

Subject leader impact

Presentation to
staff 2021
Jen Serle



ASHTON KEYNES
Church of England VC Primary School



SHINE BRIGHT ★ REACH FOR THE STARS

Science intent

“Enabling life in all its fullness”

“I came that you may have life, life in all its fullness” (John10:10)

Our **Core Christian values** for our school are: *Perseverance, Creativity, Trust and Friendship.*



The most important thing about **Science** is being curious

We observe

We question

We hypothesise and investigate

And we gain knowledge of the workings of the world around us

But the most important thing about **Science** is being curious

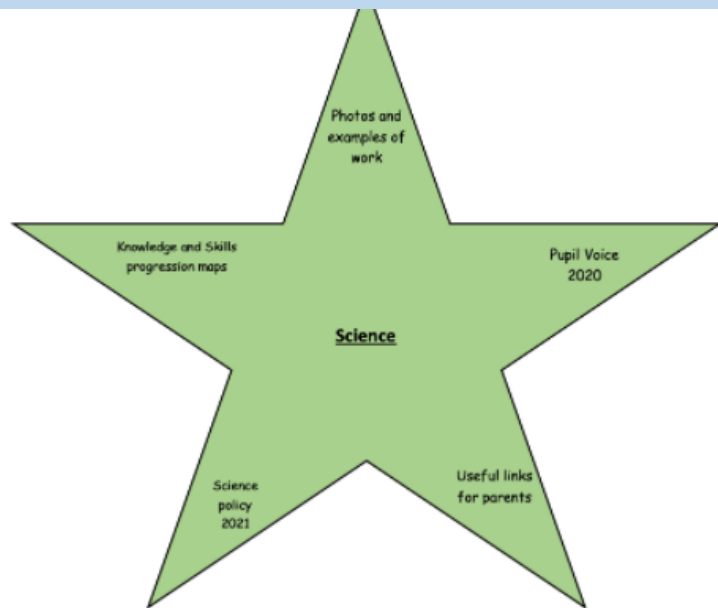
Science intent

The national curriculum for science aims to ensure that all pupils...

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Science on the website

Thank you Sarah!



Knowledge and Skills progression maps:

Science Subject Leader Impact Form

EYFS skills and progression map

Yr 1 skills and progression map

Yr 2 skills and progression map

Yr 3 skills and progression map

Yr 4 skills and progression map

Yr 5 skills and progression map

Yr 6 skills and progression map

Policy:

[AK Science Policy](#)

Useful Links for Parents:

If you and your child want to try out some exciting experiments at home, the following websites may be useful.

<https://sciencebob.com/>

<https://www.jamesdysonfoundation.co.uk/resources/challenge-cards.html>

<https://www.stem.org.uk/resources/collection/477694/starters-science-suitable-home-learning>

Pupil Voice:

2021 question to relate to learning in school

Pupil voice 2020 Focus question
What is science/a scientist?

A scientist is somebody who makes stuff and is working out all the stuff about coronavirus..

A scientist is someone who likes experimenting to try and find things out. They are clever. They sometimes get it wrong but they keep trying

I like how we can put something with another thing and then before you do that, first you have to work out what you think will work best.


I think science is about experiments. Scientists do a lot of experiments because they like doing them and they find out a lot of things.

I think it's really interesting because there are loads of different types of science. I like experimenting and trying out new things. I like learning about bones and fossils. I like looking at slides through my microscope and exploring our environment.

Photo's and examples of work: to be updated shortly

What do AK children say about learning Science?



Videos and slides help us in our lessons. So does tigtag 



I love experiments

It's not all just writing, we go outside lots in Science.

To help us improve we do the star challenge.

What does 2020 report data say about Science attainment at AK?



SCIENCE (2020 REPORTS)		
Y 1 - 6 (185)	Total	%
BARE	14	8%
ARE	148	80%
GD	23	12%

SCIENCE (2020 REPORTS)		
SEND (25)	Total	%
BARE	9	36%
ARE	15	60%
GD	1	4%

SCIENCE (2020 REPORTS)		
PPG (18)	Total	%
BARE	2	11%
ARE	14	78%
GD	2	11%

Note: Assessment of Mastery in Science shown as GD.

Having observed, questioned and been curious about Science at AK I decided my intent was...



To raise the standard of Science teaching across the school and increase the number of children achieving mastery in science.



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Starting with the implementation of a revamped whole school curriculum map to ensure all elements of the National Curriculum are taught with appropriate progression.



		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS		Early learning goal: The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.					
Year 1	Working scientifically ongoing 2yr cycle	Plants	Seasonal change	Animals including humans	Everyday materials	Revisit Plants	Revisit Animals including humans
Year 2		Seasonal change		Seasonal change	Seasonal change	Seasonal change	Seasonal change
Year 3	Working scientifically ongoing 2yr cycle	Uses of everyday materials	Materials	Animals including humans	Living things and their habitats	Plants <i>Living things could due to Covid</i>	Plants
Year 4		A 20/21 States of matter	Electricity	Sound	Revisit previous content	Living things and their habitats	Animals including humans
Year 5		B Rocks	Light	Forces	Revisit previous content	Plants	Animals including humans
Year 6		A States of matter	Electricity	Sound	Revisit previous content	Living things and their habitats	Animals including humans
Year 1	Working scientifically ongoing 2yr cycle	B 20/21 Rocks	Light	Forces	Revisit previous content	Plants	Animals including humans
Year 2		A 20/21 Electricity	Living things and their habitats	Animals including humans	Light	Revisit previous content <i>Animals as a result of missing elements due to Covid</i>	Revisit Living things and their habitats Evolution and inheritance
Year 3	Working scientifically ongoing 2yr cycle	B Earth and space	Earth and space	Forces	Animals including humans	Properties and changes of materials	Properties and changes of materials
Year 4		A Electricity	Living things and their habitats	Animals including humans	Light	Revisit previous content	Revisit Living things and their habitats Evolution and inheritance
Year 5	Working scientifically ongoing 2yr cycle	B 20/21 Earth and space	Earth and space	Forces	Animals including humans	Properties and changes of materials	Properties and changes of materials
Year 6		A Electricity	Living things and their habitats	Animals including humans	Light	Revisit previous content	Revisit Living things and their habitats Evolution and inheritance
Year 1	Working scientifically ongoing 2yr cycle	B 20/21 Earth and space	Earth and space	Forces	Animals including humans	Properties and changes of materials	Properties and changes of materials
Year 2		A Electricity	Living things and their habitats	Animals including humans	Light	Revisit previous content	Revisit Living things and their habitats Evolution and inheritance
Year 3	Working scientifically ongoing 2yr cycle	B 20/21 Earth and space	Earth and space	Forces	Animals including humans	Properties and changes of materials	Properties and changes of materials
Year 4		A Electricity	Living things and their habitats	Animals including humans	Light	Revisit previous content	Revisit Living things and their habitats Evolution and inheritance

Followed by the implementation of year group specific skills and progression maps.



Programme of study, skills and vocabulary

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Plants	Seasonal change	Animals including humans	Everyday materials	Plants	Animals including humans
Seasonal change		Seasonal change	Seasonal change	Seasonal change	Seasonal change

Animals including humans	<p>Key objectives</p> <p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>Describe and compare the structure of a variety of common animals</p> <p>Identify and name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p>Specific skills</p> <p>Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.</p>	<p>Vocabulary</p> <p>common animals fish amphibians reptiles birds mammals pets carnivores meat cat dog lion tiger fox shark killer whale eagle hawk snake herbivores plants cow hamster guinea pig tortoise omnivores meat and plants badger human bear chickens hear neck arms elbows legs knees face ears eyes hair mouth teeth</p>
	<p>Stories</p> <p>Teaching science through stories STEM</p> <p>story-links-list.pdf</p> <p>Book Lists for Primary Science Topics (booksfortopics.com)</p>	<p>Famous names/inventions</p> <p>David Attenborough Steve Backshall Chris Packham Joan Proctor (a herpetologist who designed London Zoo's reptile house) Jane Goodall – the scientist and conservationist who is famous for her work with chimpanzees.</p> <p>Evelyn Glennie – hearing impaired percussionist Stevie Wonder – blind singer songwriter</p>	<p>Job titles</p> <p>01_stem-careers-by-topic-1.pdf</p>




YEAR 1

<p>Working scientifically</p> <p>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:</p> <ul style="list-style-type: none"> 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. 	<p>Vocabulary</p> <p>question answer observe observing equipment identify classify sort group record diagram chart map data compare contrast describe biology chemistry physics</p>
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And most recently the introduction of the use of knowledge mats to give staff and children the key points of knowledge and vocabulary needed for their science topic.



Year 1: Animals Knowledge Mat

Subject Specific Vocabulary		Interesting Book	Sticky Knowledge about animals
fish	A fish is a scaly skinned creature with a spine that swims in water and breathes using gills.		<ul style="list-style-type: none"> <input type="checkbox"/> The blue whale can produce the loudest sound of any animal. <input type="checkbox"/> Horses and cows sleep while standing up. <input type="checkbox"/> Giant Arctic jellyfish have tentacles that can reach over 36 metres in length. <input type="checkbox"/> Tigers can grow up to a length of 3 metres and weigh up to 300 kilograms when fully developed. <input type="checkbox"/> There are about 400 million+ dogs in the entire world. The average life of a dog depending on the breed can vary from 10 to 14 years. <input type="checkbox"/> Dolphins use whistling, clicking and other sounds to communicate with each other. <input type="checkbox"/> Camels can survive up to six months without water or food due to the fatty tissues stored in their humps. <input type="checkbox"/> The cheetah is the fastest animal to roam the earth with top speeds of 113 km per hour.
amphibians	All amphibians begin their life in water with gills and tails. Examples are frogs and newts.		
reptiles	Are animals that are cold-blooded. Most lay eggs and their skin is covered with hard, dry scales.		
birds	Birds have feathers and wings. They lay eggs and are warm-blooded animals.	Wild Animals	
mammals	Mammals are also warm blooded animals. They breath air and have a backbone.		
carnivore	A carnivore is a meat-eating animal that gets its food from killing other animals.		
herbivore	A herbivore does not eat food and they eat plants.		
omnivore	An omnivore eats plants and meat.		
tame	Domesticated animals that are not dangerous to or frightened of humans.		
wild	Living in the natural environment and not belonging to humans.		
nocturnal	Animals that tend to be awake during the night time.		

Impact



From regular monitoring of books I have seen that the curriculum map is being followed. Where topics have been missed due to Covid lockdown, steps have been taken by staff to address this.

Knowledge mats are being trialled this term by all classes – but in different ways. We will reflect on the best way to use them.

The annual Science week went ahead but timing was chosen by staff and event was much lower key than normal. Focus was for children to experience some WOW science activities.

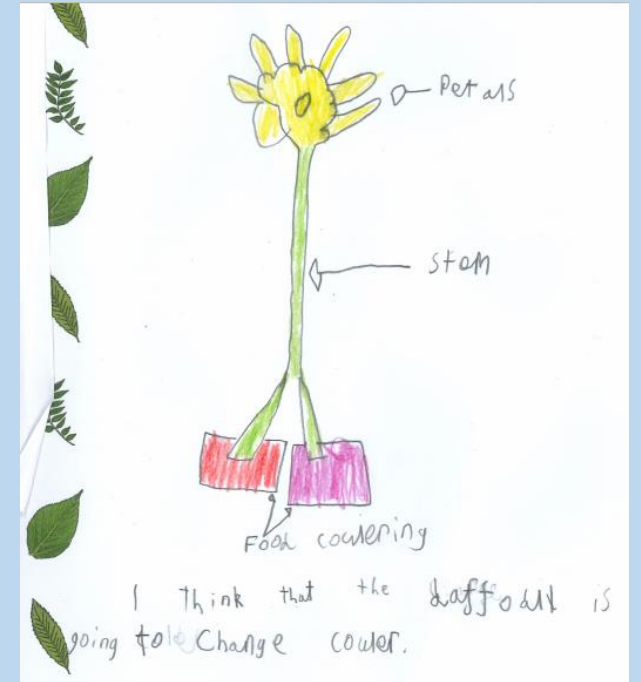


flowers trumpet
 The faows has a chupis.


stem water
 The sem SUCUP The wotus.

growing
 The faows woots gooin in the
 Soil. XOXO.
 Soil.

Science week activities EYFS and KS1




Lava Lamp



oil

food colouring and water



Alka Seltzer tablet

oil

food colouring blobs.

When we added the tablet to the mixture it sized. ✓

After this I could see blobs of food colouring bobbing. ✓

GREAT



Science week activities KS2



Next steps

- Enhance the provision of learning about, and celebrating 'real life' scientists and their work with an emphasis on diversity. *(starting with display)*
- Introduce clear guidance on the 'working scientifically' skills, and more importantly, the progression of those skills.
- Ensure appropriate resources are available to enable staff to facilitate the highest standard of learning across the school.
- Develop a rigorous and effective assessment process. *(2022)*



Year 1 & 2	Year 3 & 4	Year 5 & 6
Asking questions and recognising that they can be answered in different ways		
<p>Asking simple questions and recognising that they can be answered in different ways</p> <ul style="list-style-type: none"> • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered. 	<p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <ul style="list-style-type: none"> • The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question. 	<p><i>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</i></p> <ul style="list-style-type: none"> • Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. • Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.

NB - The National Curriculum statements in italics in these tables indicate that they feature more than once.