

Science at Alexandra Park Junior School



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.

Curriculum Implementation



- 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



- 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.

Curriculum Impact



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.

Assessment

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



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.

Observation over time













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



Year 3 investigated which conditions plants need for life.

Results

Investigation of slice of bread (the conditions it will be under)	Observations of mould growing over time				
	Day 1	Day 2	Day 3	Day 4	Day 5
Moist					
Dry					

Conclusion: By looking at the results of our bread we found out that mould grows better and quicker in a moist condition rather than a dry condition.



Year 6 investigated the best conditions for mould to grow:

Pattern seeking









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Year 3 investigated whether people with longer femurs jump further.

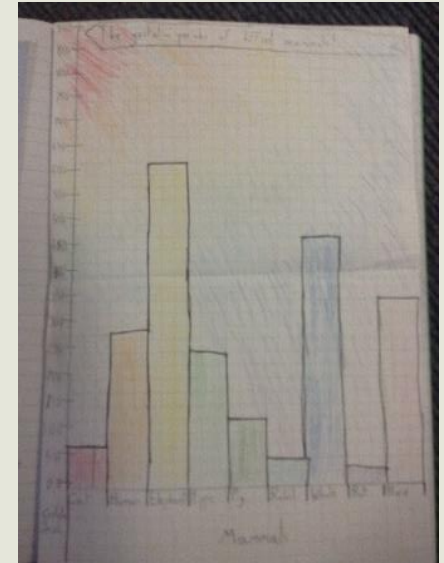


Year 5 investigated how mechanical devices can help us lift loads.

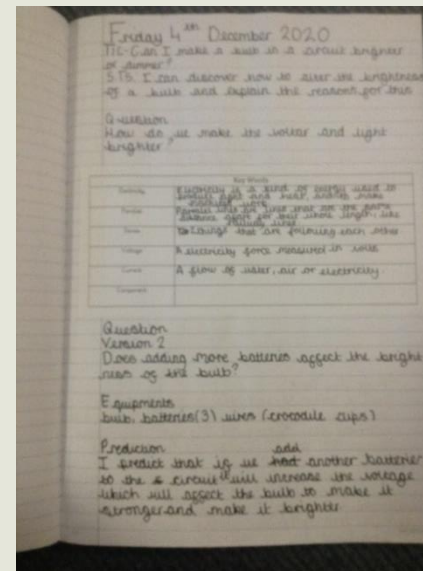
Equipment (draw if needed)	How is the sound made? (eg pluck, hit)	Which part of equipment made the sound?
	shake	bells
	Shaver Shave it	Shaver
	shake it	metal tube
	Hit it	bringle
	beat it	band
	tap it	comb

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.



Fair and comparative tests



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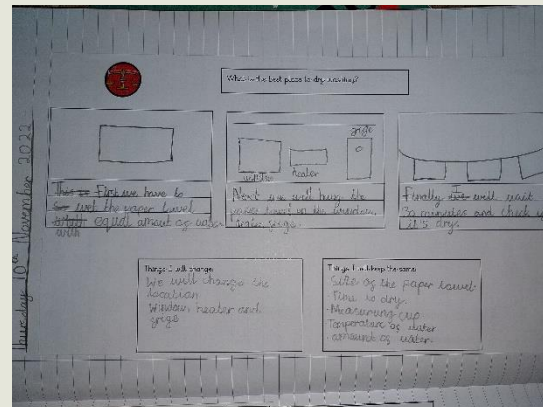
Year 5 investigated the force needed to move objects on different surfaces.



Year 5 investigated how different materials insulated ice.



Year 3 investigated friction on different surfaces.

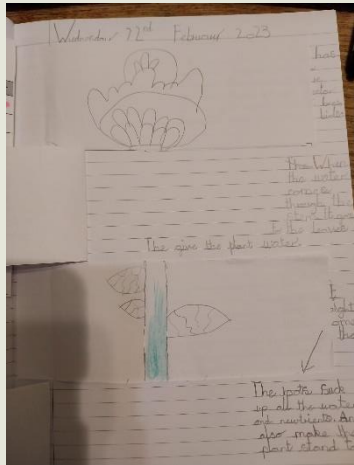


Year 4 investigated the best place to dry washing.

Research using secondary sources



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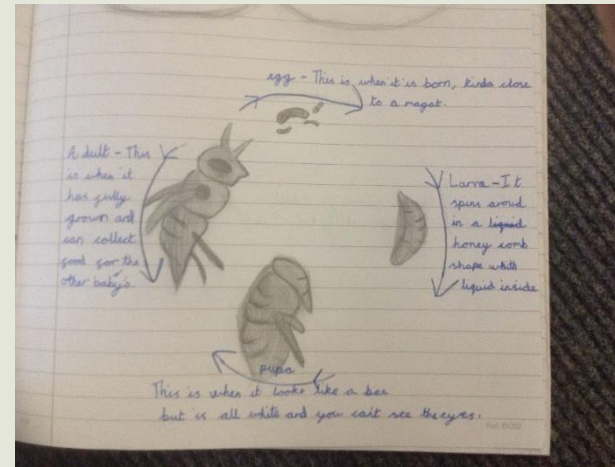


Year 3 used secondary sources to find out about the functioning parts of flowering plants.

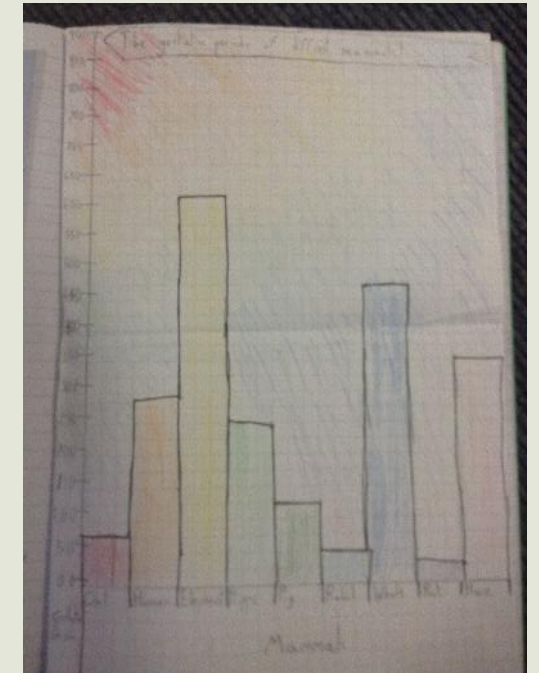
Material	Melting point
Water	0°C
Mercury	-38.83°C
Lead	327.5°C
Silver	961.8°C
Gold	1064°C
Olive oil	-6.0°C
Milk	4.0°C
Sea water	-2°C

Which material has the lowest melting point?
Mercury.

Which material has the highest melting point?
Gold.



Year 5 researched the lifecycles of insects and amphibians.



Year 5 researched the gestation periods of different mammals.

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

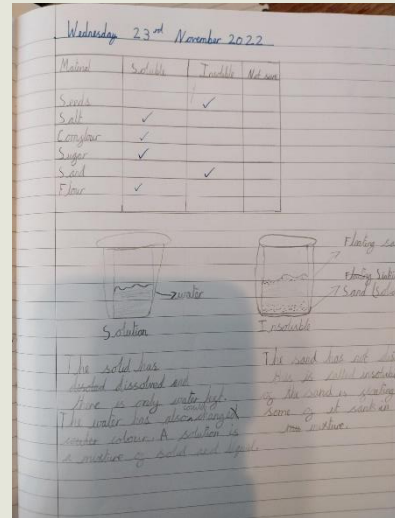
Identifying and classifying



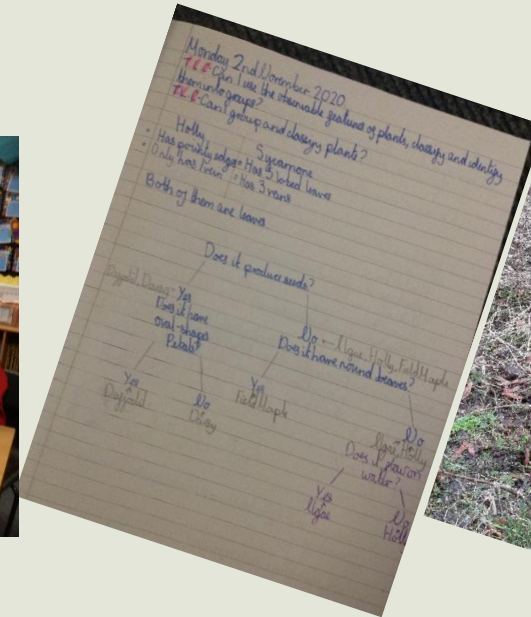
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Year 3 which materials
are magnetic?



Year 5 which solids are soluble?



Year 4



Enrichment - Castleshaw -



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Enrichment - Borrow the Moon - Moon rock exploration

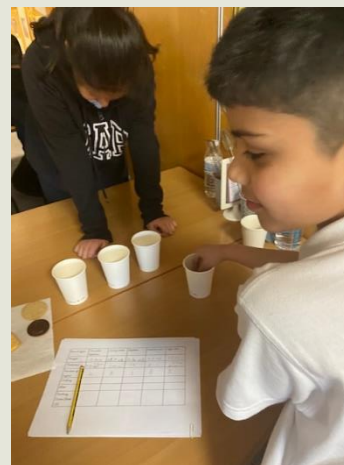


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Enrichment - British Science Week 2022

Biscuit dunking experiments

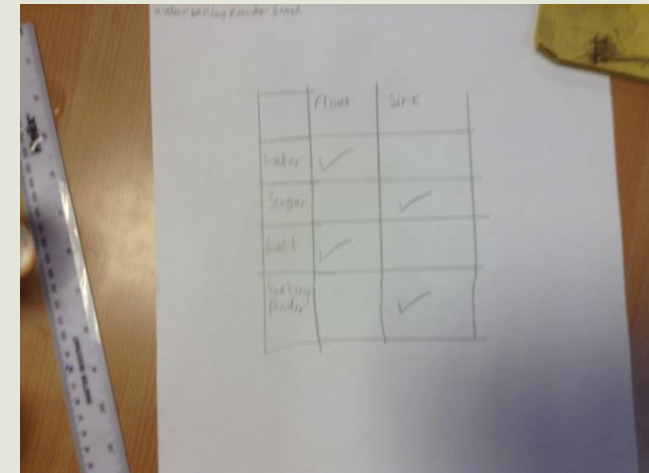


Enrichment - British Science Week 2023

Visit from scientist



"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)

"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)



Enrichment -



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



Year 4 visit from
sound man.

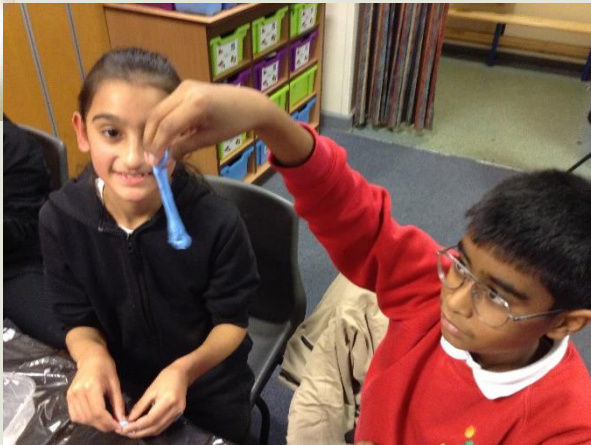


Year 5 Wonderdome planetarium.

Enrichment - Science club



"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 - The Great Science Share



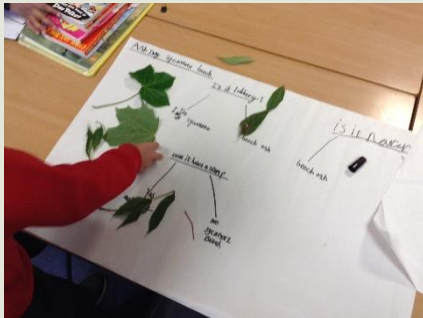
Children were invited to share their science learning with peers and adults. Everyone was really engaged and enthusiastic to share what they have found out. Approximately 20-30 adults came after school as well.



PSQM and other improvements



The use of outdoor learning has increased throughout school.



Science resources organised and tidied to make access easier.



Primary Science Quality Mark has been submitted and we are awaiting the result.



Next steps



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Pre PSQM	Key Achievements	Post PSQM
<ul style="list-style-type: none"> No science vision in place. No science INSET since 2019. Subject leader needed time to introduce expectations, resources and best practice. Subject leader needed support and guidance with moderation. Lots of practical activities in science lessons. Each year group had access to a class set of laptops or Ipads for research. Kahoot quizzes to assess science knowledge statements. Some use of Plan documents. Eco- committee established and sliver award for Green Tree School achieved. 	<ul style="list-style-type: none"> Vision and Principles document created by staff and pupils. 4 staff INSETS completed. Support and guidance from deputy head with moderation. Regular moderation has been done, including lesson observations. Feedback and support provided for teachers with planning, teaching and assessment methods. More outdoor learning done and other drama and modelling activities. Relaunch of PLAN documents to support lesson planning and assessment. Launch of TAPS focused assessments to support assessments. Use of Explorify across the school. SEERIH symbols used consistently across the school. Science club established Links made with <u>a another</u> local primary school science lead and <u>a</u> local secondary school. 	<ul style="list-style-type: none"> Look at the possibility of increasing the number of science related trips/visitors to improve enrichment. Look at including connections with real scientists to each unit so children can see how the foundations that they are learning about link to the real world. Continue to monitor science books, lessons, planning, staff and pupil voice termly (where possible) and provide feedback to staff and make arrangements for support where necessary. I have now worked directly with 6 out of 12 teachers to support with the planning of science units of work. I would like to continue this but focus on working with the staff I have not yet supported. I have enrolled the school on a course called Focus4TAPS to further support and embed the use of the TAPS resources. Complete organisation of science cupboard and create science library. Contact Clarksfield school in summer term to arrange moderation. More consistence approach to retrieval planning needed. Year 5 to visit local secondary school. Great Science Share to be organised.