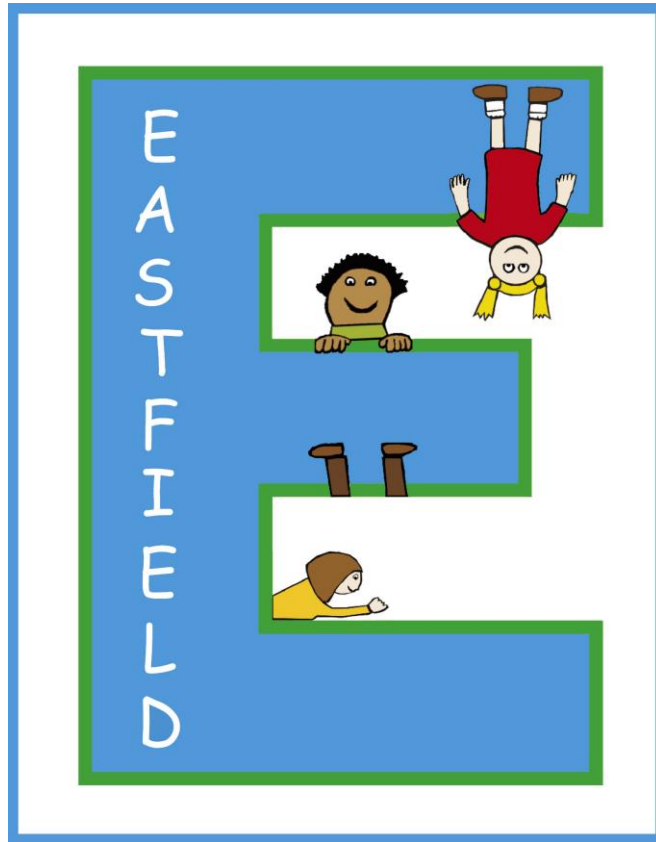


Eastfield Primary School



Science Policy

Policy on Science

Intent

In order to deliver a high quality National Curriculum for Science at Eastfield, our aim is to ensure that all pupils develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics. We strive to teach a creative curriculum that is both investigative and practical, which allows pupils to problem solve, ask scientific questions and encourages curiosity about the diverse world around them. Through the teaching of Science, we endeavour to promote a respect and caring attitude for all living organisms and the environment in which we live.

In line with the aims of the National Curriculum, our curriculum also offers -

- Opportunities for children to gain a deep understanding of the concepts taught.
- Build resilience when faced with challenging scientific enquiry questions.
- Show pride when presenting through the practical and investigative aspect of their work.
- Develop the language and vocabulary of Science
- Research the work of past and present scientists, identify their impact on the world we live in, in order for children to build their aspirations to become future scientists.

Implementation

At Eastfield Primary School, both in Key Stage 1 and Key Stage 2, our children have Science lessons that take place one afternoon or morning, every week. This longer session allows children the time to build on their prior scientific knowledge and learn new skills. Within the Early Years Foundation Stage, Science is taught through 'Understanding the World' which has links with the 3 prime areas of learning, this gives the children a foundation to achieve their end of year ELG 'The Natural World' along with areas of the two other ELG, 'Past and Present' and 'People, Culture and Communities'. Scientific experiences will begin at this early stage of their learning and our Science curriculum exposes children to consistent, high quality Science lessons, which advance their scientific understanding throughout their entire primary school education. We encourage the investigative nature of early years in its broadest sense.

Science is taught through explicit units that have been planned in line with the National Curriculum. Cross-curricular links are made where possible to the year group's termly topic. Within each year and with each new unit, plans are developed in response to the interests and questions of the children, to give purposeful learning about what they want to find out, thus giving pupils a voice within their science education. Teachers also take into consideration cultural capital, addressing issues specific to our community allowing children to access a broader curriculum.

The science curriculum includes a range of investigative and practical activities, providing children with the opportunity to work scientifically, acquiring the necessary skills to problem solve, work collaboratively and share their findings. Investigations allow children to think like scientists, make predictions based on prior knowledge, challenge theories and plan their own activities. Key vocabulary is shared and consistently modelled by the teachers; new words are displayed within the classroom and are in their books encouraging children to incorporate this language in both oral and written work. A variety of equipment is available for children to use according to their planned investigation, developing a sense of excitement and curiosity to enhance the love of Science.

Throughout the school year, teachers are encouraged to take part in Science week to form links with external providers including the University of Wolverhampton. Workshops are used to broaden the opportunity for our children to see other Scientists in our school environment.

To monitor the progress made within science lessons, all teachers are required to assess at the end of each unit in line with the moderation materials provided by the Wolverhampton Local Authority. Assessments are reported in the same manner as other core subjects. Assessments are completed before the new unit to ascertain prior learning and to inform the planning of a unit of work that is progressive and tailored to the interests of the children. Teachers are expected to complete summative assessments to monitor progress and formative assessments both during and at the end of each weekly lesson. The Science Subject Leader is responsible for monitoring of this core subject, the development of medium term planning and weekly Smart planning, alongside the monitoring of standards within children's science books through moderation. Throughout the year, training is provided to disseminate new information, guidance on changes within science and addressing any CPD needs, resulting in the best science provision delivered by teachers to all pupils in their care.

Impact of Science

The effective planning and teaching of Science by our staff, which is in line with our skills progression (incorporating all of the strands of the National Curriculum and EYFS framework) allows us to ensure that our children have access to an up to date, challenging and enquiry based curriculum. A curriculum that meets the needs of our students in order for them to make good progress. Our streamed progression will enable teachers to complete meticulous assessments, track progress and plan from it as part of our commitment to inspire all children to develop their scientific skills.

Our effective teaching of Science will impact on the students in the following ways:

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- The Science curriculum provides children with access to an investigative approach, with a mix of research, teacher led/child initiated practical lessons. They are taught scientific knowledge and understanding as well as scientific enquiry.
- A varied, progressive and rich scientific vocabulary to enable children to articulate both orally and written their understanding of the concepts taught.
- Science lessons are engaging, fun and designed to encourage all learners to gain a scientific foundation that they will require to have a better understanding of the world around them.
- Children are provided the opportunities to learn about the 3 elements of Science: Biology, Physics and Chemistry. Scientists from these fields that have changed the world and community around them.

Children's scientific understanding is consistently being built upon year on year, term on term with high aspirations to see them through to further study and success in adult life

1 The Foundation Stage

- 1.1 The Foundation Stage plan using the New Early Years Foundation Stage document (Development Matters) and have a half-termly theme that may address a variety of scientific topics. The educational programmes involve activities and experiences for children through one of the four main areas: 'Understanding the World' (U+W). This specific area of learning is broken down into 3 sub-sections:
- People and Communities
 - The World
 - Technology

Using these three areas of learning, children will start to gain the science knowledge that they will build on throughout their primary school years, such as developing their skills of observation, prediction, critical thinking and discussion.

Autumn 1	Helping Hands
Autumn 2	Eastfield Blocks!
Spring 1	Once upon a time
Spring 2	The Land before Time
Summer 1	In our back garden
Summer 2	What a Wonderful World!

2 Science curriculum planning

- 2.1 Science is a core subject in the National Curriculum. The school uses this alongside a range of teacher resources to support the planning of lessons such as: Scholastic,

Curriculum Visions Science @ School, HeadStart in Science, STEM, ASE and CGP to plan all lessons.

- 2.2 We carry out our curriculum planning in Science in three phases (long-term, medium-term and short-term). The long-term plan maps the scientific topics studied in each term during the Key Stage. Each topic was revised for each class following the release of the new primary curriculum in 2014 and updated in 2018, 2020 and 2022, then in 2021 for the new EYFS framework

Year Group	Autumn	Spring	Summer
Reception	<p>Helping Hands Eastfield Blocks!</p> <p>Talk about past and present events in their family.</p> <p>Identify similarities and differences among people who help us/community/traditions</p>	<p>Once upon a time - The Land Before Time.</p> <p>Dinosaur habitats - where they lived - how they survived.</p> <p>Looking at similarities, differences, patterns and change between habitats and our immediate environment.</p>	<p>In our back garden. What a wonderful world.</p> <p>Caring for animals and plants</p> <p>Observations of mini beasts and plants begin to explain why some things occur and discuss changes.</p> <p>Our environment - properties of materials through experimentation. Technology used around school compare to home, talk about purpose.</p>
Year 1	<p>Home Sweet Home</p> <p>Seasonal Changes - Autumn/Winter</p> <p>Everyday Materials (sorting and grouping materials)</p> <p>Forces (compare movement-type of movement water, wind, spring)</p>	<p>Out of This World</p> <p>Seasonal Changes - Winter / Spring</p> <p>Plants (name and structure of plants and trees)</p> <p>Light and Sound (link to senses-hear/see)</p>	<p>Land Ahoy!</p> <p>Seasonal Changes - Spring/Summer</p> <p>Animals Inc Humans (carnivore/herbivore/omnivore)</p>
Year 2	<p>Travelling Around</p> <p>Animals Inc Humans Basic needs for survival</p>	<p>London's Burning</p> <p>Living Things and Habitats</p>	<p>Wonder Woman</p> <p>Use of everyday</p>

	food, water, air. Exercise, food and hygiene Electricity Name appliances that require electricity/battery to give light/heat/sound/movement	living/dead living things suited to their habitat dependent on each other for survival Plants Seeds and bulbs to mature plants Requirements to grow water, light and temp.	materials Suitability of everyday materials How shapes of solid objects can change. Inventors and inventions Electricity(non-stat) Identify everyday electrical appliances. Battery/mains operated Dangers
Year 3	Meet the Flintstones Magnets & Forces Poles/attract/ repel/ movement on surfaces Animals & Humans - nutrition and balanced diet. Water, nutrients and oxygen transported in humans and animals.	Building an Empire Light Shadow formed and shape changes Plants Function of basic parts of flowering plant. Requirements for life & growth Water transport in plants Life cycle flowering plants	Street Detectives Rocks Types of rocks formation of soils Animals & Humans - Skeleton and Muscular System
Year 4	Tomb Raiders Animals Inc Humans- Basic Digestive system / teeth /food chains- predator, prey, producer.	Let the Battle Commence Living Things & Habitats- classification. States of Matter. Solid, liquid or gas heat/cool changes states Water cycle	A Large and Dirty Town Sound How we hear Vibrations pitch & sound Electricity Simple series circuits (not circuit diagrams)
Year 5	Greece Lightning Properties and changes of materials- Conductivity (electrical and thermal) Reversible	Conquering Castles Earth and Space- night and day, phases of the moon, star constellations	Black by Day, Red by Night All living things and their habitats Reproduction in

	and irreversible changes, Dissolving., filtering and separating mixtures,	Forces- Gravity in relation to earth. friction, air & water resistance, machinery and movement, levers, pulleys and gears	plants and animals. Life cycles, mammals, amphibian, birds, insects. Animals Inc humans Puberty & stages of growth.
Year 6	Mexican Hats Living Things and their Habitats Microorganisms, classification Animals, incl Humans Human circulatory and respiration system	Nautical Know How Light How we see - Waves, reflection into eyes Colour Electricity Voltage, components and circuit diagrams	The War at Home Evolution and Inheritance Observations over time. Adaptation of animals for survival. Animals and Humans Diet, exercise and Drugs

2.3 Our medium-term plans, which we have based on the national curriculum, give details of each unit of work for each term. These plans are monitored termly by the subject leader (A member of SLT). These plans are saved on the school's learning platform.

2.4 The class teacher is responsible for preparing the weekly lesson for their class. Teachers use their MTP and skills progression document to form the basis of their lesson, they will then complete their lesson plan digitally using SMART screens. These are all saved on the schools learning platform each week.

3 The contribution of Science to teaching in other curriculum areas

3.1 English

Science contributes to the teaching of English in our school by actively promoting the skills of reading, writing and spoken language. Some of the texts that the children study in reading are of a scientific nature, especially in guided reading sessions. The children develop oral skills in Science lessons through discussions (e.g. of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing investigations, reports and by recording information. Cross curricular links for writing are identified on the MTP.

3.2 Mathematics

Science contributes to the teaching of mathematics in a number of ways. When the children use a range of equipment to measure such as weight, capacity, temperature, speed etc, they are learning to use and apply number. Through working on investigations, they learn to estimate and predict. They develop accuracy in their observation and recording of events. Their results will be presented in a variety of ways using statistics and data representations such as graphs, tables, charts etc.

Many of their answers and conclusions include numbers. Cross curricular links for Maths in particular measure and data are identified on the MTP.

3.3 Spiritual, moral, social and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life, e.g. the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions, in particular about the community in which the children at Eastfield live. Through the teaching of Science, children have the opportunity to discuss, for example, the effects of smoking, and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet, and how Science can contribute to the way in which we manage the Earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

4 Science and Computing

- 4.1 Computing can enhance the teaching of Science because there are some tasks for which ICT is particularly useful, Cross curricular links for using ICT are identified on the MTP. ICT offers ways to impact on learning, which are not possible with conventional methods. Data loggers are used to assist in the collection of data (temperature, light and sound readings). Children use a range of ICT to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation (where appropriate). Children learn how to find, select, and analyse information on the Internet and on other media. Interactive learning sites such as the BBC and Vidtionary are also used as teaching aids to support learning.

5 Science and inclusion

- 5.1 At our school, we teach Science to all children, whatever their ability and individual needs. Science forms part of the school core curriculum policy to provide a broad and balanced education to all children. Through our Science teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this. For further details, see individual whole-school policies: Special Educational Needs; Disability Discrimination; Gifted and Talented Children; English as an Additional Language (EAL).
- 5.2 When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors - classroom organisation, teaching materials, teaching style, and differentiation - so that we can take some additional or different action to enable the child to learn more effectively.
- 5.3 We enable all pupils to have access to the full range of activities involved in learning Science. Where children are to participate in activities outside the classroom (a trip

to a Science museum, for example), we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

6 Assessment for learning

- 6.1 Teachers assess children's work in Science by making informal judgements during lessons. On completion of a piece of work, the teacher assesses it against the ARE's an ELG, and use this assessment to plan for future learning. Written and verbal feedback is given to the child to help guide his/her progress. Older children are encouraged to make judgements about how they can improve their own work. All work is marked according to our marking policy. Any written feedback given to a child is to build on and extend children's scientific thinking and learning.
- 6.2 Teachers will assess progress against the end of year age related expectations laid out in the National Curriculum and EYFS framework.
- 6.3 Teachers will make an assessment of the pupils' work in Science, at the end of each term and these assessments are monitored by the subject leader for the whole school overview of scientific learning. Termly assessments will be recorded and follow the whole school approach as for English and Maths (Emerging, Developing or Secure).
- 6.4 Prior to each topic, all pupils in years 1-6 complete a KWL grid, this is used by the class teacher to inform their planning. The KWL grid is also used to inform the teacher when making an end of unit topic assessment.
- 6.5 Pupils have a copy of the key vocabulary at the beginning of each new unit, this is stuck in pupils' books, and is highlighted to show they are using scientific vocabulary when sharing information or recording their findings and their secure understanding of the unit.
- 6.6 At the end of each unit, teachers will plan and carry out a range of assessments, for example: an end of unit test; cloze procedure to check understanding of key vocabulary; write an information text etc. All end of unit assessments are to be used by the teacher for future planning and making a secure judgement at the end of the term.
- 6.7 Each class also has a classroom display, dedicated to their topic for each half term. This shows the topic title, key vocabulary and any other prompts/work/photographs that may support children's learning throughout the unit. Teachers are encouraged to use one Science display board, to show the two topics they are teaching that term.

7 Resources

- 7.1 We have sufficient resources for all Science teaching units in the school and new ones have been purchased to support the delivery of the new national curriculum expectations. We keep these in a central store behind the Guided Reading books, where there is a box of equipment for each unit of work, for each year group. All new resources purchased by the subject leader are shared with staff.

8 Monitoring and review

- 8.1 The coordination and planning of the Science curriculum are the responsibility of the subject leader, who also:
- supports colleagues in their teaching, by keeping informed about current developments in Science and providing a strategic lead and direction for this subject;
 - gives the head teacher a termly summary report in which she evaluates the strengths and weaknesses in Science and indicates areas for further improvement;
 - uses allocated subject leader time to review planning, assessment alongside evidence of the children's work, progress and resources.
- 8.2 The quality of teaching and learning in Science, is monitored and evaluated, by the headteacher as part of the school's agreed cycle of lesson observations.
- 8.3 This policy will be reviewed at least every two years.

Signed: L Hylton

Date: September 2022

Review: September 20224

Appendix

Letter for Science unit - reproduction and puberty in Y5

Eastfield Primary School

Colliery Road
Wolverhampton
WV1 2QY

Phone: (01902) 558604 Fax: (01902) 558607
Email: eastfieldprimaryschool@wolverhampton.gov.uk

Head Teacher: Mrs Hay

09.09.22

Dear Parents/ Carers,

As part of our Science curriculum, your child in Year 5 will be learning about living things and their habitats, this unit will follow a 5 week programme, which includes: the life process of reproduction; stages in the growth and development of humans; changes experienced during puberty. Our teaching and learning follows the government's guidance given in the National Curriculum and is mandatory, as Science is a core subject.

Should you require more information about our curriculum content for Science this term in Year 5, please do not hesitate to contact me by email upperphase@eastfieldpri.co.uk.

Thank you for your support.
Yours sincerely,

Mrs Hylton
Assistant Head Teacher
Upper Phase leader & Science coordinator.

