



Science

Intent

At Holy Trinity Church of England Primary School, we believe Science is important and highly relevant as an integral part of daily life, from cooking and checking the weather, to recycling and nature walks. We recognise that through science, our lives are enriched and changed for the better, giving our pupils the best possible opportunity to flourish and grow. We believe the curriculum at Holy Trinity should teach pupils about the role that science plays in positive advancements, as well as scientific knowledge, methods and processes.

Advances in science are continuing to transform our world at lightning speed and we need to do our best to prepare our pupils for a future we can only imagine, yet one in which they will grow as confident global citizens who contribute to society.

Coverage

How do you know the National Curriculum is covered?

A Science **National Curriculum Coverage Map** matrix maps the objectives of the National Curriculum and cross-references them to the Learning Means the World Curriculum (LMTW). Any identified gaps are taught through National Curriculum specific units.

We believe that learning in science develops through the experience of scientific concepts in incremental steps in each phase. For this reason, we have adapted the Programme of Study within the Science National Curriculum, in line with statutory requirements*, to support children's learning. Exploratory units of Light, Electricity, Sound and Forces have been included in Key Stage 1 to ensure that children gain initial experience of a range of Physical science before Key Stage 2, as outlined below.

Forces – The Beachcombers

Physical movement is a natural process and pupils develop basic locomotion and manipulative skills from an early age. By building understanding of the basic concept of push and pull as part of this suite of movements, pupils can better access the concepts of magnetism in LKS2 and the principles of levers and pulleys in UKS2. Comparing how things move, such as different animals, links biology to this strand and also enables pupils to develop comparisons.



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Light – Light Up the World

Having already learnt about sight as one of the five senses in Early Years, pupils learn about day and night, with reference to the sun as a light source which enables us to see. On a practical level, they are also taught that we need to protect our eyes from it, as it is so strong. This naturally leads to a recognition that we need light to see things and that dark is the absence of light. The concept of shadow is also introduced at a basic level before it is re-visited and built on in LKS2.

Sound – The Beachcombers

Having already learnt about hearing as one of the five senses in Early Years, pupils explore sound sources and the relationship between the volume and distance. Also, as pupils learn about sound in music, and the element of dynamics (loud and quiet), this complements their understanding.

Electricity – Zero to Hero

As part of their everyday experience, pupils are continually interacting with common appliances that run on electricity, both mains and battery. Because of this, there are safety issues that need to be addressed at an early age which we believe is best done in the context of science. Pupils use switches every day and by introducing them to the basic exploration of electrical circuits, this not only develops pupils' confidence in safe handling but helps them connect their actions to consequences e.g. energy conservation. This learning is then re-visited and built on in LKS2 and UKS2.

In addition, environmental change is first taught in KS1 and not LKS2, linked to Living Things and Their Habitats.

Living Things and Their Habitats - Going Wild

Pupils learn about how changes in environment can result in animal species becoming endangered, when they begin to look at biodiversity.

Similarly, teaching about Evolution and Inheritance begins in LKS2 not UKS2, as it connects well with learning in history about prehistoric man and contextual evidence.



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The overall changes to the science curriculum structure enable children to build on their learning through a spiral model, encouraging the development of concepts as they visit each area of science over time.

**“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.” National Curriculum in England: Science Programme of Study*

Progression

How do you plan for progression in Science?

Using LMTW as a foundation, Science at Holy Trinity Church of England Primary School is taught through thematic units, both through Skills Development Tasks and through projects which then apply those skills. The keys skills for each subject have been mapped across each thematic unit to show coverage (**Science Skills Maps**) and progression (**Science Skills Progression Maps**).

The **Skills Ladder** acts as an incremental model for skills acquisition and provides a benchmark for each year group, with teachers using the skills statements as a model for progression throughout the school. Growing in complexity and demand across Key Stages 1 and 2, pupils’ learning when linked to the Skills Ladder should enable them to make good progress in their learning.

The Satellite View for Science (**Satellite View**) maps out which thematic units feature this subject and clearly shows the objectives taught.

The **Knowledge Building Pillars** form a robust model of progression for knowledge and understanding, helping pupils to assimilate, synthesise and apply their learning within different scientific contexts. This also means that concepts are cumulatively built upon. For example, observing and recording.

- Explorers (EYFS): Pupils know that saying what you see is an important aspect of science.
- Pathfinders (KS1): Pupils know how to use simple equipment to record and observe.



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- Adventurers (LKS2): Pupils know that clear observations and recordings support findings and prove theories.
- Navigators (UKS2): Pupils identify, analyse and explain findings that support or dismiss theories or arguments.

What do we learn about in Science?

Though our 'Learning Means the World' Curriculum as a foundation we learn about:

Plants	Animals, Including Humans
Materials	Seasonal Changes
Living things and their Habitats	States of Matter
Rocks	Light and Heat
Forces and Magnets	Sound
Electricity	Earth and Space
Evolution and Inheritance	Movement

When is Science taught?

At Holy Trinity, Science is taught through thematic units, however, one lesson per week is allocated specifically to Science to enable breadth and depth of coverage. The **Satellite View** maps out which thematic units feature this subject and clearly shows the objectives taught. In addition, there are Professor Jiffy science units.

Jiffy Science is a series of lessons based around the 'working scientifically' statutory requirements from the National Curriculum. The aim is not to teach new knowledge from the programme of study, but to use what the pupils already know to conduct investigations, carry out experiments and consolidate their learning. Each session is designed to be one lesson in length and to be taught during a thematic unit where there is no science integrated into the theme. At Holy Trinity Church of England Primary School, we have mapped out when these take place.

How is Science taught?

Science is taught through working scientifically (involving practical investigation, observation and application skills, enquiry and research) alongside specific taught subject knowledge. Learning takes place both inside and outside the classroom.



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Where will you see evidence of Science at Holy Trinity Church of England Primary School?

- ✓ Pupils' Science books
- ✓ Class displays/working walls
- ✓ Pupil voice
- ✓ Assessment
- ✓ Subject Leader folders

How do we assess and monitor Science?

We use a variety of methods to assess and monitor science at Holy Trinity. Teachers may use Kahoot Quizzes, for the purposes of diagnostic assessment, as well as checking recall in the classroom. They will also use questioning to help the children recall prior learning. We use a tracking tool to ensure that the children are making progress in science and this is monitored by the Subject Leader who carries out monitoring tasks to ensure that the curriculum is being delivered and that there is evidence of the learning in children's books.

Through close monitoring, the effectiveness of teaching has a positive impact on learning and standards. The Subject Leader has an evidence file recording monitoring activities, which can include interviews, observations and work scrutiny. The subject leader evaluates all aspects of scientific learning to define next steps for improvement from their action plan.

How we support SEN

All pupils at Holy Trinity Church of England Primary School receive high quality teaching. This means that a range of teaching styles and approaches are used and that appropriate learning objectives are set for all learners with a curriculum matched to their needs. Teachers set high expectations for all pupils. They use appropriate assessment to set ambitious targets and plan challenging work for all groups, including:

- ✓ More able pupils
- ✓ Pupils with low prior attainment
- ✓ Pupils from disadvantaged backgrounds
- ✓ Pupils with Special Educational Needs (SEN)
- ✓ Pupils with English as an additional language (EAL)

Teachers plan lessons so that pupils with SEN and/or disabilities can study every National Curriculum subject, wherever possible, and ensure that there are no barriers to every pupil achieving.



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Impact

PUPIL VOICE - through discussion and feedback, children talk enthusiastically about their science lessons. They are proud of their knowledge and feel that they can confidently speak about an event or person from science.

EVIDENCE IN KNOWLEDGE - pupils know about different ways that science can be used to support their future potential. They can build on their knowledge each year to form a solid understanding of how the world works through the science they have studied.

EVIDENCE IN SKILLS - pupils use accurate, subject specific vocabulary in science lessons. They can see common themes and use and apply skills previous taught topics.

BREADTH AND DEPTH - teachers plan a range of opportunities to use science inside and outside school and across different subjects to ensure that knowledge sticks!