



Arnside National C of E School
Aspire Believe Achieve

Science



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There is much evidence showing that children's interest in science is shaped before they leave primary school. So there is a very pressing need to ensure that primary-aged children do not lose that latent interest and enthusiasm for the world around them, and the science that underpins this.

While not all children will follow a career in science or related disciplines when they leave the school system, science literacy will influence their lives daily: for example, managing their health and understanding issues such as climate change. This means that science taught in primary schools is of vital importance to individuals and the nation's well-being.





[Green for growth - Explorify](#)

What is the Science National Curriculum? – EYFS, KS1 and KS2

EYFS

Communication and Language

The development of children's spoken language underpins all seven areas of learning and development. Children's back-and-forth interactions from an early age form the foundations for language and cognitive development. The number and quality of the conversations they have with adults and peers throughout the day in a language-rich environment is crucial. By commenting on what children are interested in or doing, and echoing back what they say with new vocabulary added, practitioners will build children's language effectively. Reading frequently to children, and engaging them actively in stories, non-fiction, rhymes and poems, and then providing them with extensive opportunities to use and embed new words in a range of contexts, will give children the opportunity to thrive. Through conversation, story-telling and role play, where children share their ideas with support and modelling from their teacher, and sensitive questioning that invites them to elaborate, children become comfortable using a rich range of vocabulary and language structures.

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

KS1 and KS2

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



National curriculum in England: science programmes of study

Updated 6 May 2015

School curriculum

The programmes of study for science are set out year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage if appropriate. All schools are also required to set out their school curriculum for science on a year-by-year basis and make this information available online.

Key stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them.

Lower key stage 2 – years 3 and 4

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them.

Upper key stage 2 – years 5 and 6

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas.



Intent, Implementation and Impact-What do we do and why?

[Science | Arnside National Primary School](#)

Intent

At Arnside National C of E school, science teaching aims to increase pupils' understanding of the natural and physical world around them. It also enables them to develop subject specific vocabulary, skills and knowledge to help them think scientifically. Our curriculum ensures that pupils gain an understanding of science processes, its uses, and its implications for today and for the future.

The science National Curriculum identifies three key areas in which the children should be taught: knowledge and understanding; working scientifically and the application of science.

Our school has a carefully mapped science curriculum that ensures children, from nursery to year 6, cover these three aims in an accessible, creative and engaging way. We believe that children learn science best by doing and seeing; by providing the children with a range of opportunities to actively carry out different types of scientific enquiries, we ensure that working scientifically and application of knowledge is embedded into the heart of our science curriculum.

Our school endeavours to ensure that every child is given the opportunity to enjoy and make progress in science. In addition, the wider curriculum provides many opportunities to apply and deepen children's understanding of science. We aim for all pupils to become, 'scientifically literate' citizens and to inspire future scientists.



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How do we organise our science programme?

Science is a core subject and objectives are organised **by year** rather than by **Key Stage**. **Therefore**, our mixed age classes require a rolling programme to ensure coverage.

Arnside Science Overview

Nursery-Year 2 - Year A (20.21) and B (21.22)

Years 3-4 - Year A (20.21), B (21.22) and C (22.23)

Year 6 - Year A only



Year A



	EYFS + KS1	Nursery	Reception/Y1	Y1/Y2	Y3/4	Y4/5	Y6
AT 1	Seasons, Plants and Weather	Understanding the World Me and my body	Animals (including Humans) My Body, my senses How do our senses help us to understand the world?	Animals (including Humans) My Body, my senses How do our senses help us to understand the world?	Forces/Magnets	Forces/Magnets	Light
AT 2		Understanding the World The Three Little Pigs	Properties of Materials Let's build	Properties of Materials Let's build	Animals (incl humans) diet, skeletons and muscles/movement	Animals (incl humans) diet, skeletons and muscles/movement	Electricity
Spr 1		Understanding the World Baby Animals	Animals (including humans) Animals around us	Animals (including humans) Animals around us			Animals incl humans
Spr 2		Understanding the World African Animals	Animals (including humans) Amazing African Animals	Animals (including humans) Amazing African Animals	Rocks	Rocks	
Sum 1		Understanding the World The Tiny Seed	Plants How does your garden grow?	Plants How does your garden grow?	Plants	Plants	
Sum 2		Understanding the World Minibeasts	Living things and their Habitats – Let's investigate a microhabitat	Living things and their Habitats Let's investigate a microhabitat	Light/Shadow	Light/Shadow	Living things/Habitats

Year B



	EYFS + KS1	Nursery	Reception/Y1	Y1/Y2	Y3/4	Y4/5
AT 1	Seasons, Plants and Weather	Understanding the World Healthy Me	Animals, including Humans What keeps me healthy?	Animals, including Humans What keeps me healthy?	Living things and their habitats	Living things and their habitats
AT 2		Understanding the World We're going on a bear hunt	Seasonal Changes What changes take place across seasons?	Seasonal Changes What changes take place across seasons?	Animal incl humans (digestive system, teeth and food chains)	Animal incl humans (digestive system, teeth and food chains)
Spr 1		Understanding the World Winter Birds	Living things and their habitats The Big Garden Bird Watch	Living things and their habitats The Big Garden Bird Watch	States of matter	States of matter
Spr 2		Understanding the World Our World	Materials Protect our planet	Materials Protect our planet	Sound	Sound
Sum 1		Understanding the World Plants all around us	Plants Wonderful, wild Plants	Plants Wonderful, wild Plants	Electricity	Electricity
Sum 2		Understanding the World Water habitats and life-cycles	Living Things and their Habitats (water) What lies beneath?	Living Things and their Habitats (water) What lies beneath?	Plants	Plants



Year C

	Y3/4	Y4/5
AT 1	Living things and their habitats	Living things and their habitats
AT 2	Animals incl humans	Animals incl humans
Spr 1	Properties and changes of materials	Properties and changes of materials
Spr 2		
Sum 1	Earth and Space	Earth and Space
Sum 2	Forces	Forces



How do we ensure coverage, how do we know what is taught and when? - Curriculum Mapping

Knowledge

YEAR A - Year 1			
	Autumn – Animals, including Humans / Materials	Spring - Animals, including humans	Summer - Plants / Living things and their habitats
1	<p>Links to previous Learning</p> <p>I know some basic body parts of humans. I know the differences between materials and can talk about changes I notice.</p>	<p>Links to previous Learning</p> <p>I know how to care for and respect animals.</p>	<p>Links to previous Learning</p> <p>I know how to plant seeds and care for plants. I can respect and care for the natural environment.</p>
	<p>Knowledge</p> <p><u>Animals, including Humans</u> <u>My Body, My Senses</u> Big Question: How do our senses help us understand the world? I know that humans use their senses to find out about and understand the world. I know the five senses of the human body. I know the parts of the human body that is linked with each sense. I know that some people might not be able to use all their senses in the same way. (e.g. blind people/partial blind) I know that humans feel with many parts of the body (not just hands).</p> <p><u>Materials</u> <u>Let's Build</u> Big Question: Where did The Three Little Pigs go wrong? I know the names of some everyday materials. I know that an object is made from one or more material. I know that some objects can be made from different materials (e.g. wooden spoon, metal spoon, plastic spoon) I know the properties of some everyday materials. I know that materials can be described by their properties. I know how to group materials depending on their properties. I know that some materials, e.g. plastic can be found in different forms with very different properties. I am beginning to know that certain materials can be recycled. I am beginning to know why it is important to reduce, reuse and recycle.</p>	<p>Knowledge</p> <p>2021 - LOCKDOWN LEARNING</p> <p><u>Animals, including Humans</u> <u>Animals all around us</u> Big Question: Where do animals like to live? I know that animals vary in many ways having different structures e.g. wings, tails, ears etc. I know they also have different skin coverings e.g. scales, feathers, hair. I know these key features can be used to identify them. I know that animals eat certain things. I know that some eat other animals. I know that some eat plants. I know that some eat both plants and animals. I know names a variety of pets / farm animals including fish, amphibians, reptiles, birds and mammals. I know that animals fit into different groups depending on special features. I know that pets / farm animals are living things and have a variety of needs.</p> <p><u>Animals, including Humans</u> <u>Amazing African Animals (Environmental Science)</u> Big Question: How can we help our animals? I know that animals vary in many ways. I know that animals have different structures (e.g. wings, tails, ears etc I know they have different skin coverings (e.g. scales, feathers, hair) I know that these key features can be used to identify them. I am beginning to know the names of the different animal groups: fish, amphibians, reptiles, birds and mammals. I know one or more feature/s of each animal group. I know that animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals. I know what some animals eat, and I am beginning to use the correct vocabulary (e.g. herbivore and carnivore) I know that animals have basic needs. I know that humans have had an impact on animals in Africa. I know that some animals are threatened and some could become extinct.</p>	<p>Knowledge</p> <p><u>Plants</u> <u>How does your garden grow?</u> Big Question: What do plants need to grow? I know that plants have specific names. I know the names of some common garden plants and wildflowers in the local area. (School and Ashmeadow). I know that I can identify plants through their leaves and other key characteristics. I know that plants have common parts. I know that plants have common parts but that they vary between different types.</p> <p><u>Living things and their habitats</u> <u>Let's investigate a microhabitat!</u> Big Question: What requirements do Living Things have to grow and stay healthy? I am beginning to know the difference between living and non-living things. I know the names of common minibeasts in our local area. I know that minibeasts can be grouped according to their body parts. For example: insects / arachnids, worms (annelids). I know the names some of the animals that live on the Knott. I know what some animals in my local area eat. I know what a food chain is. I know that a microhabitat provides shelter, food and water. I know that a fallen log is dark, cool and damp. I know that the log provides safety from some predators</p>



How do we ensure coverage, how do we know what is taught and when? - Curriculum Mapping

Skills

Key Skills	Key Skills	Key Skills
<p>Animals, including Humans My Body, My Senses Big Question: How do our senses help us understand the world? I can name each of the senses. (Identify) I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Classify) I can take part in interactive activities to explore each sense. (Research) I can investigate human senses e.g. Which part of the human body is good for feeling and which is not? Which food/flavours can I identify by taste? (Comparative/Fair Test)</p> <p>Scientist <i>I can find out about Linda Buck who won a Nobel Prize in 2004 for identifying nose receptors.</i></p> <p>Materials Let's Build Big Question: Where did The Three Little Pigs go wrong? I can take part in an object / materials hunt at home to collect small items made from different materials. (Identify) I can join in discussions about the properties of materials. (Classify) I can sort and classify materials according to their properties (Identifying and classifying) I can suggest materials that are suited to a particular purpose, according to their properties. I can suggest materials that can be used for different purposes. I can ask and answer basic scientific questions about the suitability of materials. (Comparative/Fair Test or Pattern seeking)</p> <p>Scientist <i>I can find out about John MacAdam (roads).</i></p>	<p>2021 - LOCKDOWN LEARNING</p> <p>Animals, including Humans Animals all around us Big Question: Where do animals like to live? I can listen to stories and afterwards talk about the <u>pets</u> people keep. I can name common pets and farm animals during small world play. I can take part in an animal hunt and sort animals into groups. (Identifying and classifying) I can ask questions to find out how to care for common animals. (Research) I can suggest ways to find out which material would work best to clean up after puppy had an accident (Fair test) I can make careful observations. I can talk about my findings. I can label external body parts of some common animals.</p> <p>Animals, including Humans Amazing African Animals (Environmental Science) Big Question: How can we help our animals? I can listen to non-fiction texts about African animals. I can sort African animals according to their structures (e.g. wings, tails etc) (Identifying and classifying) I can sort African animals according to the animal groups (amphibians, mammals, birds etc) (Identifying and classifying) I can ask questions and suggest answers to questions about what African animals eat and their habitat. I can demonstrate my knowledge of African animal habitats through making a diorama of a chosen endangered animal's habitat. (Research) I can make a model of my chosen animal out of plasticine. I can make a food source for my animal and talk about simple food chains. I can research about the threat to my animal. (Research)</p> <p>Scientist <i>I can find out about the life and work of Sir David Attenborough and Chris Packham.</i></p>	<p>Plants How does your garden grow? Big Question: What do plants need to grow? I can sketch and make a print of a selection of plants found in our school garden/my garden. (Observing over time + Pattern Seeking) I can classify leaves, flowers and seeds using my own criteria (Identifying and classifying) I can work in a group to plant and grow potatoes. I can observe a plant growing (Observing over time) I can make detailed sketches of wildflowers. I can plant a bulb and watch it grow. I can observe and identify how plants change throughout the year. (Observing over time) I can grow cress and carry out a test to see what they need to grow. I can grow sunflowers and beans from seeds and care for them. (Comparative/Fair Test) I can set up a wormery and make careful observations. I can (based on observations) identify patterns, e.g. bigger plants have bigger leaves (pattern seeking)</p> <p>Scientist <i>I can talk about the life and work of Charles Darwin.</i></p> <p>Living things and their habitats Let's investigate a microhabitat! Big Question: What requirements do Living Things have to grow and stay healthy? I can make food simple food chains of Knott animals. I can make careful observations of dead, living and plastic minibeasts to establish whether they are living or not. (Identifying and classifying) I can use a tick sheet to identify minibeasts found in our local area. I can sort and classify minibeasts. (Identifying and classifying) I can make careful observations of minibeasts using simple equipment. (Research) I can investigate where we find the most woodlice (Pattern seeking) I can sort pictures of animals into those that live on the Knott and those that do not. (Identifying and classifying)</p>



How do we ensure coverage, how do we know what is taught and when? - Curriculum Mapping

Vocabulary, Cultural Opportunities, Values and Resources

<p>Cultural Opportunities</p>	<p>Cultural Opportunities</p>	<p>Cultural Opportunities</p>
<p>Visit from guide dogs and fundraising opportunity. Visit to Aura – Kendal.</p> <p>Visits to our local environment to observe buildings</p>	<p>'Pets at Home' visit Pet visits to school Farm visits</p>	<p><u>Ashmeadow</u> School and home gardens Allotments Growing Well - <u>Sizergh</u></p>
<p>Key values</p>	<p>Key values</p>	<p>Key values</p>
<p>School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.</p>	<p>School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.</p>	<p>School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.</p>
<p>Book List & Resources</p>	<p>Book List & Resources</p>	<p>Book List & Resources</p>
<p><u>My Body, My Senses</u> Brown Bear, Brown Bear what do you see? By Eric Carle Polar Bear, Polar Bear what do you hear? By Eric Carle BBC Bitesize ks1 – What are the senses? Contact 'Guide Dogs' to arrange a visit. <u>Explorify</u> Developing Experts Twinkl PLAN – Planning for Assessment TAPS - pstt.org.uk</p> <p><u>Materials</u> The Three Little Pigs The Three Little Pigs STEM <u>Explorify</u> Developing Experts Twinkl PLAN – Planning for Assessment TAPS - pstt.org.uk</p>	<p><u>Animals around us</u> I want a Pet by Lauren Child, BBC Bitesize clips Woodland Trust <u>Explorify</u> Developing Experts Twinkl PLAN – Planning for Assessment TAPS - pstt.org.uk</p> <p><u>Amazing African Animals</u> Oi, get off our train by John Birmingham WWF <u>Explorify</u> Developing Experts Twinkl PLAN – Planning for Assessment TAPS - pstt.org.uk</p>	<p><u>Plants</u> Mr Bloom – Growing Cress, Worm story, wormery, old tyres, compost, potatoes, courgette seeds. Woodland Trust The Bee who spoke, by Al MacCuish Plant – DK Eye know The Golden Glow by Benjamin <u>Flouw</u> <u>What's this?</u> A seed's story by Caroline Mockford <u>Explorify</u> Developing Experts Twinkl PLAN – Planning for Assessment TAPS - pstt.org.uk</p> <p>Living things and their habitats KS1 Microhabitats Twinkl PowerPoint <u>Explorify</u> Developing Experts Twinkl PLAN – Planning for Assessment TAPS - pstt.org.uk</p>

What resources do we use to plan, teach and assess?



Which pollinators visit our school grounds?

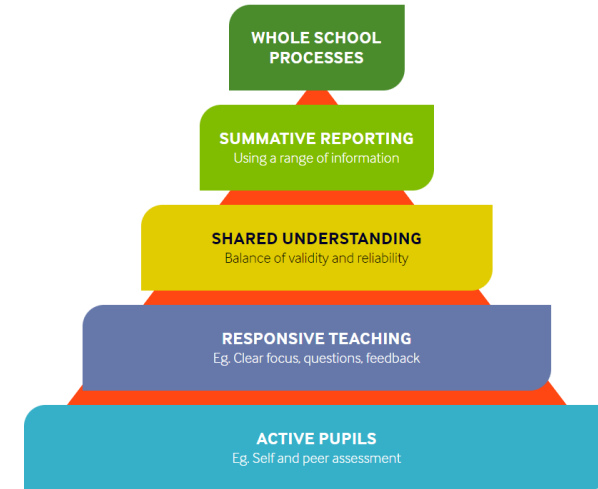
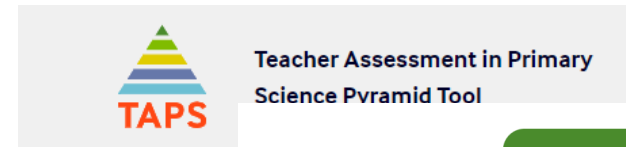
Hamilton
supporting teachers

Rocks

Science Year 3 Rocks and Fossils

Create an amazing rock and fossil museum to which you can invite other classes, parents and family, or even members of your local community like the Natural History or Geology Society! Each session you will build up your knowledge to become expert museum curators and make exhibits, quizzes and activities for your exciting pop-up museum.

Session 1 Become rock stars!



Animals Including Humans - Food and Digestion



Classifying Living Things and their Habitats



Electricity



Living Things and their Habitats - Nature and the Environment



Sound



States of Matter

What are our next steps for development?

Science Action Plan

Subject Specific Action Plan 2021-2022

Aim	Action	People Involved	Date	Achieved
To assess and compare children's understanding at the start and end of each science unit, checking for gaps and misconceptions (using PLAN knowledge matrices as a guide)	Teachers to use a 'stimulus' and allow children time to complete a prior knowledge task. CH to copy KWL, Spider diagrams, class discussions (photographs), 'pupil voice '	CH (All staff)	October half term	
To display and use enquiry posters to familiarise all pupils with the different ways they are/and can work scientifically.	CH to share at Science staff meeting	CH (all staff)	October half term	
Carry out a pupil voice meeting to ask children what they think about science in our school and what they would improve (as a baseline assessment of where we are.	CH to meet with two children from each class	CH	Friday 17 th Sep	
To use TAPS pyramid model science assessment school self-evaluation tool, as a baseline.	CH to complete with discussion, save a copy in the Subject Leader folder on staff shared	CH (All staff)	Friday 17 th Sep	
To use a TAPS plan for focused assessment of science.	CH to carry out assessment in class 2 for 'Healthy me' and feedback in staff meeting.	CH (All staff)	October half-term	



Thank you!

