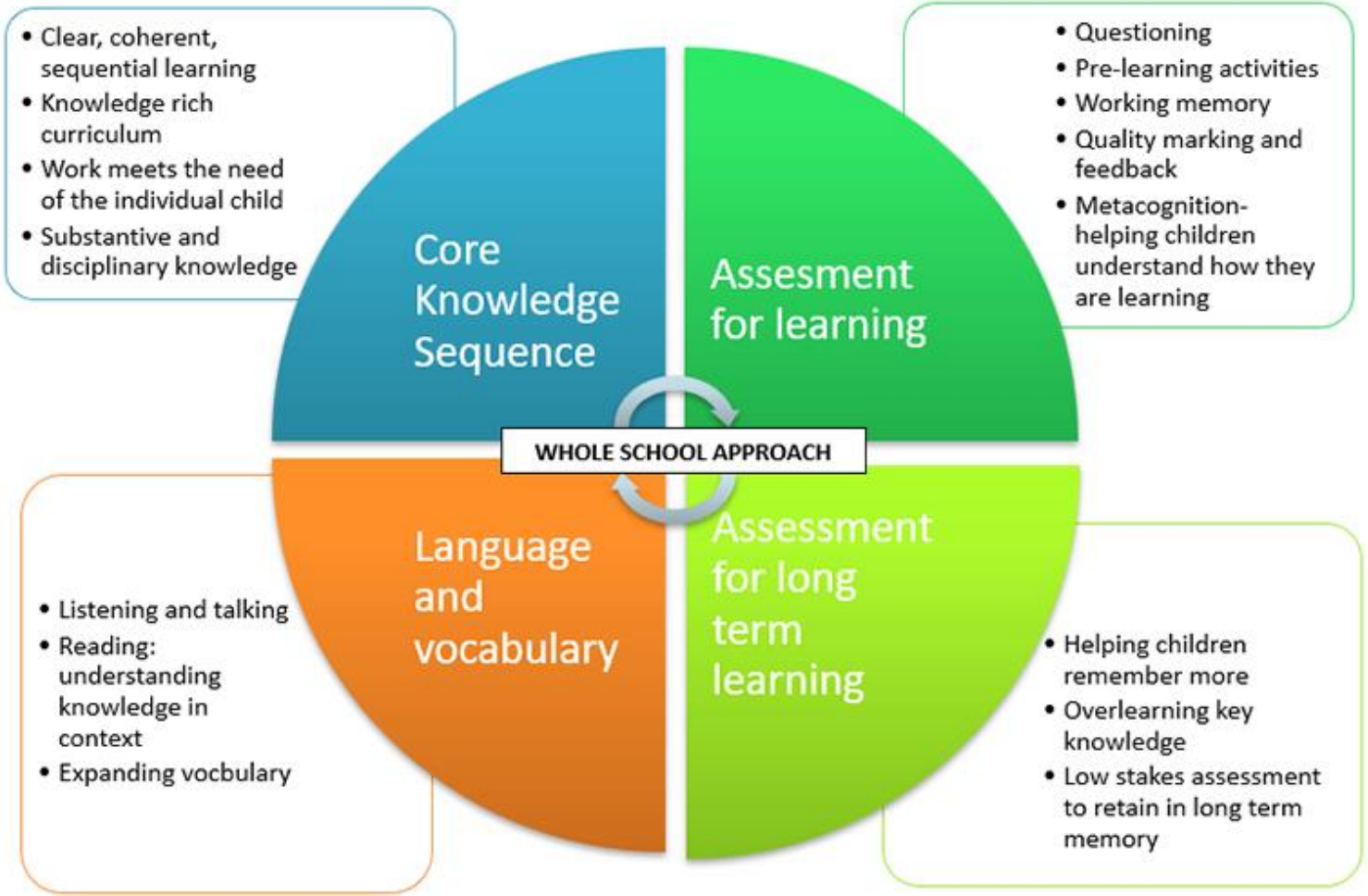
Science at Bramhope Primary School

Science curriculum meeting

13.03.25

How is our curriculum organised?



Vision

We want children to be inquisitive and to gain scientific knowledge that will prepare them for the next stage of their education.

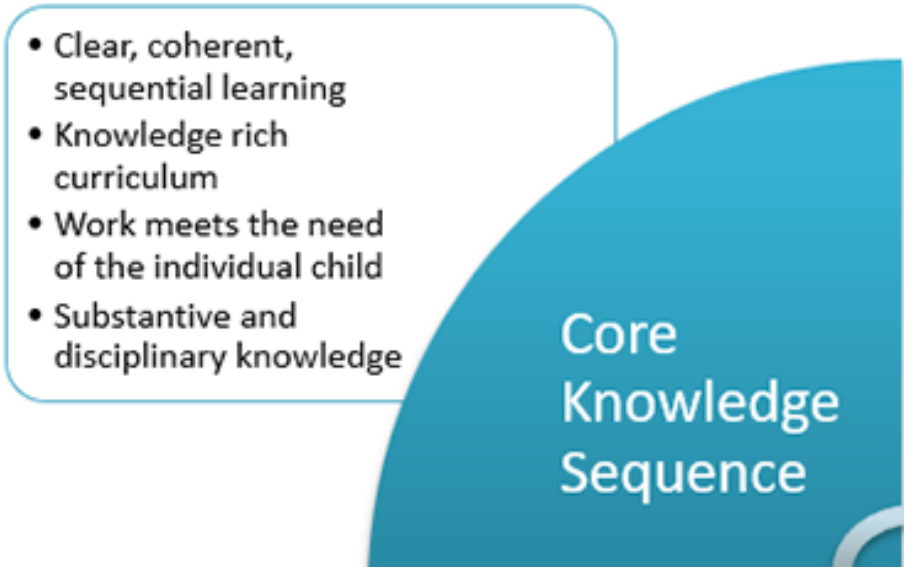
Main Principles – At Bramhope

Teaching enables children to develop an understanding of key scientific knowledge building on their previous knowledge and experiences, **and encourages the use of scientific vocabulary.**

Science promotes children's **curiosity**, asking scientific questions about their learning and investigating the unknown and unexpected.

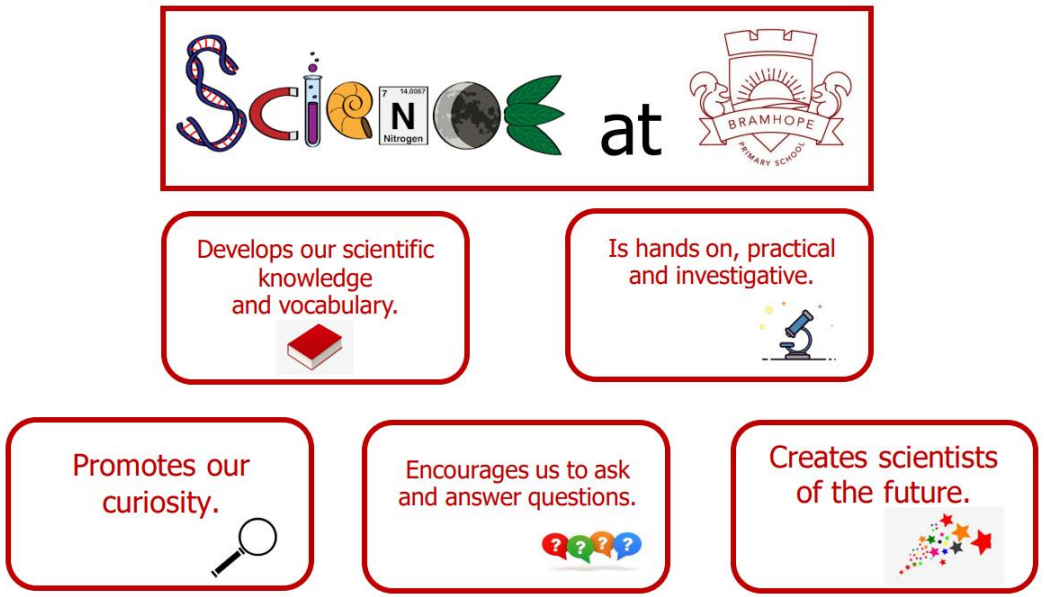
Science includes practical investigations, visitors, whole school events and cross curricular links in order to make it real and relevant for the children.

Our children learn about diversity in science and make links in their learning with scientific careers to broaden their understanding of science in the real world.



Click here for…

- **Science long term plans**
- **PLAN progression working scientifically**
- **Knowledge overviews for each year group**



		Biology	Physics	Chemistry		
2024/25	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	All About Me	Transport and Forces	Under the sea and the Arctic	Space	Animals and mini beasts	Traditional tales - Materials and how the change
Y1	Seasonal Changes and Autum	Everyday Materials	Animals including humans Spring- Seasonal changes		Plants Summer - Seasonal chnages	
Y2	Everyday Materials	Health and Hygiene	Animals including humans	Plants	Plants Living Things	Living Things
Y3	Rocks and Soils	Animals including Humans	Light	Plants		Forces and Magnets
Y4	States of Matter		Electricity	Sound	Living things and their habitats	Animals including Humans
Y5	Earth and Space	Forces	Properties of Materials		Living things and their habitats	Animals including humans
Y6	Electricity	Animals - Circulation System	Light	Living thing and their habitats	Evolution and Inheritance	

We clearly identify the knowledge that we want the children to learn and the skills that we will be teaching them.

	Year Group: 2					
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Everyday Materials	**Animals incl. Humans** (Health and hygiene)	**Animals incl. humans** (Offspring and lifecycles)	**Plants** (Light and Dark)	**Plants/Living Things** (Growing/Observing)	**Living Things**
NC Objectives Covered (Taken directly from the National Curriculum) Red= substantive knowledge Blue= disciplinary knowledge)	•Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. •Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	• Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	•Observe and describe how seeds and bulbs grow into mature plants. •Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	•Observe and describe how seeds and bulbs grow into mature plants. •Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. For Living Things objectives see Su 2.	• Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats. • Describe how animals obtain their food from plants and

We have created a sequence of learning for all units. Each unit builds on previous knowledge, develops understanding and challenges children to question.

Learning Sequence **-Detail the learning sequence using key questions in an ordered sequence.** **-The questions should have a sequential build up to answer the overall learning challenge.**	1. Can I classify a range of different materials and identify which materials objects are made of? 2. Can I identify and explain the suitability of different materials for different purposes? 3. Can I investigate whether a material is waterproof or not? 4. Can I investigate how stretchy a material is? 5. Can I understand whether a material is opaque, translucent or transparent? 6. Can I explore how materials can change shape? 7. Can I research suitable materials to meet a design brief? Garden - Can I plant winter bulbs?	1. Can I describe the importance of hygiene? 2. Can I explain the importance of handwashing to stop the spread of germs? 3. Can I classify food into food groups? 4. Can I make a meal and identify the different food groups used? 5. Can I investigate the effect of exercise on the human body? 6. Can I present my findings about the importance of exercise and a balanced diet?	1. Can I find out what humans need to survive? 2. Can I make observations about how human offspring grow and change? 3. Can I observe the changes of animal offspring over time? 4. Can I research and identify the offspring of different animals? 5. Can I recognise the needs of animals to survive? 6. Can I describe the lifecycle of an animal? 7. Can I research how to look after a pet?	1. Can I classify seeds and bulbs? 2. Can I investigate the conditions which seeds need to grow and stay healthy? 3. (*throughout rest of unit*). Can I make observations of our seeds and their growth? 4. Can I research which plants grow at different times of the year? 5. Can I use results from my investigation to explain what a plant needs to grow and be healthy?	1. Can research how to sow seeds to grow vegetables? 2. Can I make observations of plants in the wildlife garden and what their different needs might be? 3. Can I explain the similarities differences between seeds and bulbs? 4. Can I identify animals in the wildlife garden? 5. Can I find out about an animal and its habitat? 6. Can I investigate the number of animals living in a habitat in our wildlife garden?	1. Can I identify things that are living, dead and never alive? 2. Can I classify things that are living, dead and never alive? 3. Can I investigate preferred living conditions for a minibeast? 4. Can I research different habitats and the animals that live there? 5. Can I research and create food chains? 6. Can I identify animals, plants and habitats within our wildlife garden? 7. Can I investigate the number of animals living in a habitat in our wildlife garden?

For each unit, we have key knowledge sentences that the children learn through the activities that they complete. These align with the expectations of the national curriculum.

Knowledge Sentences **-Using the end points, what are the key statements children need to remember by the end of the unit? (I know that…)** **(To share with children when it is taught during the unit)**	1. I know that objects can be made of different materials like metal, plastic, glass, wood, paper. I know that materials can be described as hard, soft, rough, smooth, rigid, flexible. 2. I know that all objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. 3. I know that waterproof materials will not let water through/absorb water. I know that materials like glass, plastic and metal are waterproof. 4. I know that some materials are flexible and can stretch whereas other materials are solid and rigid. 5. I know that materials that are: - opaque block out the light - translucent let some light through - transparent let all light through (see-through) 6. I know that objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. 7. I know that all objects are made of one or more materials that are chosen specifically because they have suitable properties for the task.	1. I know that good hygiene is important for preventing infections and illnesses. 2. I know that handwashing will help to stop the spread of germs. 3. I know the main food groups: meat, fish, bread, pasta, dairy, fruit and vegetables. 4. I know that it is important to have a balance of all the different food groups to be healthy. 5. I know that I need to do exercise to help my body healthy. 6. I know that to be a healthy adult they also need the right amounts and types of food and exercise.	1. I know that humans and animals need air, water, shelter and food in order to survive. 2. I know that humans have offspring which grow into adults. 3. I know that some animals lay eggs, and that some offspring do not look like their parents. 4. I know the stages of the lifecycle of a butterfly. It starts with egg, then larvae, pupa and finally a butterfly. (1 repeated 3x)	1. I know that plants may grow from either seeds or bulbs. 2. I know that bulbs and seeds germinate and grow into seedlings which grow into mature plants. 3, 4, 5 – I know that plants need water, light and suitable temperature to grow. I know some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy. I know seeds can grow in the dark but that seedlings need light to grow healthily. 6 - I know that seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates.	1. I know that seeds need warmth and water to grow and that seedlings grow healthily with sunlight. 2. I know some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy. 3. I know that bulbs and seeds will produce plants 4.I know that bulbs will regrow each year and that plants from seed will need to disperse their seeds to make new plants. 4. I know that animals and plants live in a habitat to which they are suited. 5. I know the habitat provides the basic needs of the animals and plants – shelter, food and water. 6. I know that within a habitat there are different micro-habitats e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves and different numbers of minibeasts can be found here.	1/2. I know all objects are either living, dead or have never been alive. Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers. I know an object made of wood is classed as dead. Objects made of rock, metal and plastic have never been alive. 3. I know micro-habitats have different conditions e.g. light or dark, damp or dry. 4. I know that animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well. 5. I know that the way that animals obtain their food from plants and other animals can be shown in a food chain. 6. I know that in our wildlife garden that animals live in/under hedgerows, log piles, stones, the pond and trees. 7. I know that within a habitat there are different micro-habitats e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves and different numbers of minibeasts can be found here.

At each stage of the sequence of learning, we are checking to see that children understand and can explain their understanding. We choose many different ways for them to show this.

Curriculum End Points **-What will children know and be able to do by the end of the unit?** **-What will the children produce to demonstrate this knowledge?**	Children will design and create an item to meet a design brief. The brief will require different material properties that the children have previously investigated. They will be able to explain their material choices and their suitability. (Link to a suitable story text).	Children to present the findings of their research and investigations to explain what a balanced diet is and the importance of exercise.	Children to be able to describe the lifecycle of a caterpillar through observations in class and link this to 'offspring to adult'. Children to choose a pet to research and identify their key needs to be able to survive.	Children will revisit their bulbs planted in Au 2 to make observations. Children will write up a sunflower plant diary over a period of time and they will be able to share their observations and write up the results of their observations of what they think a plant needs to grow and be healthy. Children will be able to explain how different plants they have planted need to be planted at different times of the year. They will sow different seeds in Su 1.	Children will use the knowledge gathered in the previous half term to sow seeds in the vegetable patch. They will revisit plants previously planted to make observations about how healthy their plants are and discuss what they can do to look after them. Children will harvest vegetables when ready. They will produce a piece of work to showcase what they have learnt about seeds and bulbs and make it relevant our school garden and what they have grown. Children will revisit the wildlife garden and identify plants previously learnt about in Year 1.	Children will by the end of the topic be able to identify a range of small animals and minibeasts that live in our school wildlife garden. They will be able to talk about which habitats they live in and identify some relevant plants. They will also develop their data handling skills and conduct two surveys through the topic for number of minibeasts in a habitat and looks for differences between the investigations. They will produce tables and pictograms.

Children focus on a different enquiry type in each lesson.

Science at Bramhope Primary School

Enquiry Types

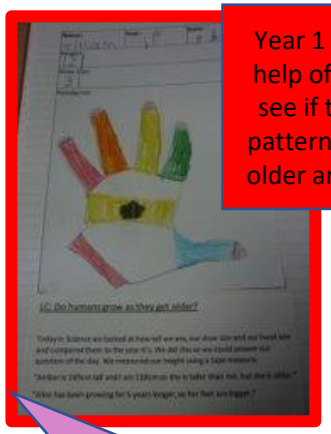
LA, SLC

Enquiry types and the use of enquiry logos was embedded across school except in the classrooms of new teachers. Most teaching staff are knowledgeable about the different strands of enquiry and pupil voice shows children (particularly in KS2) are able to identify the different types and understand how they link to their learning.

Reception observing the growth of tadpoles

Reception harvesting radishes they had grown from seed.

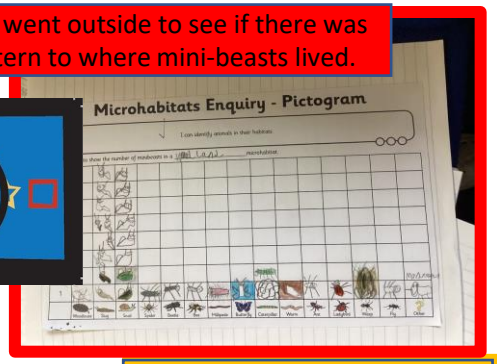
Year 4/5 using shadow sticks.



Year 1 worked with the help of a Year 6 child to see if they could find a pattern between getting older and growing taller.

I helped out in a Year 1 lesson to see how people grow. **Year 6 pupil.**

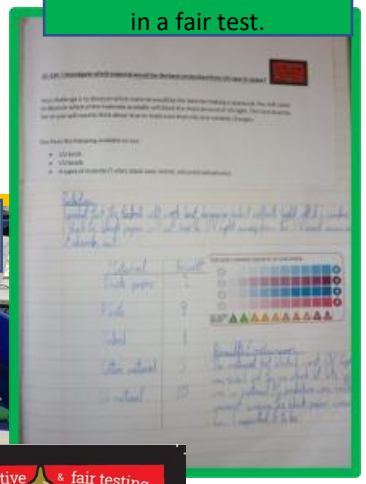
Year 2 went outside to see if there was a pattern to where mini-beasts lived.



We were pattern seeking when we were changing the number of bulbs in a circuit. **Year 4 pupil.**

Year 5/6 independently investigating circuits.

Year 4 focusing on results and conclusions in a fair test.



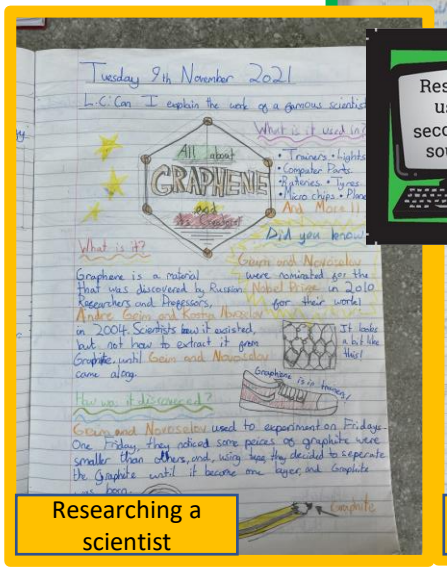
Year 1/2 observing the seasons and how the world changes.

Researching space exploration on the iPad

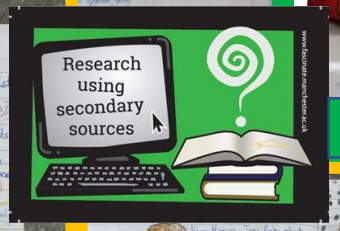
Researching rocks

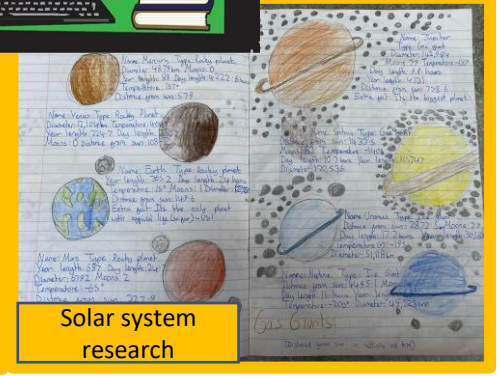
Y3/4 grouping and classifying rocks/animals using own criteria.

Y3/4 using a fair test to test the permeability, durability and hardness of rocks.



Researching a scientist





Solar system research

TAPS Working Scientifically Cycle

Whilst working on developing their understanding of science enquiry we are progressively teaching them the skills they need in science.

BATH SPA UNIVERSITY

why & how?
PRIMARY SCIENCE TEACHING TRUST

Principles of dialogic talk: listening and talking

Science at Bramhope Primary School

Develops our scientific knowledge and vocabulary.

Is hands on, practical and investigative.

Promotes our curiosity.

Encourages us to ask and answer questions.

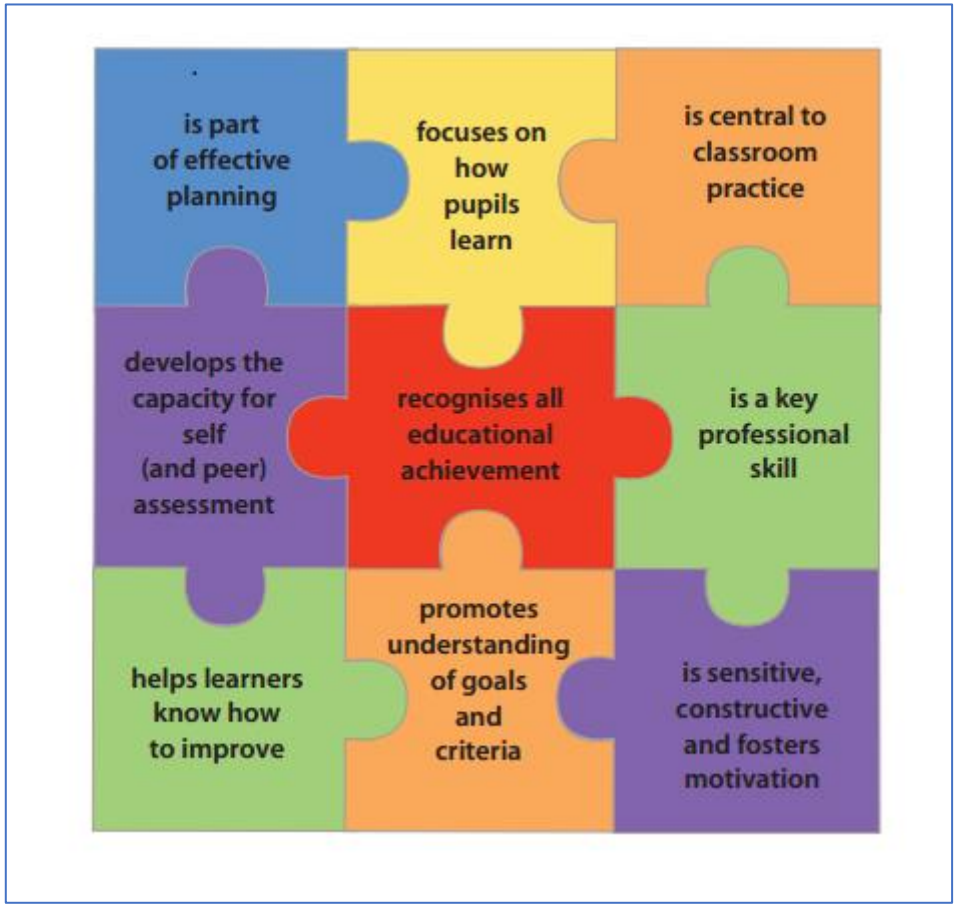
Creates scientists of the future.

Language and vocabulary

- Listening and talking
- Reading: understanding knowledge in context
- Expanding vocbulary

Assesment for learning

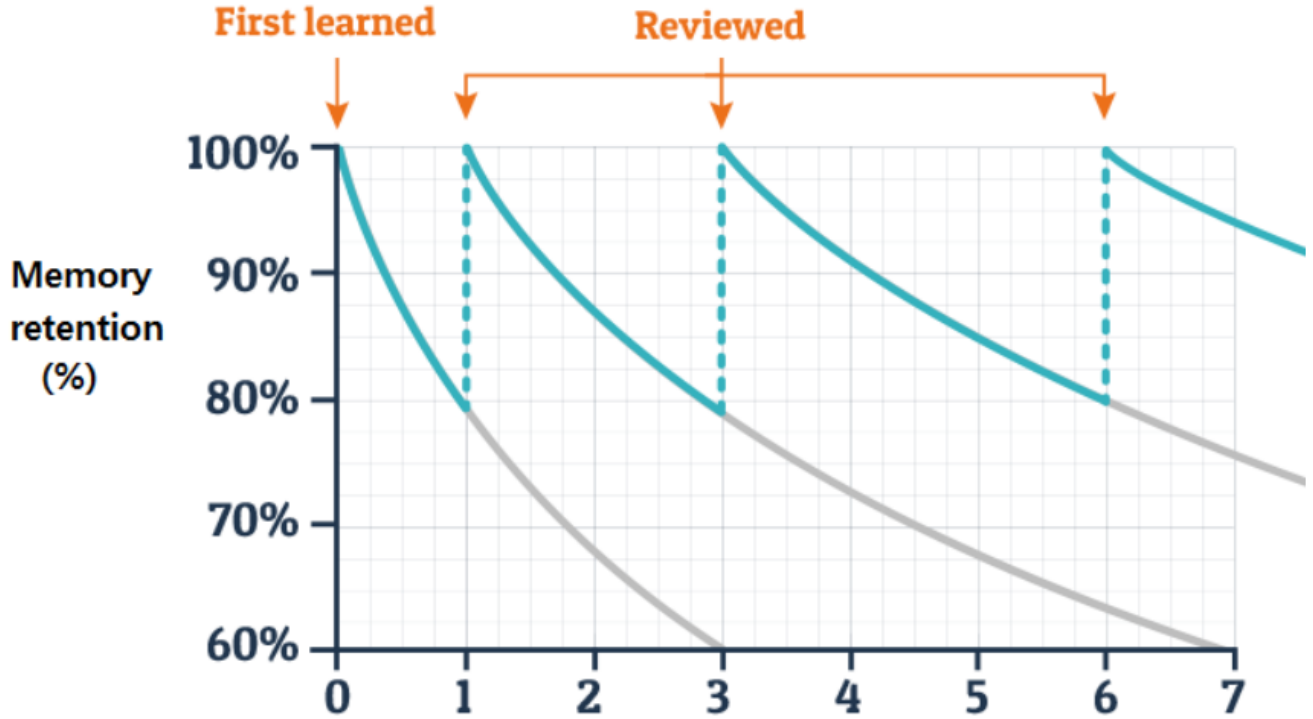
- Questioning
- Pre-learning activities
- Working memory
- Quality marking and feedback
- Metacognition- helping children understand how they are learning



1. Clarifying, understanding, and sharing learning intentions
2. Engineering effective classroom discussions, tasks and activities that elicit evidence of learning
3. Providing feedback that moves learners forward
4. Activating students as learning resources for one another
5. Activating students as owners of their own learning

Assessment for long term learning

- Helping children remember more
- Overlearning key knowledge
- Low stakes assessment to retain in long term memory



Science at Bramhope Primary School

Develops our scientific knowledge and vocabulary.

Is hands on, practical and investigative.

Promotes our curiosity.

Encourages us to ask and answer questions.

Creates scientists of the future.

5 Questions recap

1. What type of rock was granite?
2. Which planet is furthest from the sun?
3. Can you name the 5 categories of living things?
4. Name one thing a plant needs and why.
5. What did permeable mean?

Vocabulary recap

What do these words mean? Can you explain them?

- Prediction
- Fair test
- Durable
- Solid

Enrichment

We try to make sure that children have enrichment events throughout their time at Bramhope. This might be a STEM visitor talking about their job or something more hands on like the Wonderdome or a heart dissection workshop.

How can you help at home?

- Encourage your child to ask questions.
- Use non-fiction books to develop your child's understanding of the world around them.
- Ask your child about their science lessons – have they learnt a new skill or fact.
- Visit STEM museums such as: Thackray Medical Museum, Eureka, Magna.
- Visit local parks and look at the wildlife.
- Use the news to talk about topical science.

STEM Careers – Would you be willing to come into school?

We are always looking to develop our children's science capital.

- Could you come in a share your experience? Your pathway to your chosen career?
- Do any of our topics link to your job?

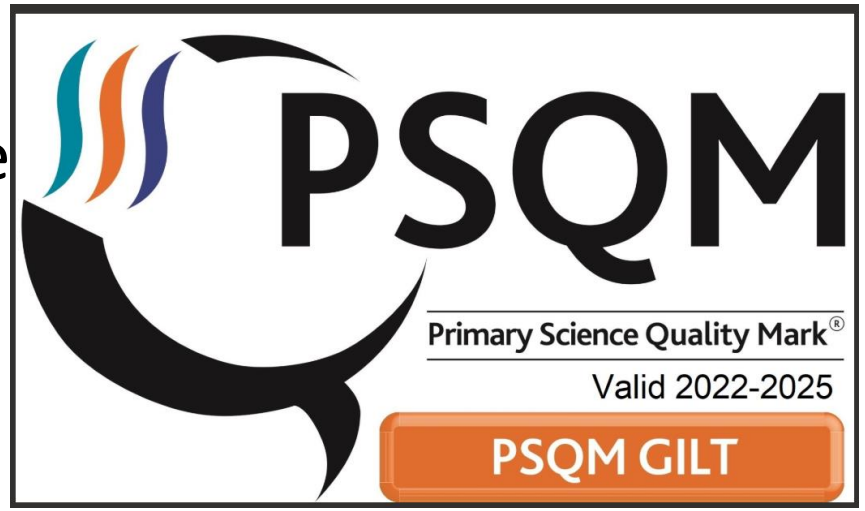
- Email the office and they will forward your email.

PSQM – Primary science Quality Mark

We currently hold the Gilt Quality Mark and we will be completing our reaccreditation over the coming year.

This looks at all aspects of science teaching, learning and leadership.

It is the third time we will be completing this and each previous time it has had a very positive impact on our school.



The Ogden Trust | School Partnership

Over the next 5 years we are working with a large cluster of primary and secondary schools to develop the teaching and learning of Physics.

This is a project that focuses on CPD and resources but also more importantly the enrichment activities that we can provide in school.

This year already, Early years and KS1 teachers have received specialised CPD and resources to develop and add physics into their curriculum.

Science Week – What will you see today?

Competition Time

•Early years and primary children are invited to enter our usual poster competition, linked to this year's British Science Week theme of 'Change and adapt'. You can find full details of the Change and adapt competition in the positive news.

Entries in by 28th March

Prizes include:

•Cool Cat Chem Cards
•15-minute STEM books
•Shape Aliens GameAt the museum jigsaw
•A Day in the Life…books
•Shroot pouches

- Memberships for My Science Club
- MegaWatt Games
- SuperQuesters: The Case of Angry Sea STEM adventure books by QuestFriendz

- A collection of Science Works books
- Two space-themed 3D building playsets
- Our Living Planet book
- WWF adoption pack
- Annual subscription to Save My Exams
- A 12 month subscription to Alfresco learning

Arrangements for this morning

- If you have a child in reception, Year 1 and Year 2, Mr Street will direct you to their classroom.
- If you have a child in Years 3 to 6, Mrs Lawson and the Year 6 ambassadors will take you over to the KS2 building and direct you to your child's classroom.
- At 10.15am, parents in the R/KS1 building will be collected from the classrooms. Parents in the KS2 building, Year 6 ambassadors will collect you from the classroom and direct you to the Year 3 corridor where Mr Street will meet you.
- If you have children in both R/KS1 and KS2 buildings, please head to your child's class in the R/KS1 building first. At 9.55am, Mr Street will collect you and take you over to the KS2 building.