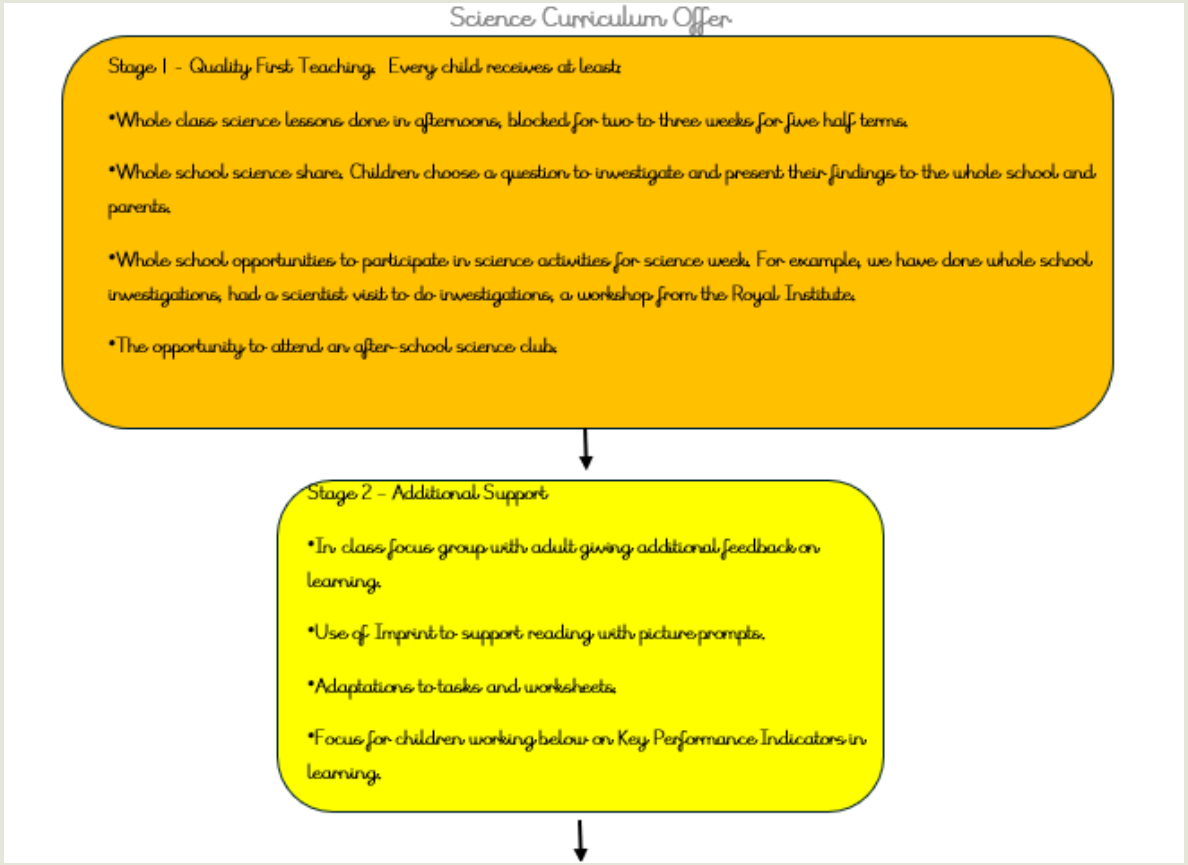
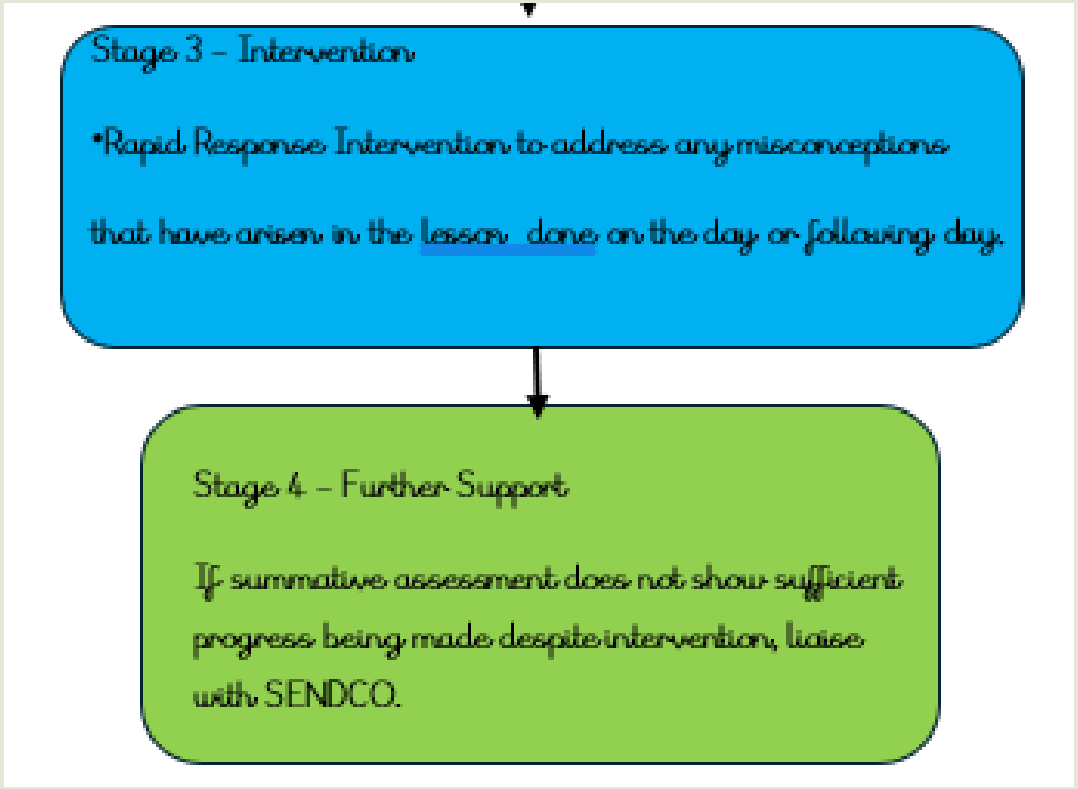
Science at Alexandra Park Junior School

Alexandra Park Junior School

Science Curriculum Offer

Alexandra Park Junior School





Curriculum Intent

- At Alexandra Park Junior School, we aim to foster a natural curiosity and excitement about the world through a stimulating, engaging and challenging science curriculum. All children will be provided with a broad and balanced science curriculum in line with the National Curriculum 2014. Through this they will develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Our science curriculum allows all children to obtain the knowledge and skills needed to help them to think like a scientist, developing an understanding of scientific processes and to understand the uses and implications of science both today and in the future.
- Our children will be immersed in a vocabulary rich environment using scientific language taught, built upon and revisited throughout the different Key Stages. They will develop and use a range of skills including observation, planning and investigation as well as being encouraged to question the world around them with the intention of becoming independent learners.

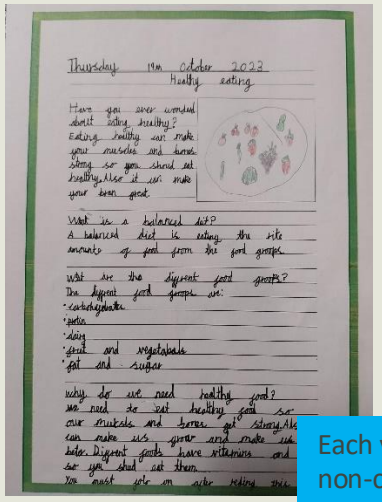
Intent – Long term plan

Alexandra Park Junior School

2024-25	A1	A2	Sp1	Sp2	Su 1	Su 2
Year 3	Animals inc humans (2wks)		Rocks and soils (2 wks)	Forces and magnets (2 wks)	Plants (2 wks)	Light (3 wks) Science Share
Year 4	Living things and their habitats (3 wks)	States of matter (3 wks)	Sound (2 wks)	Electricity (2 wks)	Animals inc humans (2 wks)	Science Share
Year 5	Earth and Space (3 wks)	Properties and changes of materials (3 wks)	Forces (2 wks)	Living things and their habitats (2 wks)	Animals inc humans (2 wks)	Science Share
Year 6	Living things and their habitats (3 wks)	Electricity (3 wks)	Evolution and inheritance (2 wks)	Animals inc humans (3 wks)		Light (2 wks) Science Share

Intent – Cross curricular links

Alexandra Park Junior School

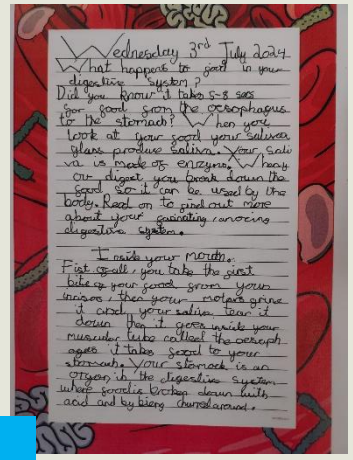

Thursday 19th October 2023
Healthy eating

Have you ever wondered about being healthy? Eating healthy can make your muscles and bones strong so you should eat healthy. Also it will make your brain great.

What is a balanced diet?
A balanced diet is eating the right amounts of food from the food groups.

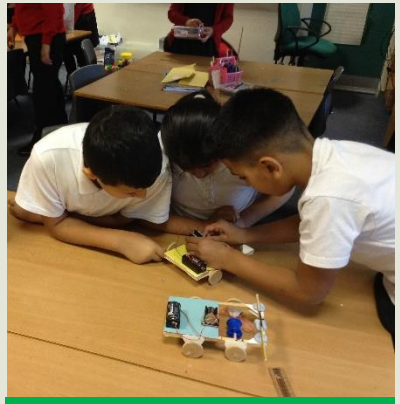
What are the different food groups?
The different food groups are:
- carbohydrates
- water
- dairy
- fruit and vegetables
- fat and sugar

Why do we need healthy food?
We need to eat healthy food so our muscles and bones get strong. It can make us grow and make us better. Different foods have different vitamins and so you should eat them.

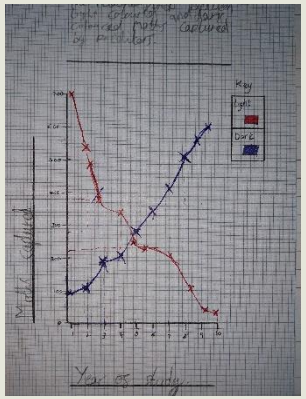

Wednesday 3rd July 2024
What happens to food in your digestive system?
Did you know it takes 5-8 secs for food from the oesophagus to the stomach? When you look at your food your saliva glands produce Saliva. Your saliva is made of enzymes. When our digest you break down the food so it can be used by the body. Read on to find out more about your fascinating amazing digestive system.

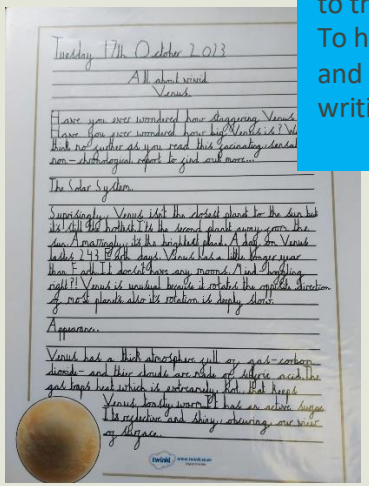
Inside your mouth.
First of all you take the giant bite of your food. Your incisors then your molars grind it and your saliva tear it down. Then it goes into your muscular tube called the oesophagus it takes 5secs to your stomach. Your stomach is an organ in the digestive system where acid is broken down with acid and by being churned around.

Each year group writes non-chronological reports in English related to their science topics. To help secure learning and create purpose for writing.


Year 5 used their knowledge of electrical circuits from Year 4 to make moon buggies in DT.

Links with geography- Y6 learning about rivers and river life at Castleshaw Outdoor Centre.


Year 6 graph work.


Tuesday 17th October 2023
All about Venus

Have you ever wondered how staggering Venus is? Have you ever wondered how big Venus is? What do you think no? Further on as you read this fascinating, detailed non-chronological report to find out more...

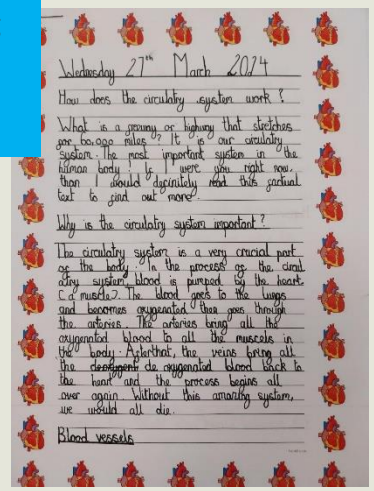
The Solar System

Surprisingly, Venus isn't the closest planet to the sun but it's still the hottest! It is the second planet away from the sun. Amazingly, it is the brightest planet. A day on Venus lasts 243 Earth days. Venus has a little longer year than Earth. It also has very normal wind travelling right?! Venus is unusual because it rotates the opposite direction of most planets also its rotation is deeply slow.

Appearance

Venus had a thick atmosphere full of gas - carbon dioxide and their clouds are made of sulfuric acid. The gas traps heat which is extremely hot. Hot heat!

Venus totally wasn't it had an active surface. The reflective sand shiny, obscuring our view of Uranus.


Wednesday 27th March 2024
How does the circulatory system work?

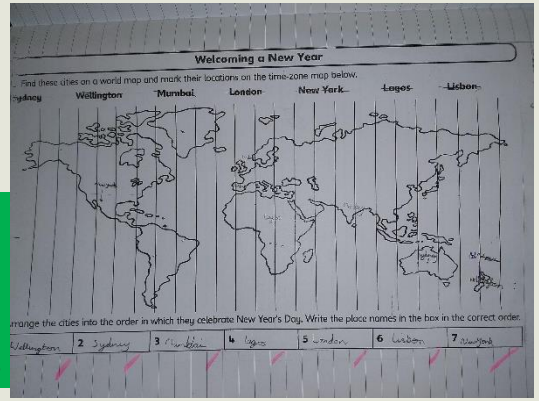
What is a tramway or highway that stretches for 60,000 miles? It is our circulatory system. The most important system in the human body! If were you right now, then I should definitely read this factual text to find out more!

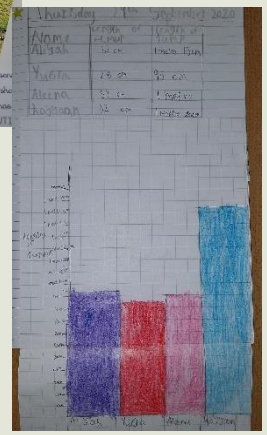
Why is the circulatory system important?

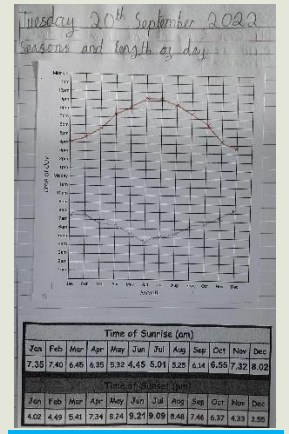
The circulatory system is a very crucial part of the body. In the process of the circulatory system blood is pumped by the heart (a muscle). The blood goes to the lungs and becomes oxygenated then goes through the arteries. The arteries bring all the oxygenated blood to all the muscels in the body. After that, the veins bring all the deoxygenate de oxygenated blood back to the heart and the process begins all over again. Without this amazing system, we would all die.

Blood vessels

Year 5 used their knowledge of why we have day and night to support work in geography on time zones.




Year 3 graph work.


Tuesday 20th September 2022
Seasons and length of day

Time of Sunrise (am)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7.35	7.40	6.46	6.35	5.32	4.45	5.01	5.25	6.14	6.55	7.32	8.02

Time of Sunset (pm)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.02	4.49	5.41	7.34	8.24	9.21	9.09	8.46	7.46	6.37	4.33	3.55

Year 5 graph work.

Intent- Progression

Alexandra Park Junior School

At Alexandra Park, our curriculum ensures coverage of all aspects of substantive and disciplinary knowledge from the National Curriculum, as well as ensuring that children have the opportunity to experience each of the five types pf scientific enquiry.

Working scientifically Biology Chemistry Physics

STRAND	Y1	Y2	Y3	Y4	Y5	Y6
Working scientifically	During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: -Asking simple questions and recognising that they can be answered in different ways -Observing closely, using simple equipment -Performing simple tests -Identifying and classifying -Using their observations and ideas to suggest answers to questions -Gathering and recording data to help in answering questions.		During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: -Asking relevant questions and using different types of scientific enquiries to answer them -Setting up simple practical enquiries, comparative and fair tests -Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers -Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions -Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables -Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions -Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions		During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: -Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Using test results to make predictions to set up further comparative and fair tests -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -Identifying scientific evidence that has been used to support or refute ideas or arguments.	

Y6 Electricity

Lesson	Substantive knowledge objective	Disciplinary knowledge objective	Enquiry type Enquiry question
2	TLC: Can I use recognised symbols when representing a simple circuit diagram?	TLC: Can I draw results using scientific diagrams?	
3		TLC Can I plan a scientific enquiry to answer a question, recognising and controlling variables?	Comparative and fair test How could we change the brightness of a bulb in a circuit?
4	TLC: Can I show that the volume of a buzzer or the brightness of a bulb depends on the number and voltage of cells in circuits?	TLC: Can I report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations?	Pattern seeking Will increasing the number of cells increase the brightness of a bulb or the volume of a buzzer?
5	Can I compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches?	Can I use test results to make predictions to set up further comparative and fair tests?	

Intent- Retrieval

Alexandra Park Junior School

Retrieval Topics

Y3

Half term	Topic taught	Retrieval topic
Autumn 1	Animals including humans	Y1 Seasonal changes
Spring 1	Rocks and soils	Y1 Materials
Spring 2	Magnets	Y1 Plants
Summer 1	Plants	Y1 Animals including humans
Summer 2	Light	Y2 Living things and their habitats

Y4

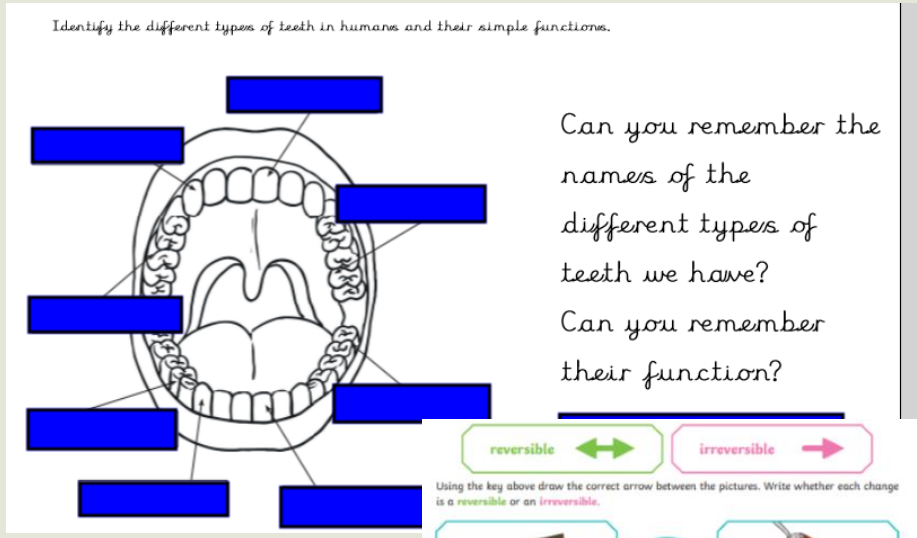
Half term	Topic taught	Retrieval topic
Autumn 1	Living things and their habitats	Y2 Materials
Autumn 2	States of matter	Y2 Plants
Spring 1	Sound	Y2 Animals including humans
Spring 2	Electricity	Y3 Animals including humans
Summer 1	Animals including humans	Working scientifically

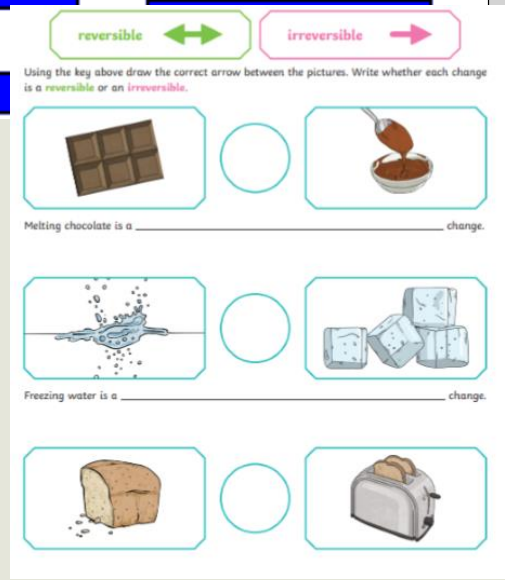
Y5

Half term	Topic taught	Retrieval topic
Autumn 1	Space	Y4 States of matter
Autumn 2	Properties and changes of materials	Y3 Forces and magnets
Spring 1	Forces	Y3 Plants
Spring 2	Living things and their habitats	Y4 Sound
Summer 1	Animals including humans	Y4 Living things and their habitats

Y6

Half term	Topic taught	Retrieval topic
Autumn 1	Living things and their habitats	Y4 Electricity
Autumn 2	Electricity	Y3 Rocks and soils
Spring 1	Evolution and inheritance	Y4 Animals including humans
Spring 2	Animals including humans	Y3 Light
Summer 2	Light	Y5 Properties and changes of materials





Each unit of learning includes retrieval questions from a previous topic to re-ignite learning and knowledge and keep information in the working memory.

Where possible, a retrieval topic will be done before an associated topic to remind children of previous learning and allow teachers a formative assessment opportunity prior to the new topic being taught..

Curriculum Implementation

Alexandra Park Junior School

- All children are taught Science in blocked sessions. To ensure high standards of teaching and learning, we implement a curriculum that is progressive and that gives full coverage of the 2014 National Curriculum programmes of study for Science. Through teacher modelling and planned questioning, we want our children to be amazed by the world around them as we recognise that our children often lack experiences.
- At the start of each topic, teachers find out what the children already know/understand and use this to adapt the curriculum to the needs of the learners. Children reflect on their previous learning throughout, building on prior knowledge and linking ideas together, which enables them to ask questions and to become enquiry-based learners.
- Building a subject rich vocabulary is important and so there is an emphasis placed upon activities that will transfer information from the working memory into the long-term memory. This is achieved through the use of displays, knowledge mats and quizzes.

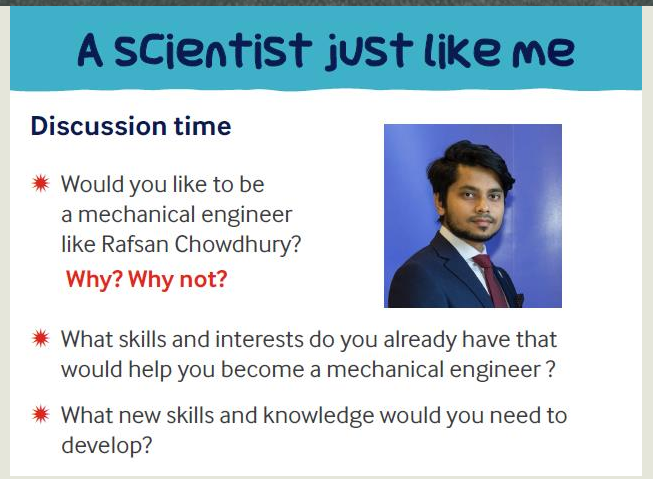
Curriculum implementation continued

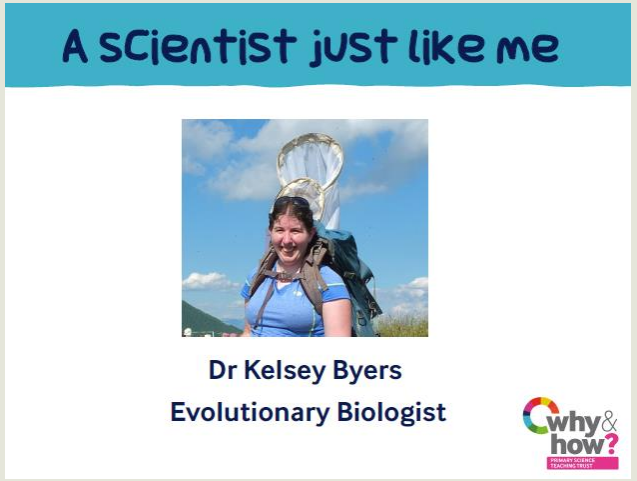
Alexandra Park Junior School

- During each topic there are planned opportunities for children to develop their enquiry skills within the five types of scientific enquiry – observation over time, pattern seeking, identifying, classifying and grouping, comparative and fair testing and research using secondary sources. This allows for a progression in skills as the children increase in age and ability and allow teachers to plan high quality science lessons.
- All children have access to a range of quality resources including science equipment, digital technology, practical experiences and photographs. They will also use a range of secondary resources to develop their knowledge and understanding. Where applicable, children will take part in off-site educational visits and also welcome science visitors into the classroom as a way to enhance their learning experiences.

Implementation-A scientist just like me

Alexandra Park Junior School





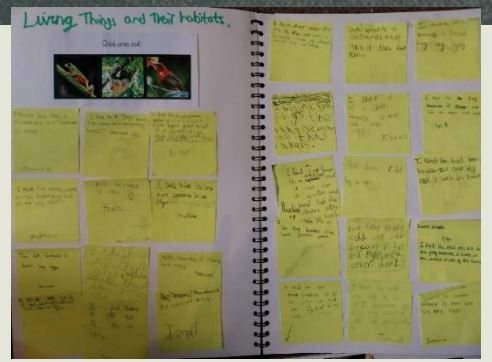
Each unit of begins with the introduction of a real Life scientist whose work relates to the unit of learning.

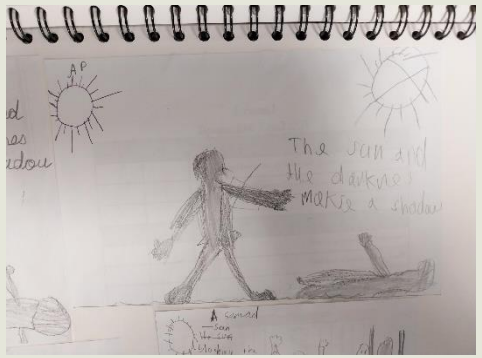
The scientists represent a diverse range of people from different backgrounds and ethnicities.

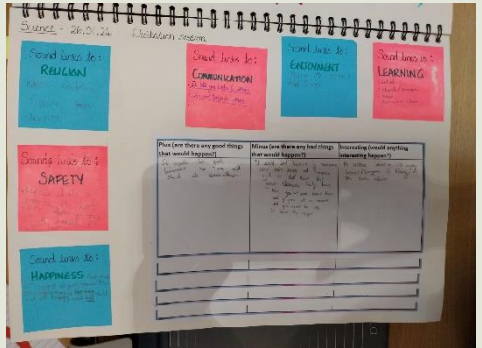
The purpose of this is to show how the children's learning links to the real world and also hopefully encourage the idea that science is for everyone and that scientists are not typically older, white males, who wear lab coats.

Implementation- elicitation of ideas

Alexandra Park Junior School



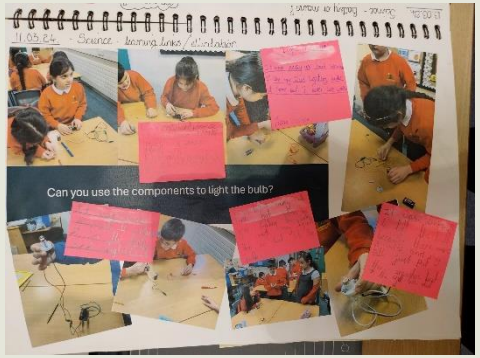


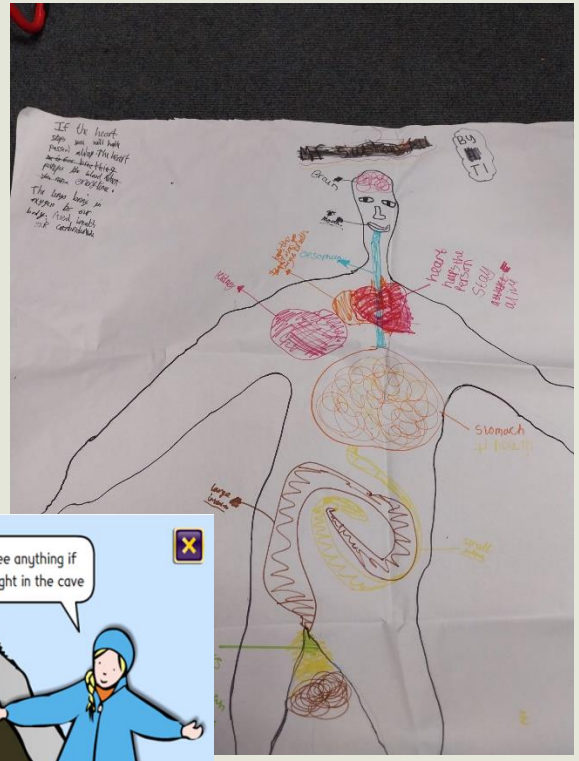


At the beginning of each unit of work the teachers elicit the children's ideas about the unit they are about to do. This allows the teachers to gauge the children's prior learning and knowledge, look out for misconceptions and Adapt their planning as a consequence.

A variety of engaging activities are used, including:

- Concept cartoons
- Odd one out discussions
- Labelled diagrams
- Practical challenges





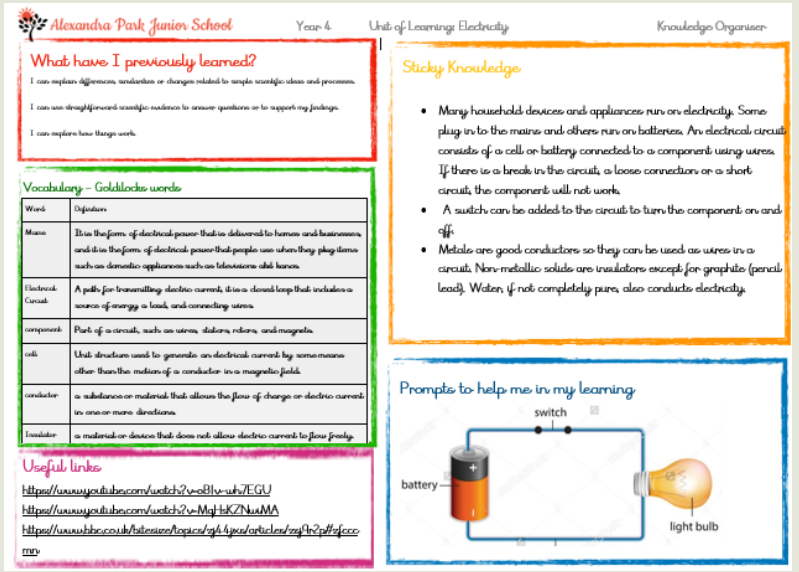
Implementation –vocabulary development

Alexandra Park Junior School

Subject specific vocabulary has been developed using the Plan Progression in Vocabulary document.

Strands	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working scientifically	Question, enquiry, similar, different, change, observe, measure, equipment, test, plan, resource, predict, identify, classify, compare, sort, gather, record, data, diagram, table, pictogram, block graph, tally chart.		As for Year 1 and 2 plus secondary sources, accurate, systematic, thermometer, data logger, comparative, fair test, pattern seeking, observation over time, keys, bar charts, venn diagram, carroll diagram, conclusion, evidence, method, report, present, explain.		As for Year 1, 2, 3 and 4 plus control, variables, precision, repeat, classification key, line graph, scatter graph, support, refute, trust, causal.	
Plants	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area	As for Year 1 plus light, shade, sun, warm, cool, water, grow, healthy.	Photosynthesis, pollen, insect/wind pollination, seed formation Seed dispersal (wind dispersal, animal dispersal, water disposal)		(Living things and their habitats) life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, bulbs, cuttings	

This is included on the knowledge organisers for each unit and word aware activities in each lesson.
Three key words are included on the steps to success in each lesson for the children to refer to.



Alexandra Park Junior School — Year 4 — Unit of Learning: Electricity — Knowledge Organiser

What have I previously learned?

I can explain differences, similarities or changes related to simple scientific ideas and processes.

I can use straightforward scientific evidence to answer questions or to support my findings.

I can explore how things work.

Vocabulary – Goldilocks words

Word	Definition
Mains	It is the form of electrical power that is delivered to homes and businesses, and it is the form of electrical power that people use when they plug items such as domestic appliances such as televisions and hairdryers.
Electrical Circuit	A path for transmitting electric current; it is a closed loop that includes a source of energy, a load, and connecting wires.
component	Part of a circuit, such as wires, motors, relays, and magnets.
cell	Unit structure used to generate an electrical current by some means other than the motion of a conductor in a magnetic field.
conductor	a substance or material that allows the flow of charge or electric current in one or more directions.
Insulator	a material or device that does not allow electric current to flow freely.

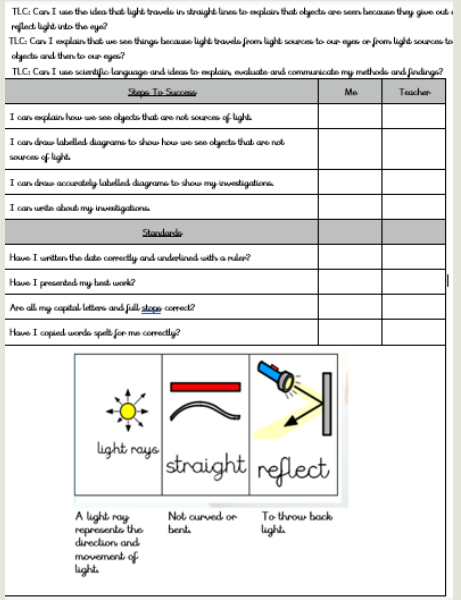
Useful links

Https://www.youtube.com/watch?v=oBIv-uh7EGU
Https://www.youtube.com/watch?v=MqHxK7NuxMA
Https://www.bbc.co.uk/bitesize/topics/zgh4jxs/articles/zqf7n2p#zfccc mn

Sticky Knowledge

- Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit, the component will not work.
- A switch can be added to the circuit to turn the component on and off.
- Metals are good conductors so they can be used as wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity.

Prompts to help me in my learning

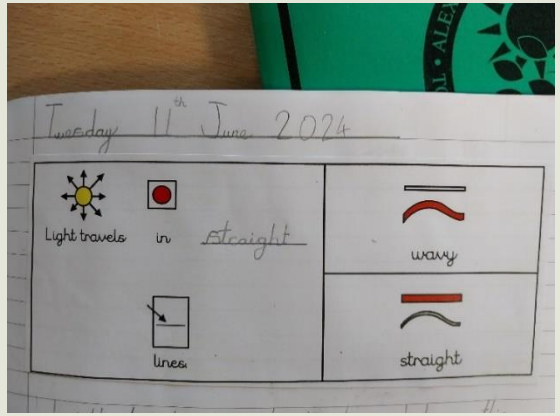


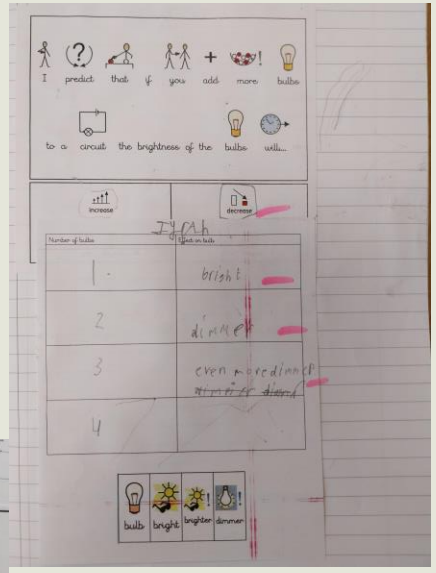
TLC: Can I use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye?
TLC: Can I explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes?
TLC: Can I use scientific language and ideas to explain, evaluate and communicate my methods and findings?

Steps To Success	Me	Teacher
I can explain how we see objects that are not sources of light.		
I can draw labelled diagrams to show how we see objects that are not sources of light.		
I can draw accurately labelled diagrams to show my investigations.		
I can write about my investigations.		
Standards		
Have I written the date correctly and underlined with a ruler?		
Have I presented my best work?		
Are all my capital letters and full stops correct?		
Have I copied words spelt for me correctly?		

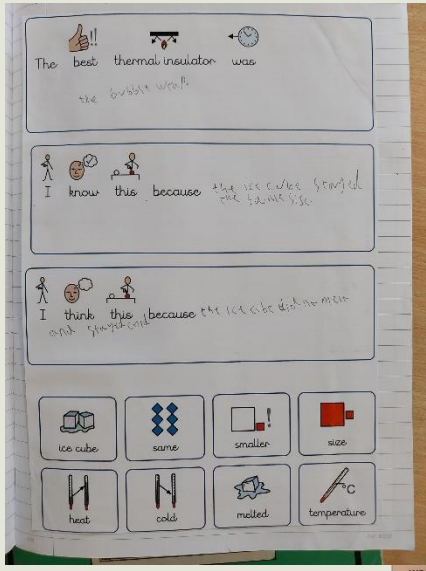
Implementation –Adaptation and vocabulary development

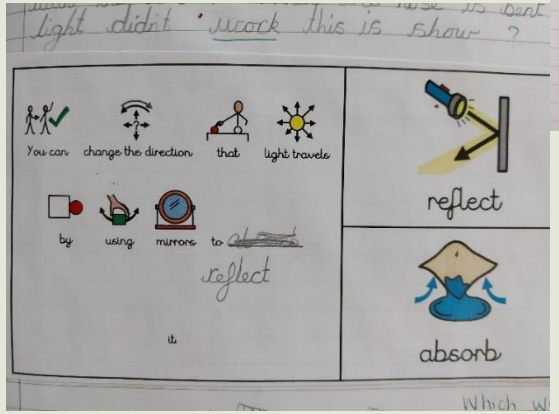
Alexandra Park Junior School

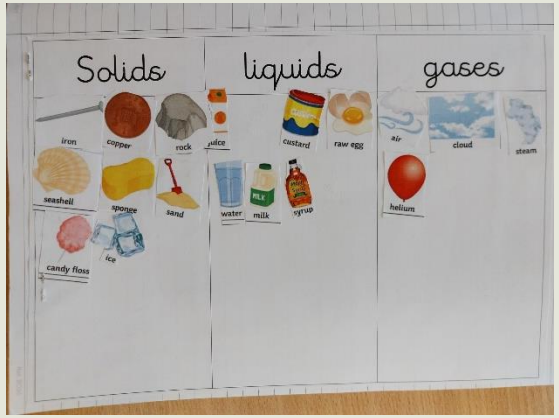


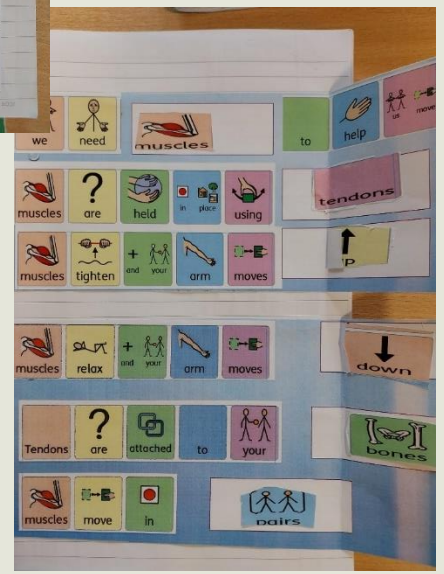


Work is adapted and additional vocabulary support is provided for children with special educational needs and international new arrivals.





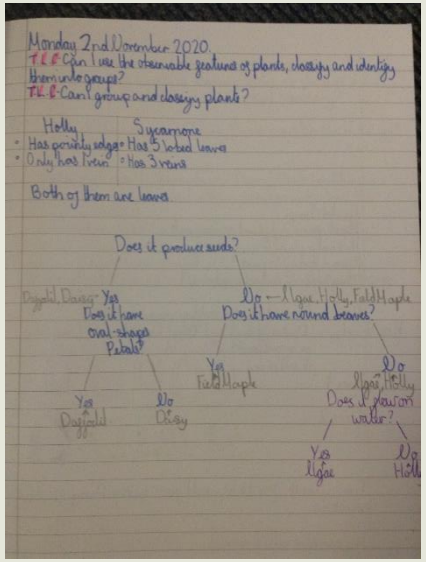


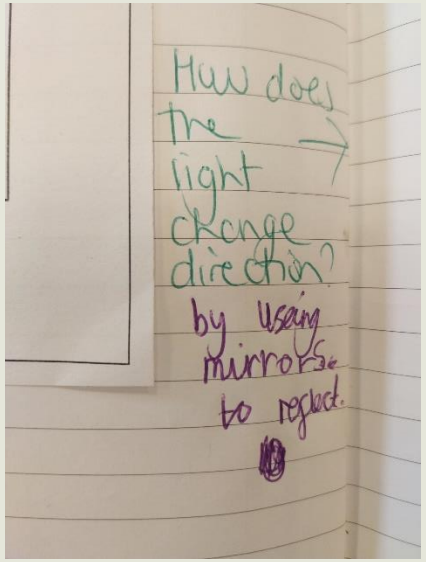


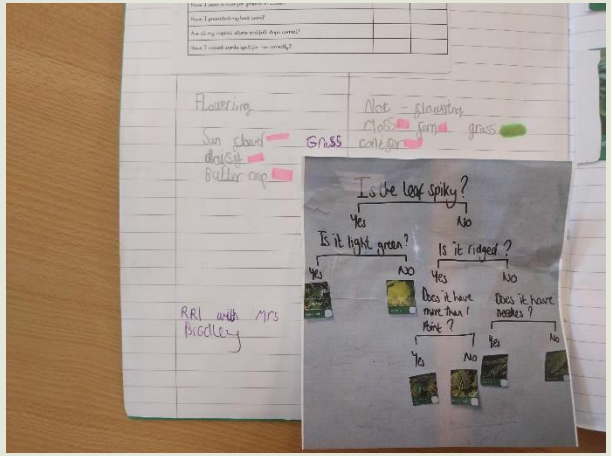
Implementation –Feedback and rapid response intervention

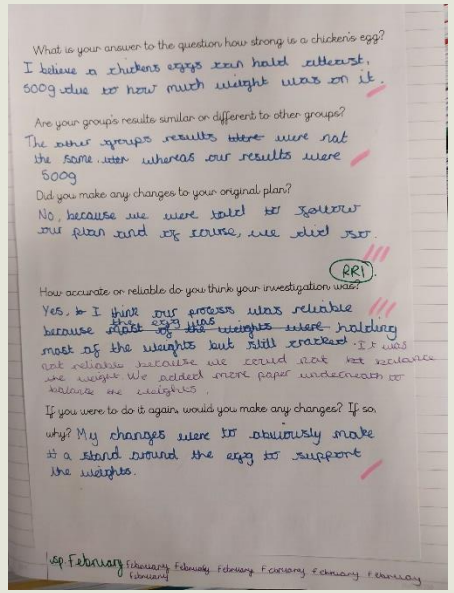
Alexandra Park Junior School

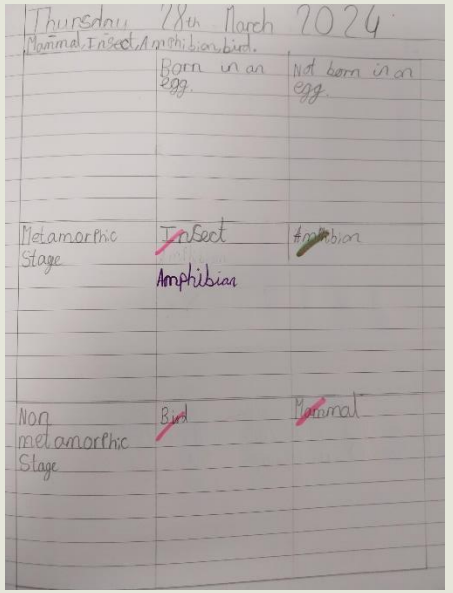
Whenever possible, feedback is given in the lesson and acted upon by children using a purple pen. When additional support is still required, RRI (rapid response intervention) takes place to address any misconceptions.









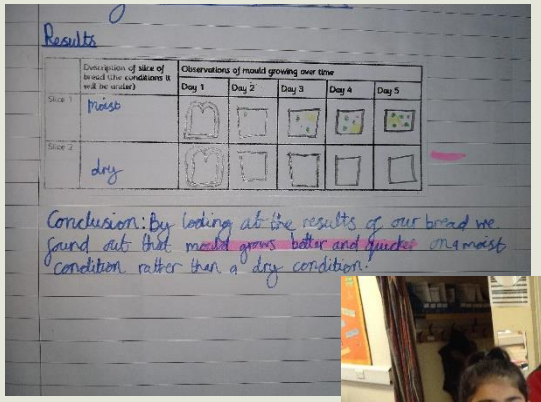


Implementation- Enquiry types
Observation over time

Alexandra Park Junior School

Year 4 investigated the effect different liquids have on teeth (eggshells).

Year 3 investigated which conditions plants need for life.



Year 6 investigated the best conditions for mould to grow.

Implementation- Enquiry types
Pattern seeking

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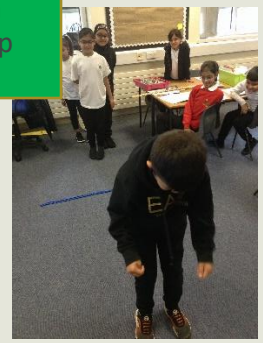
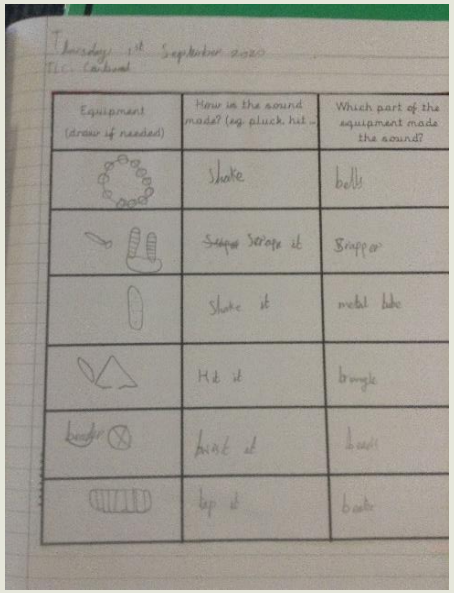
"We found out that people with longer femurs do not always jump further". (Y3 child)



Year 3 investigated whether people with longer femurs jump further.

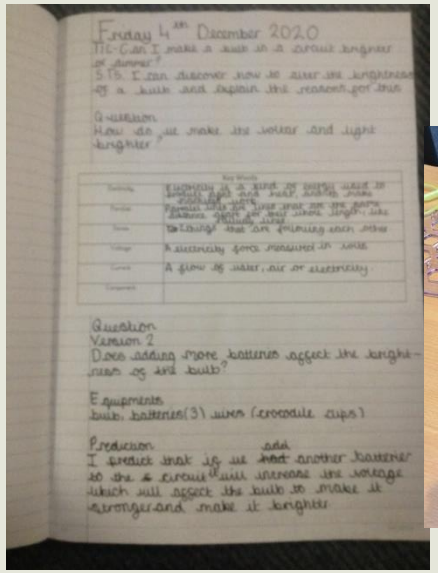


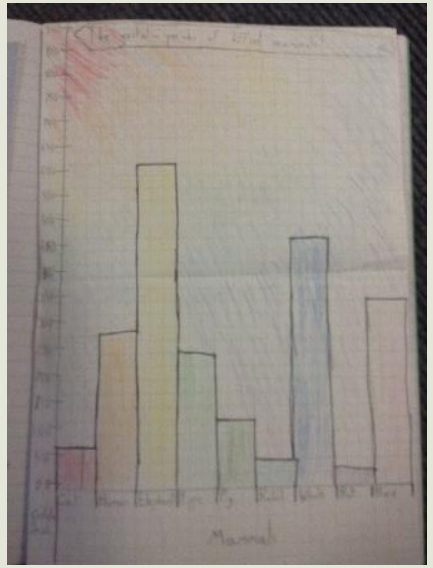
"The more pulleys that you have the easier it is to lift the load." (Y5 child)

Year 5 investigated how mechanical devices can help us lift loads.

Year 4 investigated how the pitch of an instrument could be changed.

Year 6 investigated how adding more batteries affected the brightness of a bulb.





Year 5 investigated the pattern between the size of a mammal and their gestation period.

Implementation- Enquiry types
Fair and comparative tests

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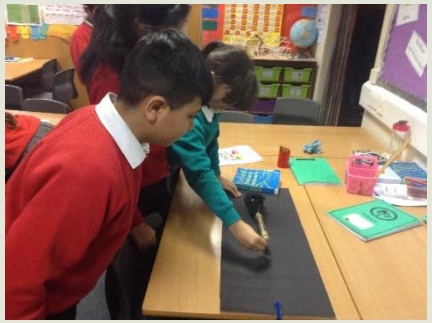
Year 5 investigated how different materials insulated ice.

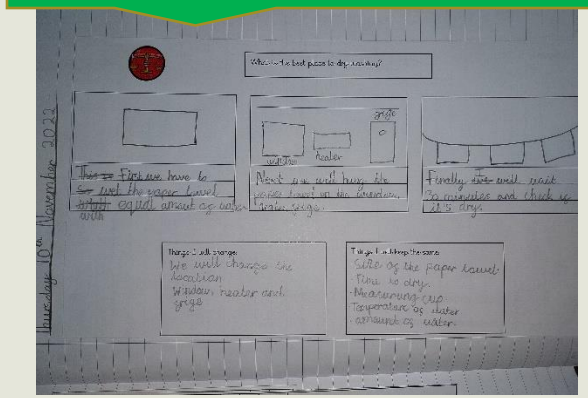
"The surface that caused the most friction was the carpet. We found out that the rougher the surface, the more friction was caused." (Y5 child)



Year 5 investigated the force needed to move objects on different surfaces.

Year 3 investigated friction on different surfaces.

"The best place to dry the paper towel was the radiator because the heat helped the water to evaporate." (Y4 child)



Year 4 investigated the best place to dry washing.

Implementation- Enquiry types
Research using secondary sources

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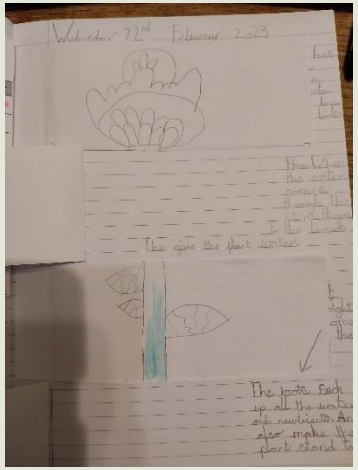
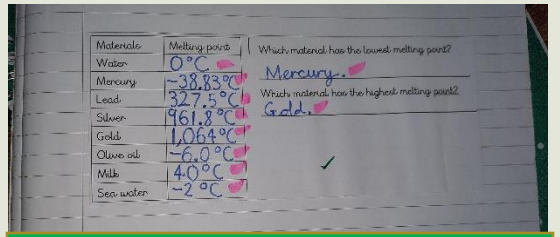
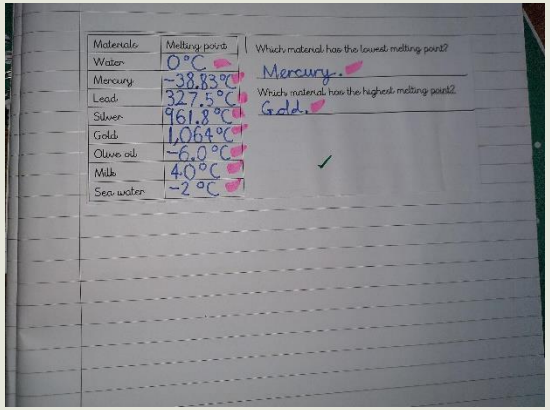


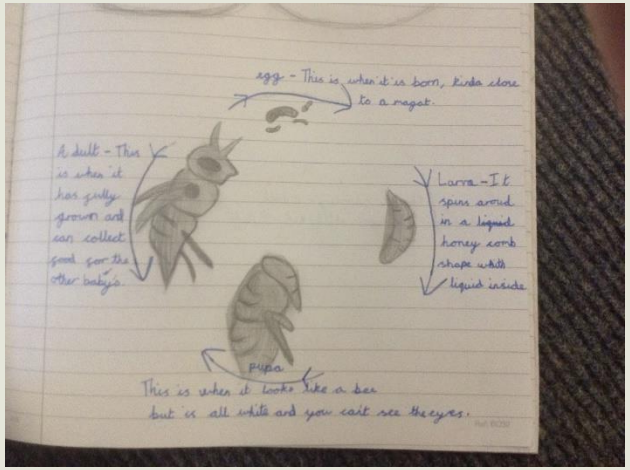
Year 3 used secondary sources to find out about the functioning parts of flowering plants.



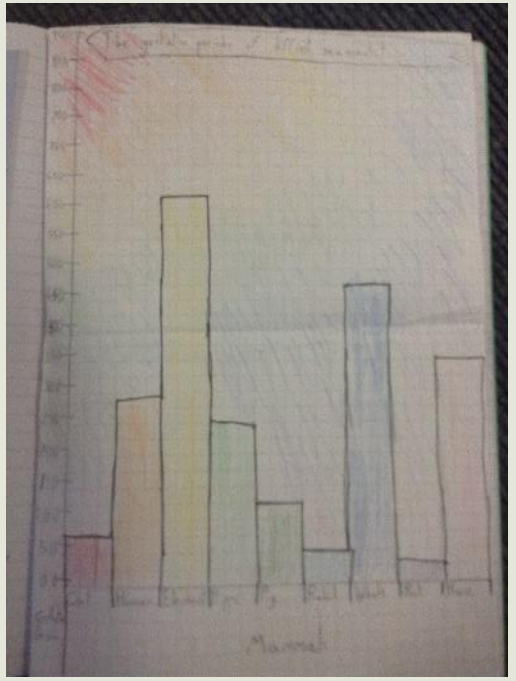
Y4-Do all solids and liquids change state at the same temperature?
"No different substances change state at different temperatures because their melting points are all different." ((Y4 child)



Y4 researched if all solids and liquids change state at the same temperature



Year 5 researched the lifecycles of insects and amphibians.



Year 5 researched the gestation periods of different mammals.

Implementation- Enquiry types
Identifying and classifying

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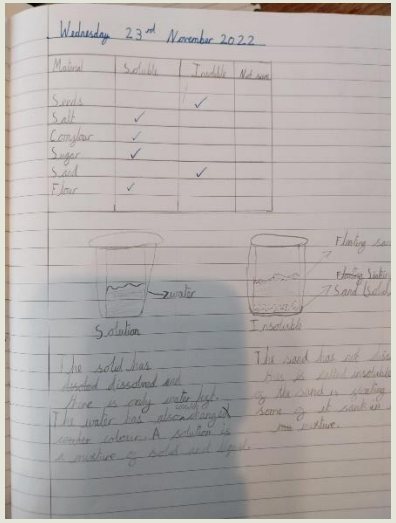
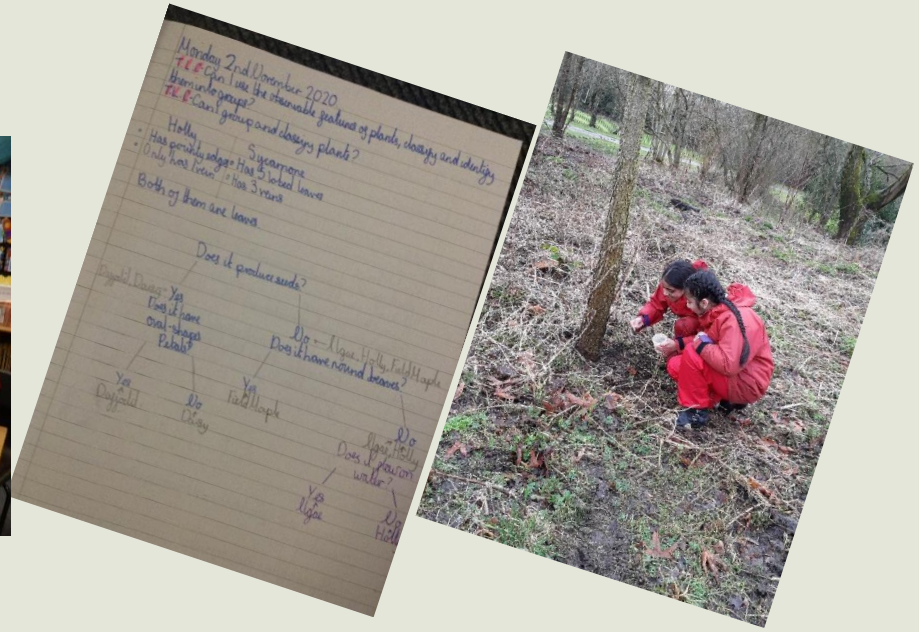
Year 3 which materials are magnetic?



Year 5 which solids are soluble?



Year 4

Implementation- Outdoor learning

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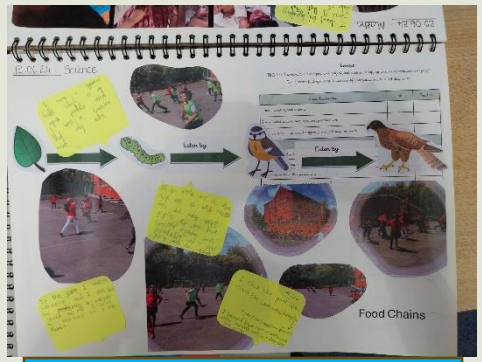
Outdoor learning is encouraged for number of reasons:

- allowing children to see how science relates to the world around them
- providing engaging, practical opportunities to collaborate
- research says outdoor learning can accelerate progress (EEF) and improve the performance of under achieving pupils (Hamilton Trust).

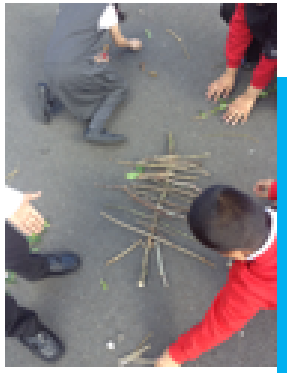
"Uranus was 29m away from the Sun in our model so we had to count 29 clicks on the trundle wheel." (Y5 child)



Year 4 playing a game to model food chains.

Year 6 photographing mini beasts to classify.

"If we have longer legs, could we run faster?" "If you have big hands, can you throw further?" (Y3 children)



Can I ask questions and use different types of scientific enquiries to answer them?
Children made skeletons using twigs etc then generated questions to investigate.
As a class they chose to investigate if children with longer femurs jumped

Outdoor and active learning allows children the opportunity to use the vocabulary they have been taught in a meaningful way.

"We have taught science outdoors during our space topic. This supported the children's understanding of the movement of the planets and the scale of the solar system". (Year 5 teachers)

Year 6 modelling the circulatory system.

Curriculum Impact

Alexandra Park Junior School

Children should be able to show that they have met the steps to success for each lesson in a variety of ways. They may demonstrate this through independent differentiated work, group work (which could be recorded in the class active learning book), oral or visual presentations.
Children should self-assess their work using the steps to success at the end of each lesson. They will also be given the opportunity to use the learning line to show how confident they feel about their learning in the lesson,

<u>Assessment</u>
Teacher assessment is the primary method of assessment, this includes taking into account the discussions that children have in class with the teacher and their peers, written work in books, presentations etc as well as a Kahoot quiz end of a unit of work. Each unit also includes a TAPS focused assessment which targets specific working scientifically objectives.
Target Tracker assessments are used throughout the school to assess children's progress and attainment in science, ensuring that the attainment in both working scientifically and scientific knowledge targets are taken into account. Teachers judge which band to put children on by choosing the one that best fits a child's attainment within (where possible) their academic year.

Impact

Alexandra Park Junior School

Monitoring

The science subject leader will monitor the teaching of science throughout school during pop in observations and book scrutinies and will give feedback to class teachers about areas for praise and areas for development.
The science subject leader will monitor and analyse the data inputted onto Target Tracker, looking at children who are not on track to meet age related expectations. The subject leader will also analyse the data for boys vs girls, SEND, Pupil Premium and International New Arrivals and consider their performance compared to others and monitor where additional support may be needed. This will be fed back to SLT.

Impact

There is a clear expectation that all classes are making progress towards achieving age related expectations. All objectives used in TLCs must be taken from Target Tracker to support accurate assessment.

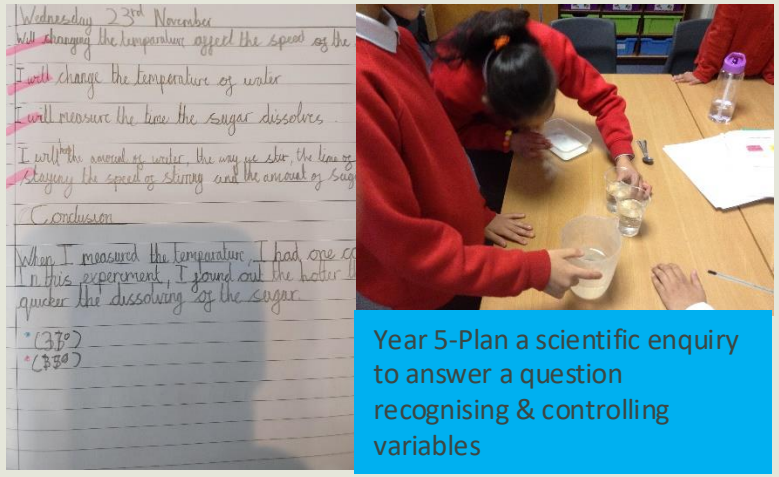
The progression of both knowledge and skills across the Key Stage secures pupils' understanding of the key objectives, as well as developing enquiring minds. We believe that our science curriculum lays solid foundations for our pupils to build on as they move into Key Stage 3 and a life-long love of learning about the world around us.

Impact will be measured through 'spotlights' three times a year which will include :

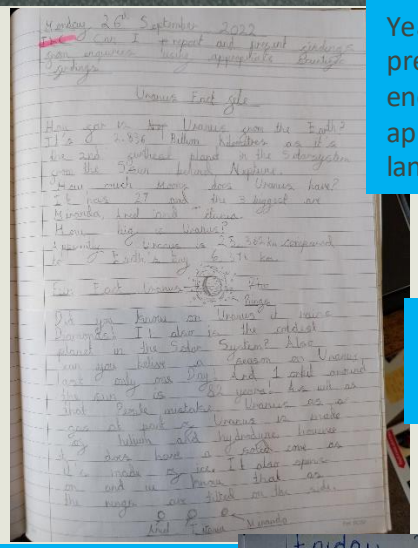
- book scrutinies
- planning scrutinies
- learning walks
- lesson observations and pop-ins
- staff and pupil voice
- data analysis

Impact – TAPS assessment

Alexandra Park Junior School

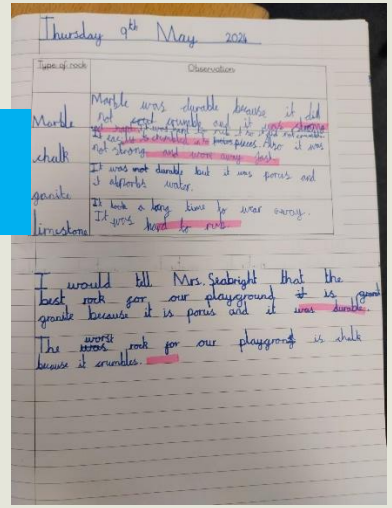


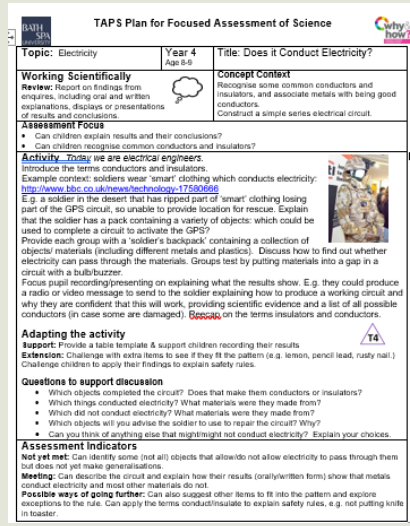
Year 5-Plan a scientific enquiry to answer a question recognising & controlling variables

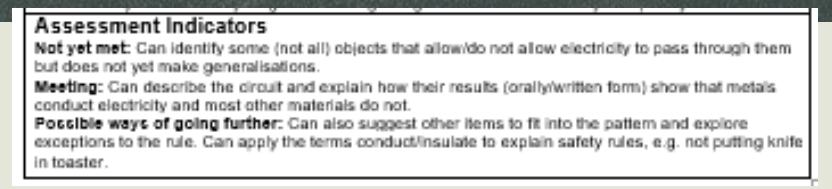


Year 5 -Report and present findings from enquiries using appropriate scientific language.

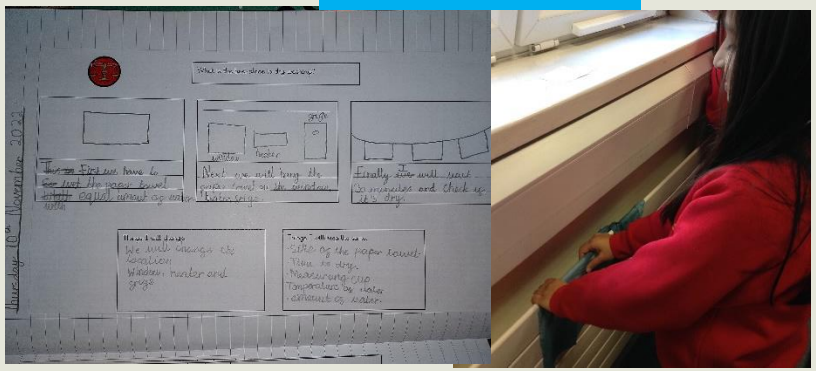
Year 3 -Report and present findings from enquiries..



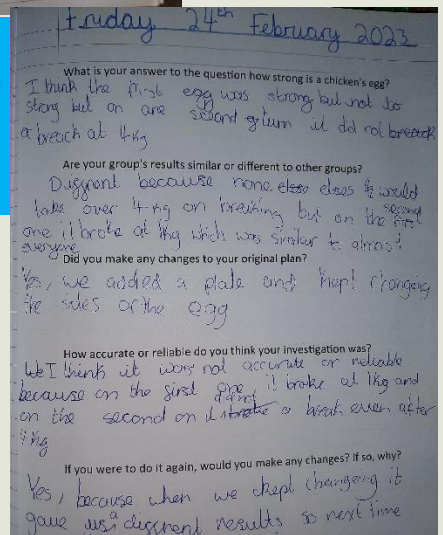




Year 4- plan a fair test.



Year 6-Report and present findings from enquiries and explain degree of trust in results.



TAPS focused assessments introduced to support the delivery and assessment of working scientifically skills
They provide an explanation of the age-related expectation for each skill and are designed to focus on one skill at a time.

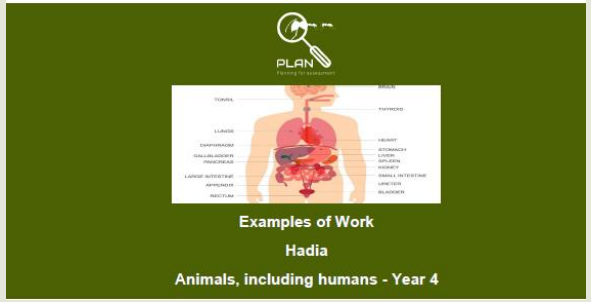
Impact- PLAN assessment

Alexandra Park Junior School

PLAN
Planning for assessment

Knowledge matrices Y1-6

"The PLAN resources show us what is expected from age related children and what the children's outcomes should look like. It addresses misconceptions and common mistakes that could be made. The TAPS assessments allow us to focus on the specific skills required from the children. "(Y4 teacher –ECT)



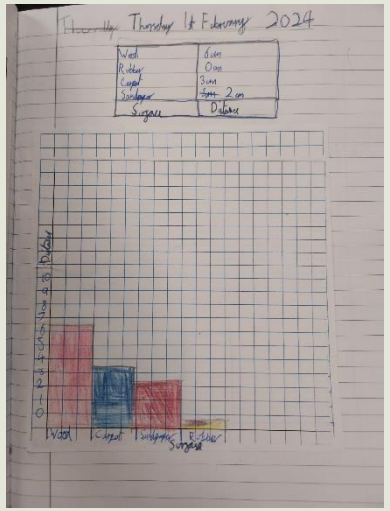
We use PLAN documents to give examples of age-related work, which helps teachers with making accurate assessments. It also provides key vocabulary and potential misconceptions and makes the key learning points clear so teachers know the essential points which children must take away from a unit of learning.

Key learning	Possible evidence
A sound produces vibrations which travel through a medium from the source to our ears. Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound effectively. Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds. **Key vocabulary** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	• Can name sound sources and state that sounds are produced by the vibration of the object • Can state that sounds travel through different mediums such as air, water, metal • Can give examples to demonstrate how the pitch of a sound are linked to the features of the object that produced it • Can give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder • Can give examples to demonstrate that sounds get fainter as the distance from the sound source increases
Common misconceptions	
Pitch and volume are frequently confused, as both can be described as high or low. Some children may think: • sound is only heard by the listener • sound only travels in one direction from the source • sound can't travel through solids and liquids • high sounds are load and low sounds are quiet.	

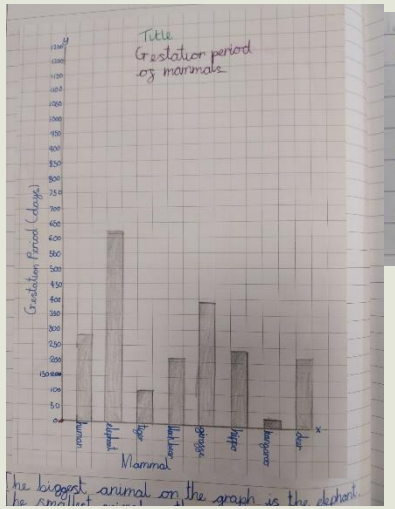
Evidence of Learning		Assessment
Oral evidence	Examples of work	Knowledge
"When we plucked the guitar, we noticed that the thicker strings made the lower-pitched sound and the thinner strings made the higher-pitched sound. I think it also depends how tight the strings are."		Hamza identifies patterns between the pitch of the sound and the features of the object.
Teacher observations		Working scientifically
		Hamza consistently uses comparative language to link cause and effect.

Impact-Progress across the key stage

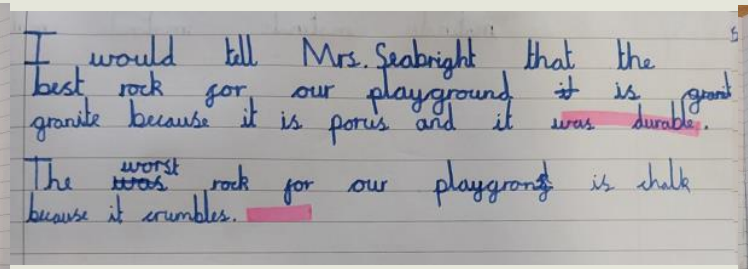
Alexandra Park Junior School



Year 3

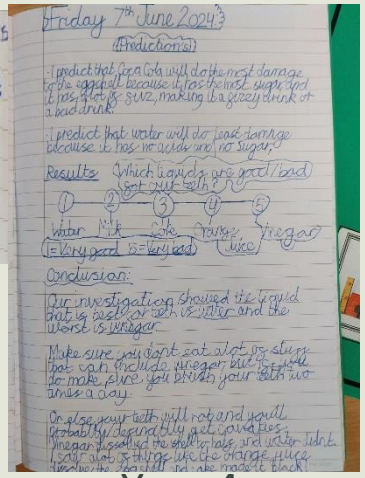


Year 5

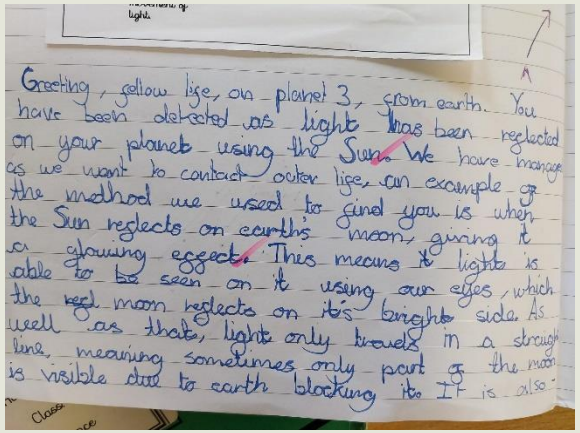


Year 3

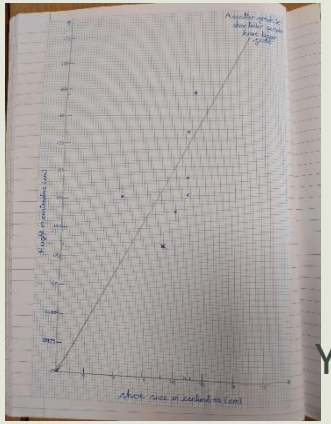
- Graphs
- Explanations
- Labelled diagrams



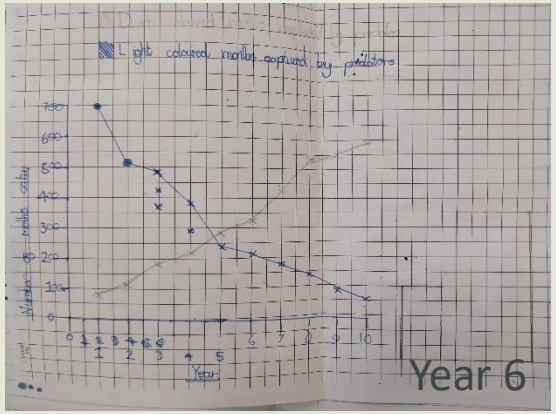
Year 4



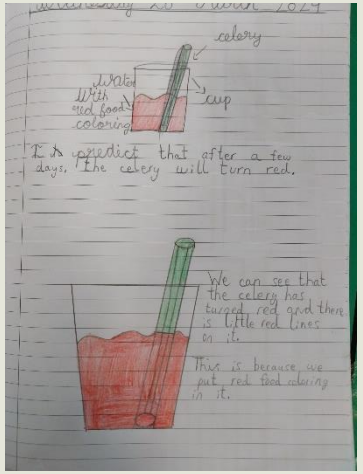
Year 6



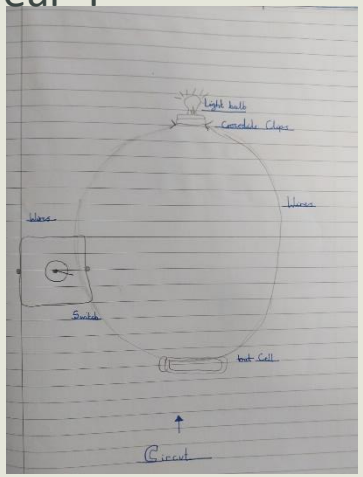
Year 5



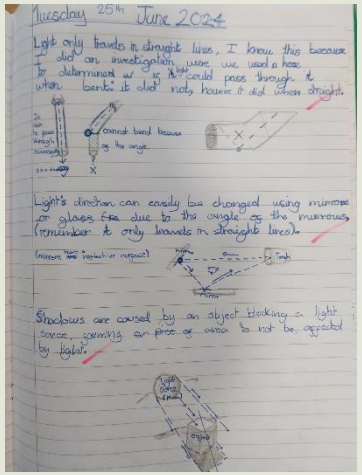
Year 6



Year 3



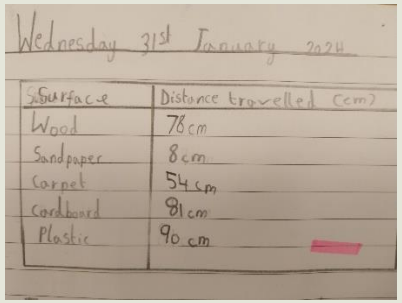
Year 4



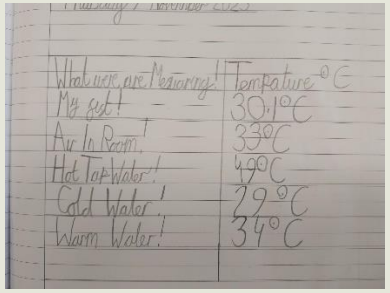
Year 6

Impact-Progress across the key stage

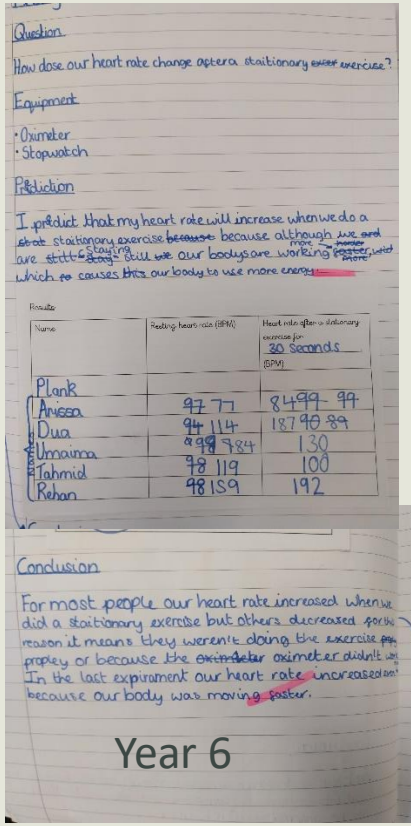
Alexandra Park Junior School



Year 3

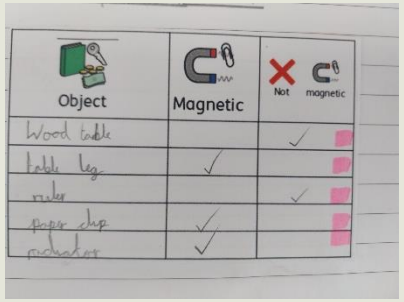


Year 4



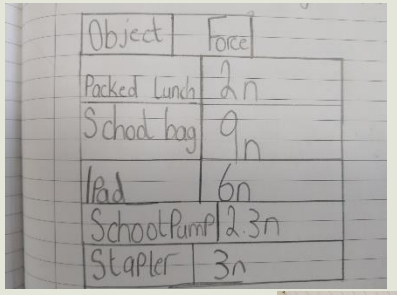
Year 6

Measuring
Planning
Classifying

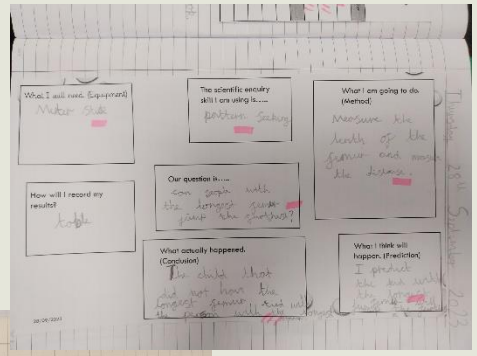


Year 3

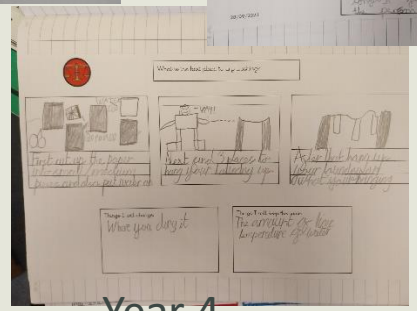
Year 5



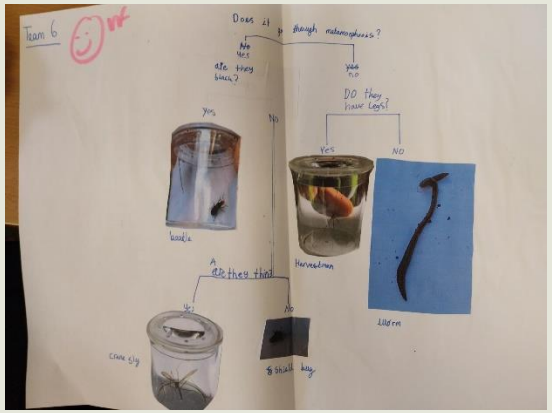
Year 5



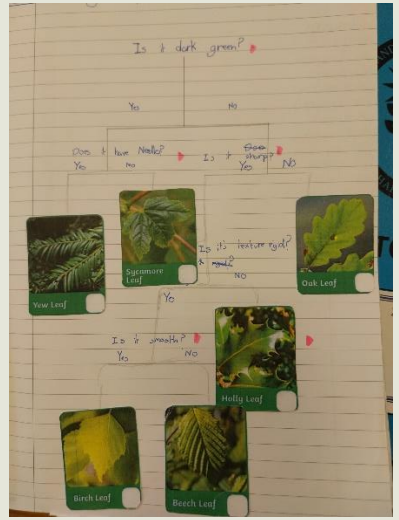
Year 3



Year 4



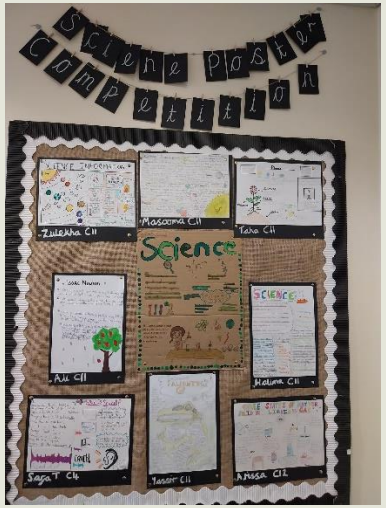
Year 6

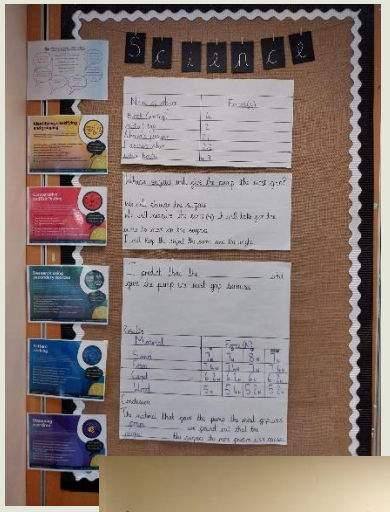


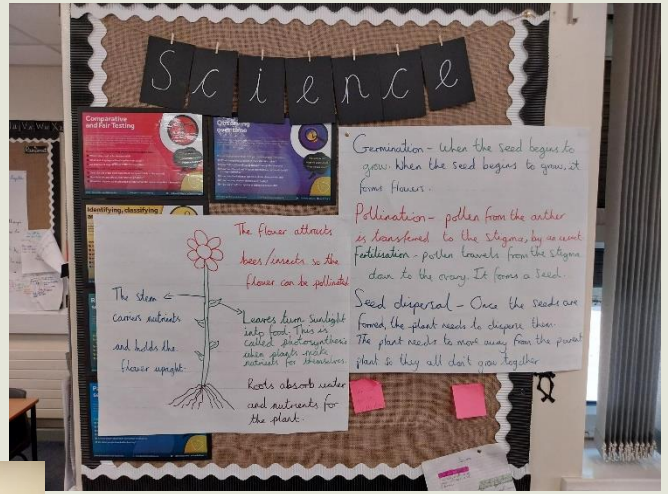
Year 6

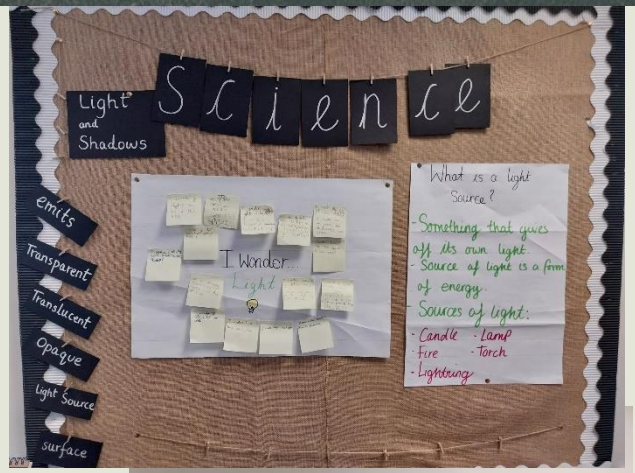
Displays

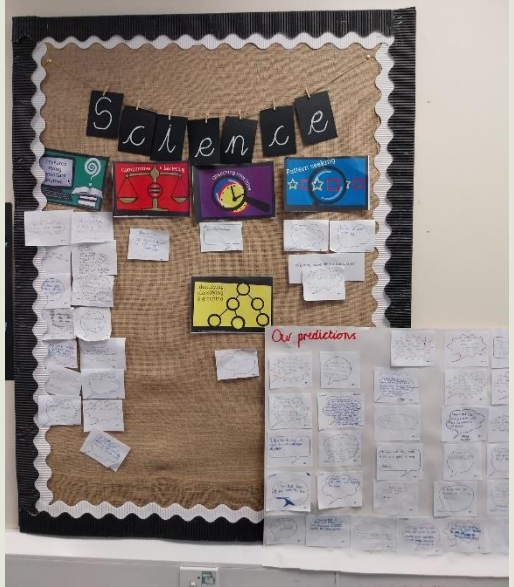
Alexandra Park Junior School











We held a science poster competition and some of the entries are displayed to celebrate the children's effort and independent learning.

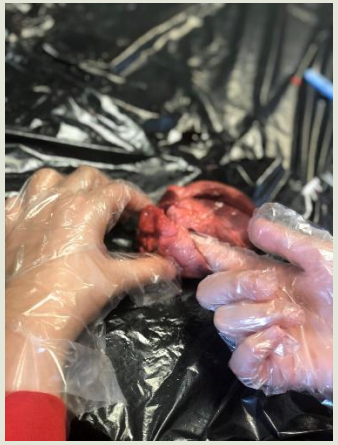
Each class has a science working wall.
Prompts, vocabulary boards and whole class work is added throughout the teaching of a unit for the children to refer to support their learning,
Posters of the five types of scientific enquiry are also available to refer to.

Enrichment

Alexandra Park Junior School

"We did exercise with Freddie Fit and I learned all about our bodies and muscles." (Y3 child)

Freddie Fit- helping with Year 3's healthy me topic.



Year 6- Heart dissection

Year 4-Visit from sound man.

"I loved finding out how sound is made and making the cool instruments." (Y4 child)

"The planetarium was great, it was like really being in space." (Y5 child)

Year 5 Wonderdome planetarium.

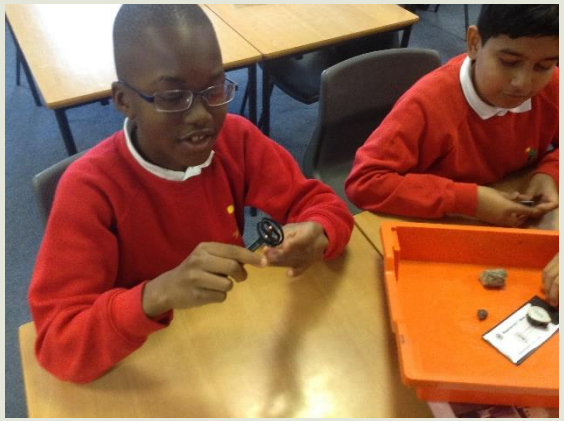
Enrichment – Castleshaw –

Alexandra Park Junior School

Year 6 went to a local outdoor centre primarily related to their geography topic about rivers. They did some identifying and classifying of creatures found in the river.
"There was a lot of life in the river which must mean it doesn't have a lot of pollution." (Y6 child)

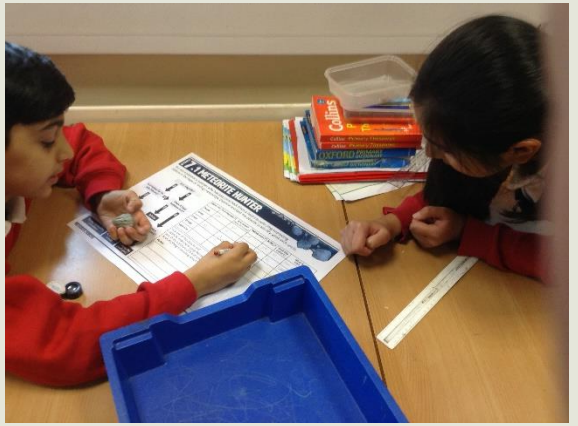
Enrichment – Borrow the Moon – Moon rock exploration

Alexandra Park Junior School



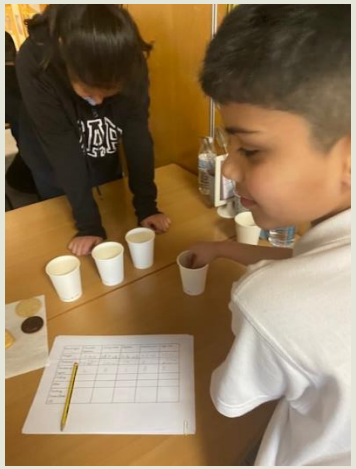
"When I held the moon rocks, I was so excited because they had come all the way from the Moon!" (Y5 child)

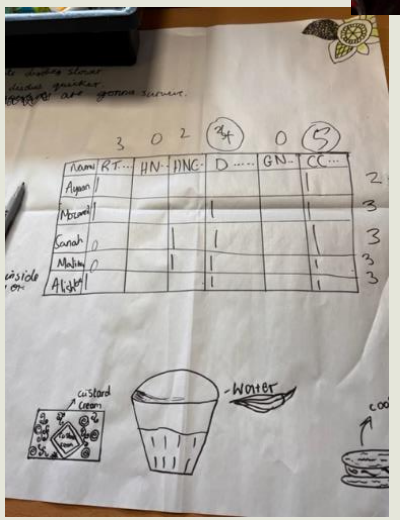
"It is essential that we provide these experiences for our children as these may be the only opportunities they have. They really help with children's understanding and aspirations." (Year 5 teacher)



Enrichment – British Science Week 2022
Biscuit dunking experiments

Alexandra Park Junior School





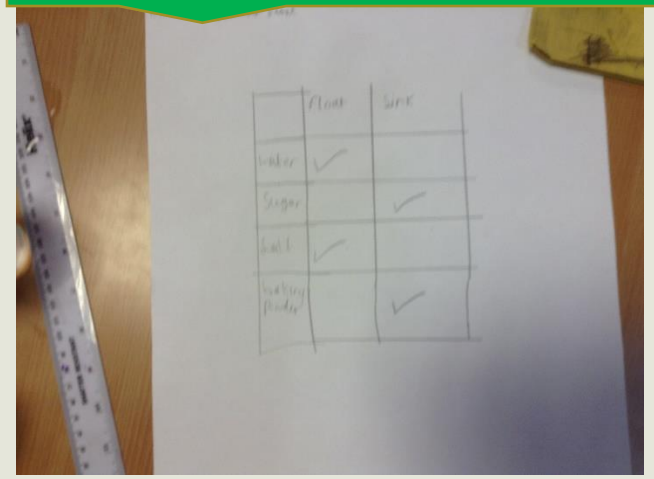
Enrichment – British Science Week 2023
Visit from scientist

Alexandra Park Junior School

I would like to be a scientist when I am older so I can find out why things happen because I find it really interesting .” (Y6 child)

“The popping candy popped in water and vinegar, but not in oil because it was too sticky.” (Y4 child)

“I learnt that adding solids like sugar to water makes it more dense and this makes it harder for the bead to sink.” (Y6 child)



Enrichment – British Science Week 2024
Visit from The Royal Institution

Alexandra Park Junior School

I also applied for and received a grant, which enabled me to organise a visit from the Royal Institution.
They did student workshops, a family event and a staff training session.
The feedback from the adults, who attended, was very positive and it was a great way to improve parental involvement.

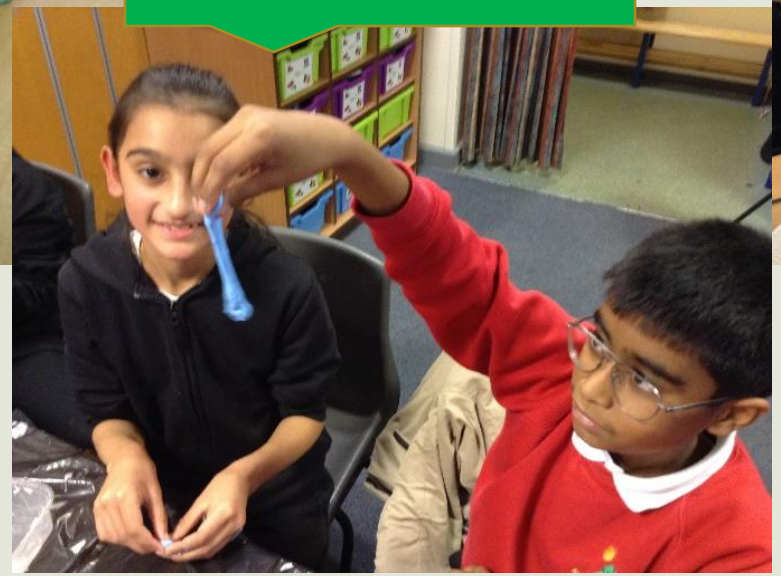
"It was an amazing performance- a great opportunity to appreciate it with our children."
Parent

"It helps children learn about real life things"
Parent

Enrichment – Science club

Alexandra Park Junior School

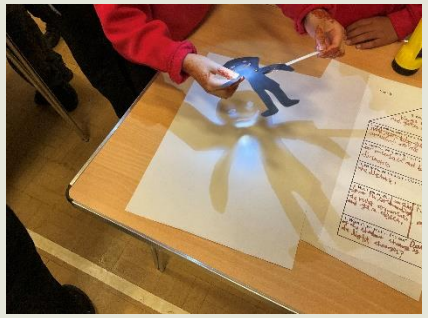
"I would recommend science club because it is a great a great opportunity to have fun and learn at the same time." (Y6 child)



"The things that I enjoyed about science club were making slime, making and eating our own butter and learning about different birds that we can see in the park. " (Y4 child)

Enrichment and oracy –The Great Science Share

Alexandra Park Junior School



Children were invited to share their science learning with peers and adults.
Everyone was really engaged and enthusiastic to share what they have found out.
Approximately 30 adults came after school as well.

PSQM

Alexandra Park Junior School

In 2023 we were awarded the Primary Science Quality Mark.

PSQM
Primary Science Quality Mark®

Primary Science Quality Mark

The Primary Science Quality Mark (PSQM) is designed to set every child on a path to a life filled with exciting opportunities, by giving them access to high quality primary science education.

The PSQM is enabling a world of possibilities for all children.

Since 2011, our comprehensive, one-year, evidence-informed, professional development and school improvement programme has equipped primary science subject leaders with the knowledge, confidence, and expert support they need to transform the quality and profile of science education in their schools. The PSQM empowers science subject leaders to make a positive and lasting impact on science teaching and learning.

Science subject leaders who successfully complete the programme receive recognition for their school through the accreditation of a highly-regarded Primary Science Quality Mark.