children put their rockets to the test against the same elements from the beginning of the week.

As out fab finish for the week, we were invited to attend the 'Big Bang' science fair, where children were able to present their projects, as well as take part in a variety of STEM activities such as; making an LED torch, exploring what happens to objects when put into a vacuum, watching a science show and learning about solar cars.

Each year we have the opportunity to take part in the Mid Sussex Science Week.

Mid Sussex Science Week 2023:

This year we were teamed up with Leap Environmental and our project focused on sustainability and renewable energy. To start the week, the selected children had workshops with experts, learning about why being more sustainable is so important and ways that we can use renewable energy. The children then designed their own wind turbines, which needed to not only produce wind energy, but also be attractive and have another function (e.g. solar power or act as a habitat for bugs).

Once children had shared their designs and gained feedback from the professionals, they built their wind turbines and tested them.

Once again, we attended the 'Big Bang' science fair at the end of the week, where children were able to present their projects. The children really impressed the spectators with their enthusiasm, knowledge and hard work.