HORBURY PRIMARY ACADEMY

Science

Curriculum Overview

Place Partnership

A MULTI-ACADEMY TRUST

Our Vision

At Horbury Primary Academy, our science curriculum is designed to inspire curiosity, develop a lifelong love of learning and equip children with the knowledge and skills to understand the world around them. Rooted in our vision of *Strong Roots, Growing Minds*, we aim to nurture inquisitive learners who ask questions, think critically and confidently explore the natural and physical world.

Our ambitious and progressive curriculum enables children to develop a secure understanding of key scientific concepts whilst building the knowledge, vocabulary and enquiry skills needed to work and think scientifically. Through carefully planned and sequenced learning, pupils revisit and build upon prior knowledge, making meaningful connections that strengthen understanding and support long-term retention.

Scientific enquiry lies at the heart of our curriculum. Children are taught to observe, question, predict, investigate, analyse and evaluate, enabling them to develop the skills required to become independent and reflective learners. By revisiting concepts across different year groups and contexts, pupils deepen their understanding and become increasingly confident in applying their scientific knowledge.

We also aim to develop children's understanding of the role of science in everyday life and its impact on society. Through studying significant scientific discoveries, innovations and influential scientists from diverse backgrounds, pupils gain an appreciation of how science continues to shape our world. They are encouraged to consider both the benefits and ethical implications of scientific developments, preparing them to become informed, responsible citizens of the future.

Implementation

Our science curriculum is delivered through immersive, carefully sequenced units that allow pupils to develop both substantive scientific knowledge and disciplinary scientific enquiry skills. Learning is designed to build on prior knowledge, enabling children to make meaningful connections across units and year groups whilst strengthening long-term retention.

Each lesson follows our whole-school approach to teaching and learning, ensuring that children:

- Retrieve and revisit prior learning to strengthen memory and recall.
- Engage with ambitious scientific vocabulary and key concepts.
- Develop new knowledge through practical exploration, discussion and investigation.
- Make links between current learning, prior learning and real-world scientific contexts.
- Apply knowledge through scientific enquiry, problem-solving and independent thinking.
- Reflect on and evaluate their learning using accurate scientific language.

Science lessons provide regular opportunities for children to:

- Observe over time.
- Identify, classify and group.
- Seek patterns.
- Carry out comparative and fair testing.
- Research using secondary sources.
- Gather, record and interpret data.

Through a balance of direct teaching, practical investigation, discussion and application, pupils develop a secure understanding of scientific concepts whilst learning how scientists work and think.

Impact

The impact of our Science curriculum is evident in the confidence, curiosity and enthusiasm pupils demonstrate when exploring the world around them. Through carefully sequenced learning, regular retrieval opportunities and meaningful scientific enquiry, children develop a secure body of scientific knowledge that they can recall, apply and build upon over time.

By the time children leave Horbury Primary Academy, they will:

- Know more, remember more and make meaningful connections between scientific concepts studied throughout the curriculum.
- Demonstrate a secure understanding of key scientific knowledge and vocabulary appropriate to their age and stage of learning.
- Apply scientific knowledge confidently in a range of familiar and unfamiliar contexts.
- Independently select and use a range of scientific enquiry skills, including observing, classifying, predicting, researching, testing and evaluating.
- Ask thoughtful questions, think critically and justify conclusions using evidence and scientific language.
- Understand how science influences everyday life and recognise the significant role it plays in shaping the modern world.
- Appreciate the achievements and contributions of scientists from a diverse range of backgrounds and understand the opportunities science can offer in the future.
- Recognise the positive impact that scientific developments can have on society whilst thoughtfully considering ethical and environmental implications.
- Demonstrate resilience, curiosity and independence when investigating and solving problems.
- Show clear progression in both scientific knowledge and disciplinary skills and be prepared for the next stage of their education.

Children will leave Horbury Primary Academy with a genuine sense of wonder about the world around them. They will be equipped with the knowledge, skills and confidence to continue exploring, questioning and engaging with science throughout their lives. Through our curriculum, pupils develop not only as scientists but as informed, responsible citizens who understand their potential to contribute positively to the future of their local community and the wider world.

Assessment for Learning

Assessment for Learning is embedded throughout the curriculum and used to ensure pupils know more, remember more and understand more. Teachers assess pupils' understanding through retrieval activities, purposeful questioning, discussion, observation and the review of pupils' work. This enables misconceptions to be identified quickly and informs future teaching.

At Horbury Primary Academy, each unit culminates in an end-of-unit enquiry question that pupils work towards answering throughout their learning journey. These carefully planned questions provide pupils with the opportunity to demonstrate their knowledge, understanding, vocabulary and disciplinary skills, whilst making meaningful connections to previous learning. Responses may take a range of forms appropriate to the subject and learning objectives.

Assessment information is used to evaluate pupil progress, identify gaps in learning and ensure that all pupils develop a secure understanding of the taught curriculum. Through regular opportunities to retrieve, apply and communicate their learning, pupils strengthen retention and develop increasingly sophisticated subject knowledge over time.

Adaptive Teaching

At Horbury Primary Academy, we are committed to delivering an ambitious curriculum for all pupils. Adaptive teaching ensures that every child can access, engage with and succeed within the same high-quality curriculum whilst maintaining high expectations for all learners.

Adaptive teaching is informed by ongoing assessment and may include:

- Retrieval activities to strengthen prior learning and support retention.
- Explicit teaching and pre-teaching of subject-specific vocabulary.
- Visual supports, modelling and worked examples.
- Carefully planned scaffolds to support understanding and independent application.
- Adapted questioning to provide support, challenge and deepen thinking.
- Flexible grouping and targeted adult support where appropriate.
- Opportunities to revisit key concepts and address misconceptions.

- Alternative methods of recording where necessary to remove barriers to learning.

These adaptations support pupils to develop secure knowledge, build confidence and successfully answer the end-of-unit enquiry question. By responding to individual needs whilst maintaining curriculum ambition, all pupils are supported to flourish academically and personally in line with our vision of **Strong Roots, Growing Minds**.

National Curriculum aims for Science
Through the teaching of science, pupils will: • Develop scientific knowledge and conceptual understanding through the disciplines of biology, chemistry and physics. • Develop understanding of the nature, processes and methods of science through different types of scientific enquiry. • Be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

Progression of Knowledge and Skills

Biology

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explores animals, plants and the natural world.	Identifies common animals, humans and plants.	Explains basic needs, habitats and life cycles.	Understands nutrition, skeletons and plant functions.	Explains classification, food chains and environmental change.	Compares life cycles and human development.	Explains classification, inheritance, adaptation and evolution.

Chemistry

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explores materials and	Identifies and compares	Investigates suitability and	Identifies and compares	Explains states of matter and	Investigates properties, mixtures	Applies understanding of material properties when

how they change.	everyday materials.	changes in materials.	different rocks and soils.	changes of state.	and reversible and irreversible changes.	explaining scientific phenomena.

Physics

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explores forces, movement and seasonal change.	Observes seasonal changes and weather patterns.	Applies understanding of materials and living things through observation.	Explains forces, magnets and light.	Explains electricity, sound and particle behaviour.	Explains forces, mechanisms, gravity and Earth in space.	Explains electricity and light using scientific models and evidence.

Working Scientifically

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Observes, explores and asks questions.	Makes observations and groups objects.	Uses simple tests and records findings.	Makes predictions and carries out fair tests.	Selects enquiry types and begins to draw conclusions from evidence.	Plans enquiries, controls variables and evaluates findings.	Independently plans, conducts and evaluates investigations using evidence to justify conclusions.

Scientists & Scientific Impact

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Talks about how things work in everyday life.	Knows that scientists help us understand the world.	Describes how scientific discoveries affect daily life.	Studies significant scientists linked to learning.	Explains how science impacts society and the environment.	Evaluates the contribution of scientists and inventions.	Explains how scientific discoveries have changed understanding and

						continue to influence the modern

Long Term Plan for Science

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Marvellous Me! Amazing me!	Lets Sparkle Once Upon a Time!	If you go down in the woods today… Help! I need somebody	That's not my pet! Down on the Farm	A Bugs Life All Aboard	Commotion in the Ocean The World In Your Lunchbox
Y1	**Could you survive without one of your senses?** What are the main parts of the human body? What are the five senses? How does sight help us understand the world? How do hearing, taste,	**Why doesn't the world stay the same all year?** What are the four seasons? What happens in spring? What happens in summer? What happens in autumn and winter? How does weather	**Can you build something that won't break?** What materials can we find around us? What are objects made from? How are materials different? Which materials are best for different jobs?	**Could a plant survive without us?** What plants can we find around us? What are the parts of a plant? What are the parts of a tree?		**Could you become an animal expert?** **Objectives** How are animals grouped? What makes mammals, birds, fish, reptiles and amphibians different? What do animals eat?

	smell and touch help us? Which sense would be hardest to lose? **End Point** **Senses Challenge** Children complete mystery challenges using one sense at a time.	change across the year? **End Point** Children's weather forecast.	Which material would be strongest for a challenge? **End Point** **Horbury Junior Engineers** Children are given a challenge such as: Build the strongest bridge. Build a waterproof shelter. Build a boat that floats. Build a chair for a toy figure. They test, improve and present their design, explaining why they chose particular materials.	What does each part of a plant do? What do plants need to survive? **End Point** Become a Garden Expert exhibition.		How can we classify animals? Which animal would make the best pet? **End Point** Horbury Zoo Guide.

Y2	**Can you create a material for a superhero?** What materials do we use every day? Which materials can bend, squash, twist and stretch? Which materials are strongest? Which materials would be best for different superhero jobs? Which material would make the best superhero suit? **End Point** **Superhero Science Convention** Children design a superhero and justify the materials used for: • cape • boots • shield • vehicle using scientific evidence.		**Could you build the perfect habitat?** What is alive, dead and never alive? What makes a good habitat? What lives in different habitats? What are microhabitats? How are animals connected through food chains? **End Point** **Habitat Designer Challenge** Children create a habitat model for a chosen animal and explain why it would survive there.	**Could you grow a prize-winning plant?** What is a seed and how does it grow? How do plants change during their life cycle? What do plants need to stay healthy? What happens when plants don't get what they need? How can we help plants grow better? **End Point** **Horbury Flower Show** Children showcase: • their plant • growth records • scientific findings	**Could you train to become a human survival expert?** **Objectives** How do animals grow and change? How do humans grow and change? What do humans need to survive? Why is healthy eating important? How do exercise and hygiene keep us healthy? **End Point** **Survival Expert Challenge** Children create a guide: **"How to Keep a Human Alive and Healthy"** Could be: • booklet • poster • video guide for younger children

Y3	**Could you solve the mystery of a million-year-old fossil?** What are rocks and how are they formed? How can we identify different types of rocks? What can rocks tell us about Earth's past? How are fossils formed? What is soil and why is it important? **End Point** H**orbury Fossil Hunters Museum** Children become palaeontologists and present their findings about a fossil discovery.	Forces and Magnets **Could you become a magnetic inventor?** What are push and pull forces? How does friction affect movement? What materials are magnetic? How do magnets attract and repel? How are magnets used in everyday life? **End Point** **Inventors' Fair** Children design and present a magnet-powered invention.	Animals Including Humans **Could your body work without bones and muscles?** Why do we need food and nutrition? What makes a healthy balanced diet? Why do humans and animals need skeletons? How do joints help us move? How do muscles help our bodies work? **End Point** **Build a Human Challenge** Children create a life-sized model or presentation explaining how the body moves and works.	Light and Shadow **How can light save lives?** What is light and where does it come from? Why can we only see when light is present? How does light travel and reflect? How are shadows formed? How can we use light to solve problems? **End Point** **Safety Design Challenge** Children choose one: • lighthouse • bike reflector • road sign	Plants **How does a tiny seed become a giant plant?** What are the different parts of a flowering plant? What job does each part of a plant do? How do plants transport water? What does a plant need to grow successfully? How do plants reproduce and spread seeds? **End Point** **The Incredible Journey of a Seed** **Children create:** • **stop-motion animation** • **comic strip** • **digital book** **showing the complete journey**

					• torch • emergency beacon and explain the science behind how it works.	**from seed to new plant.**
Y4	States of Matter **Where does a puddle go when it disappears?** What are solids, liquids and gases? How can materials change state? What happens when materials are heated or cooled? How does evaporation and condensation happen? How does the water cycle recycle water? **End Point** **Weather Presenter Challenge** Create a weather forecast explaining:	Electricity **Could you live without electricity?** **Objectives** What is electricity? What components make a simple circuit? Why do some circuits work and others fail? Which materials are conductors and insulators? How has electricity changed our lives? **End Point** **Power Cut Challenge** A power cut has hit Horbury.	Sustainability **Could Year 4 make Horbury greener?** What is climate change? How do humans affect the environment? What does sustainability mean? How can science help protect our planet? What changes could we make in Horbury? **End Point** **Horbury Recycling Campaign** Create: • leaflets • videos • QR codes	Sound **Could you create the perfect concert?** How are sounds made? How does sound travel? Why are some sounds louder than others? Why are some sounds higher or lower in pitch? How can we control and improve sound? **End Point** **Festival Sound Engineer Challenge** Children become sound engineers and design the perfect stage setup for a school concert.	Living things and their habitats **Could you discover a brand-new species?** How can living things be grouped? What are classification keys? How do environments affect living things? How do changes to habitats affect organisms? Why is classification important to scientists? **End Point** **Horbury Nature Discovery Centre** Children invent, classify and	Animals including Humans **Are you fuelled for success?** Why do humans need different types of food? How does the digestive system work? What happens to food inside our bodies? What are food chains? How can we make healthy choices? **End Point** **Design the Ultimate School Lunch** Children create a menu and justify it scientifically using everything they have learned about nutrition and digestion.

	"Where does a puddle go when it disappears?"	Children design and build a simple electrical product that could help people during an emergency.	• social media style adverts for families and the local community.		present a "new species" using their understanding of classification.	
Y5	Space **Could humans live somewhere else in our solar system?** What is in our solar system? Why do planets orbit the Sun? Why do we experience day and night? Why does the Moon appear to change shape? Which planet would be the best place for humans to live? **End Point** **Mission to Mars** Children design a space colony and persuade NASA why humans should live there.	Forces **Can you beat the forces?** What forces act on moving objects? How does gravity affect movement? How does friction affect movement? How do air and water resistance affect movement? How can we use our knowledge of forces to solve problems? **End Point** **Forces Fair** Children choose and explain their favourite **investigation:** • friction	Properties and changes of materials **Can you create a material fit for a world-changing invention?** How can materials be grouped according to their properties? Which materials are the best conductors and insulators? How can materials be separated from mixtures? Which changes are reversible? Which changes are irreversible? **End Point** **Young Inventor Expo** Children invent a product and justify the materials used. Examples: • thermal water bottle • survival tent • sports equipment • eco-product		Animals including Humans **Are you built to survive?** How do humans change throughout their lives? What happens during infancy and childhood? What changes during puberty? What happens as humans become adults and elderly? How do our bodies adapt throughout life? **End Point** **The Human Survival Guide** Children create a guide: **"How to Survive Being Human"**	Livining Things **What would happen if a species disappeared forever?** How do mammals, birds, amphibians and insects reproduce? How do life cycles differ between living things? How do plants reproduce? Why is biodiversity important? What happens when species become endangered or extinct? End Point **Save Our Planet Conference** **Children become scientists presenting:**

		• gravity • water resistance • air resistance			explaining the stages of human development.	• a species at risk • why it matters • what could happen if it disappeared • how humans can help
Y6	Animals Including Humans **How does your body keep you alive?** How does the circulatory system work? What are the jobs of the heart, blood and blood vessels? How are nutrients and water transported around the body? How do exercise and lifestyle affect our bodies? How can we keep our bodies healthy? **End Point**	Light **Can your eyes always be trusted?** How does light travel? How do we see objects? How are shadows formed? Why do shadows change shape and size? How can light create illusions and tricks? **End Point** **Science of Illusions Exhibition** Children create and explain optical illusions and light-based		Electricity **How could you become an electrical engineer?** How do electrical circuits work? How does voltage affect a circuit? How do components behave differently in circuits? How can electrical diagrams help scientists and engineers? How can electricity be used to solve problems?	Animal Classification and microorganisms **Are all microbes villains?** How do scientists classify living things? What are microorganisms? How do microorganisms help us? How can microorganisms harm us? Why is classification important to scientists? **End Point** **Microbe Investigation**	Evolution and Inheritance **How did we become who we are today?** What is inheritance? Why are offspring similar but not identical to their parents? What is adaptation? How does evolution happen over time? How did Darwin change the way we understand life? **End Point** **Evolution Expo** Children design and justify a species adapted to survive

	Become a Health Expert Create a health guide, podcast or presentation for Year 5 pupils called: *"How to Keep Your Body Working at Its Best."*	demonstrations for visitors.		**End Point Inventor's Showcase** Children design and explain an electrical invention that solves a real-world problem.	Children create a case file proving whether a chosen microorganism is: • helpful • harmful • or both before presenting their evidence.	in a chosen environment: • desert • rainforest • Arctic • ocean • future Earth using evidence from evolution and adaptation.