



OUR LADY AND
ST HUBERT'S
CATHOLIC PRIMARY SCHOOL



At Our Lady and
St. Hubert's, home,
school and parish
work together,
knowing that God is
with us in all we do.

Science

Guidance and Procedures

Intent, Implementation, and Impact

Intent

At Our Lady and St Hubert's, students will gain a strong understanding of the world around them, whilst acquiring specific skills and knowledge to help them to think scientifically.

Children will acquire an understanding of scientific processes and an understanding of the uses and implications of Science, today and for the future. They will be encouraged to think about how they can use their scientific understanding to assist them in finding solutions to real world problems, using a range of skills including critical thinking, creativity, and citizenship.

Implementation

Children will learn fundamental knowledge and skills within Science, in line with the National Curriculum. Many Science topics are built on throughout a child's school journey at OLSH, allowing children to build upon their prior knowledge and embed this deep understanding into their long-term memory.

Through following Rosenshein's principles, we are allowing our children to know more and remember more. All children are encouraged to develop and use a range of 'Working Scientifically Skills' including observations, planning and investigations, as well as being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Subject specific vocabulary will be delivered through lessons and topics and will be built upon as a topic progresses throughout year groups.

Through the use of modelling, targeted questioning, and continuous review, children will develop confidence and competence to use these skills appropriately, independently, and in a range of contexts. Children will learn scientific knowledge and skills in relation to other subjects, with cross-curricular links being highlighted where appropriate. This will allow for children to see connections in their learning. When this is not possible, children will learn explicit topics and discuss the necessary learning taking place.

Impact

We want our children to become inquisitive about the world around them- and we feel that Science is the key to this. They will develop an understanding as to why things happen, how things happen and the effect they can have on the people and the environment around them.

Science will be evident in other areas of learning, like DT; choosing materials based on their properties, Computing; investigating electrical components and being Critical Thinkers; explaining and justifying their decisions, using their Science knowledge to back them up.

When children leave OLSH, we want them to be competent and confident in their knowledge and be able to face real-world problems head on, finding new and inquisitive solutions to solve them.

Curriculum Planning

The curriculum provides children with opportunities to learn new scientific concepts and knowledge over the course of the year, as well as time to review and recap prior learning. The science curriculum is planned out in a way that ensures coverage of the national curriculum objectives, but also provides children opportunities to embed their learning and make connections cross-curricula as well as with wider concepts. Medium Term planning ensures that topics are being structured in a way as to ensure substantive knowledge is provided to children over the course of the half-term and any cross-curricular links are highlighted. Short Term planning should then develop the individual objectives within the topic and build upon them to ensure a progression and sequence of learning in taking place.

Whole School Science Overview						
	Autumn		Spring		Summer	
	A Wonderful World	A Moment in Time	Peace and Conflict	Nurturing Nature	We are Engineers	Our Place in the World
Year 1	Plants / Seasons		Animals including Humans	Animals including Humans / Seasons	Materials	Seasons
Year 2	Animals including Humans		Materials	Habitats	Plants	
Year 3	Light	Rocks, Fossils, Soil		Plants and Nutrition	Forces and Magnets	Animals including Humans
Year 4	Animals including Humans	Sound	Animals including Humans	Solids, Liquids, Gases	Electricity	
Year 5	Changing States/Gases Around Us	Forces		Life Cycles	Earth, Sun, Moon	Living Things
Year 6	Animals including Humans	Evolution and Inheritance	Electricity	Habitats	Light	

In Key Stage 1 children will Work Scientifically by:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

In Lower Key Stage 2 children will Work Scientifically by:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests

- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings

In Upper Key Stage 2 children will Work Scientifically by:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

6Cs

At Our Lady and St Hubert's, our lessons are underpinned by our 6Cs- '21st Century skills for effective learning'. These skills will support our children in being prepared for whatever they encounter when they leave education and enter society and the workforce.



Character

Children will need to show perseverance and resilience, particularly when carrying out different scientific activities, such as experiments and observations, reflecting on their own actions and how they could improve these.



Citizenship

Children will need to show an understanding of the wider world and how their learning links to real world problems. Children will learn about how their actions have a direct impact on the world and how they need to make the right decisions to ensure this is a positive impact.



Communication

Children will need to communicate effectively with others, being able to present their ideas and their findings. They will use a range of communication tools to present their findings and be able to discuss the implications of these.



Collaboration

Children will need to collaborate effectively with others, particularly when carrying out experiments, to achieve the common good. This may include organisation of different roles and responsibilities within a group. Collaboration also includes children sharing their ideas and working with others to help them succeed.



Creativity

Children will have opportunities to identify real-world problems and come up with creative solutions for these. They will have the chance to undertake their own enquiries into these problems and ascertain the most-appropriate resolutions for them.



Critical Thinking

Children will need to make links, see patterns and connections between previous and current learning, and how they can use their knowledge and understanding to help them select the most appropriate choices to solve problems.

Assessment

Assessment is conducted in a variety of forms within Science.

This is completed in a formative manner through marking of individual lessons to decipher children's understanding before moving on and addressing misconceptions and conducting reviews to assess children's retention of prior learning. Knowledge Organisers allow teachers to see the objectives that need to be met within a topic and use these to indicate whether and to what level a child has accomplished this.

Summative assessment also takes place at the end of units of work to assess children's knowledge and understanding of a topic, as well as over the course of a year, to ascertain whether children are on track with their understanding of the science curriculum. It is the role of teachers to conduct these assessments and record them accordingly. It is the role of the subject leader to monitor this assessment.

Knowledge Organisers

For each Science topic, children are given a Knowledge Organiser which is to be stuck into their books. These provide the children with key vocabulary related to the topic, diagrams and images that may link and facts and definitions that will be related to a part of their learning. Children are encouraged to use these to support themselves within their learning. These also include the national curriculum aims for teachers to assess against as well as working scientifically areas that may be covered within the topic.

Science
Year 6 – Electricity

Circuit Diagram
Electricity is a type of energy.

Current: the amount of electricity flowing through the circuit it can be measured in amps.

Voltage: is the difference in electrical energy between two parts of a circuit. It can be measured using a volt meter and is measured in volts. The bigger the voltage, the bigger the current. Larger electrical items need a higher electrical voltage and current than smaller items.

Some objects conduct electricity; this means they allow electricity to flow through them easily. These are called conductors.

Key Vocabulary
Circuit Diagram
Symbols
Voltage
Amps
Volts
Cell

Variation of Components
When changes are made to circuits, components can function differently. Through analysing circuit diagrams, you should be able to work out what would happen.

When drawing electrical circuits, standard symbols should be used to show different components.

Science
Year 6 – Electricity

Use recognised symbols when representing a simple circuit in a diagram.

Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.

Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells using in the circuit.

E1: plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.

E3: record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

E5: report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.

E6: identify scientific evidence that has been used to support or refute ideas or arguments.

Arbor

Teachers will track summative assessment data for children on Arbor and this will be completed termly.

Monitoring/Reports

The science subject leader will conduct a termly monitoring of teaching and learning and is to ensure all objectives are covered and offer support where necessary.

Progress and attainment is reported to parents through parents' evenings and end of year reports. Reports describe each child's attitude towards Science, his/her progress in scientific enquiry and understanding of the content of science.

SEND, Pupil Premium and Inclusion for all

All children are given opportunities to develop their Scientific knowledge. To ensure all children can access learning, adaptations are put in place where necessary to support children, through differentiation of activities, support given to complete activities and further guidance given.

Children will have opportunities to develop their scientific knowledge as well as their skills for working scientifically, and adaptations will be put in place where necessary to support any barriers that are identified.

For those children who are identified as having strong subject knowledge and use of scientific skills, challenges will be provided to stretch and deepen their learning.

The Role of the Science Subject Leader

The role of the subject leader is to provide a vision of how science will be taught and delivered throughout school. They will provide guidance and support for good-quality teaching and be responsible for monitoring this. They will conduct monitoring through a range of forms to ascertain an overview for how Science is seen across school, including environment walks, curriculum coverage, book looks and learning walks. Where necessary, the subject leader will inform teachers of opportunities to complete CPD to enhance planning and teaching. The subject leader will also provide opportunities to promote science across the wider school.

Reviewed – March 2023 – Ellie Johnston (Subject Lead)

Date of next Review – January 2024