

*'As the children move through the school, they **blossom** as they grow as unique individuals, benefitting from the strength and faith of our school.'* – ref. School Vision



## What Science looks like in Goodrich CE (VC) Primary School

We aim to use Science to stimulate and excite children's curiosity about phenomena and events in the world around them as well as giving them the opportunities to develop their understanding and increase their knowledge. We aim to promote the development of enquiry, exploration and observation in a meaningful context. Science lessons encourage children to work collaboratively and independently to learn about the world around them.

### Curriculum Intent

#### What a Science looks like in our school.

- Exciting science topics to provide children with the opportunity to explore and investigate the world around them.
- A variety of activities which take place inside and outside of the classroom to engage children about the world around them.
- Investigations/practical exploration with the children being able to plan, record, carry out and conclude their learning.
- Opportunities to work individually, in pairs or groups.
- A range of scientific resources to enable the children to carry out engaging experiments.
- Subject specific vocabulary which is focused upon at the start of each topic and is then embedded within each lesson.
- Different aspects of Science are focused upon: physics, chemistry, and biology.
- Use of a range of media to help the children to learn about the world and space.
- Learning about the achievements of famous scientists.
- Opportunities for children to talk about their observations and discoveries using scientific vocabulary.

#### This is our philosophy:

- Children learning through exploring different topics whilst acquiring new skills.
- Using the children's understanding as a starting point.
- Making links to the world around us.
- High quality modelling of scientific skills and techniques.
- Promoting the use of the scientific method to extend learning.
- Cross-curricular links where possible.
- To foster a healthy curiosity in our children and a passion for science.

**This is the knowledge and understanding gained at each stage:**

**By the end of EYFS pupils will:**

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.













**By the end of Key Stage 1 pupils will:**

- Experience and observe phenomena, looking more closely at the natural and humanly constructed world around them.
- Develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions.
- Begin to use simple scientific language to talk about what they have found out.
- Mostly use first-hand practical experiences, but also appropriate secondary sources, such as books, photographs, and videos.
- Read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

**By the end of Key Stage 2 pupils will:**

- Develop a deeper understanding of a wide range of scientific ideas and begin to recognise that these change over time.
- Select the most appropriate ways to answer science questions using different types of scientific enquiry.
- Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to first, to talk about and, later, to write about what they have found out.
- Read, spell and pronounce scientific vocabulary correctly.

## Curriculum Implementation

SCIENCE												
BIG IDEAS	Working Scientifically		Biology				Chemistry			Physics		
Building Blocks	Methodologies of science	Communicate Scientifically/ Vocabulary	Understand Plants	Understand Animals & Humans	Investigate Living Things	Understand Evolution & Inheritance	Investigate Materials	Understand Movement, Forces & Magnetism	Understand the Earth's Movement in Space	Investigate Light & Seeing	Investigate Sound & Hearing	Understand Electrical Circuits
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Please refer to:

- National Curriculum Compliance document – to demonstrate that statutory requirements are met.
- Building Block Coverage – to plot where building blocks are taught throughout the curriculum.
- Long Term overview – to identify themes used to explore the building blocks
- Vocabulary document – words required to be taught in each milestone or class
- Theme webs – which summarise the key knowledge and skills to be acquired in each theme taught
- Science Progression document and Working Scientifically document – skills and knowledge to be taught in each building block by milestone or class.

### This is how it works:

- Science is taught in the EYFS as an integral part of the topic work covered throughout the year. Children are encouraged to explore and investigate independently during continuous provision.
- All children in Y1-6 receive a minimum of 2 hours quality Science teaching a week.
- Knowledge and understanding are taught in blocks with a new topic each term/half term and a range of scientific enquiries are carried out each half term.
- Where possible links are made with other subjects to enrich learning.
- There are regular practical sessions where children have opportunities to develop their investigative skills.
- Lessons incorporate the use of technology where appropriate.
- Pre-teaching of scientific vocabulary takes place at the start of each topic so it can be used in the following lessons.
- Displays support current learning which include vocabulary.
- A range of engaging resources enable the children to carry out exciting experiments to deepen their learning and develop their understanding of the concept that is being taught.
- There are opportunities for paired, group and class discussion and debate to consolidate learning.
- Children learn about the achievements and contributions of key scientists from the past and modern times.

### **This is what the adults do:**

- Plan exciting progressive lessons which build on prior knowledge.
- Support, encourage and nurture a love of Science.
- Create a learning environment that supports learning and engages children's interest in the topic being studied.
- Use Bloom's Questioning in class to assess conceptual knowledge and skills and allow pupils to develop strategies for questioning and thinking.
- Demonstrate how to use scientific equipment, and the various 'Working Scientifically' skills in order to embed scientific understanding.
- Regular book scrutiny, learning walks, pupil meetings and planning audits.
- Whole school professional development.
- Network with other schools and science coordinators, e.g. though the WVLN.

### **This is how we support children:**

- We use teacher and self-assessment to quickly identify any child who requires additional support in specific areas
- Differentiated ability tasks enabling children to progress at their own pace.
- We make cross curricular links whenever possible.
- Provide visual and practical prompts

### **This is how we support staff:**

- Identification of CPD needed
- Curriculum Groups – share expertise throughout the school
- Use of staff meetings
- Small sessions and immediate support as and when required
- Work in conjunction with other local school through Science network meeting and South Herefordshire Ogden Trust group.

### **This is how we challenge:**

- Lessons will be differentiated or adapted through challenge or support.
- Additional activities to stretch the learning within the lesson and further develop certain techniques.
- Activities with alternative/extended discussion points.

### **This is how we ensure all children can access the curriculum:**

- To support all children, particularly those who have SEN or EAL needs, key vocabulary is referenced and specifically taught to extend the children's use of vocabulary and develop greater access to the curriculum.
- Seating children alongside good role models to support one another.
- More frequent repetition and revisiting to help make it stick.
- By providing visual/practical prompts.
- Teaching lessons using a range of different techniques to appeal to different learning styles e.g. videos, interactive websites, drama, artefacts, texts etc.

## Cultural Capital/Enrichment

In addition, the intent behind science is to contribute towards the cultural capital for the children in terms of the knowledge and skills they need to be successful learners and in wider life. Cultural capital in science has been identified in terms of the knowledge useful to our lives. We are aware that powerful knowledge will put children at an advantage.

The powerful knowledge we teach in science is as follows:

- Scientific literacy: a young person's knowledge and understanding about science and how science works. This also includes their confidence in feeling that they know about science.
- Science-related attitudes, values and dispositions: this refers to the extent to which a young person sees science as relevant to everyday life (for instance, the view that science is 'everywhere').
- Scientific vocabulary
- Knowledge about the transferability of science: understanding the utility and broad application of science qualifications, knowledge and skills used in science (e.g. that these can lead to a wide range of jobs beyond, not just in, science fields).
- Science media consumption: the extent to which a person, for example, watches science-related television, reads science-related books, magazines and engages with science-related internet content.  
(videos as part of lessons to help explain or model concepts)
- Participation in out-of-school science learning contexts: how often a young person participates in informal science learning contexts, such as science museums, science clubs, fairs, etc.
- Family science skills, knowledge and qualifications: the extent to which a young person's family have science-related skills, qualifications, jobs and interests.
- Knowing people in science-related roles: the people a young person knows (in a meaningful way) in their family, friends, peer, and community circles who work in science-related roles.
- Talking about science in everyday life: how often a young person talks about science out of school with key people in their lives (e.g. friends, siblings, parents, neighbours, community members) and the extent to which a young person is encouraged to continue with science by key people in their lives

**Curriculum Impact**

At Goodrich Primary School, we recognise the importance of science in every aspect of daily life. Our Science Curriculum facilitates sequential cyclical learning and long-term progression of knowledge and skills. Teaching and learning methods provide regular opportunities to recap acquired knowledge through high quality questioning, discussion, modelling and explaining to aid retrieval at the beginning and end of a lesson or unit. This enables all children to build on their prior knowledge and develop as Scientists.

**This is what you might typically see:**

- Happy, confident and engaged learners
- Children practising and applying knowledge to different situations.
- Children posing their own questions and hypothesis for investigation
- Children working cooperatively in paired/group work.
- A classroom environment with displays including vocabulary, to support learning.
- Children discussing, reflecting and sharing their learning.
- TIPTOP learning

**This is how we know how well our children are doing:**

We have identified substantive and disciplinary knowledge which is fundamental to the children's development and understanding as scientists. They accumulate this as they move through our school which then gives them a firm foundation to build on when they move on to KS3 and beyond.

- Marking and feedback which also includes peer assessment
- Lesson planned based on work done in previous year groups to ensure children are progressing
- Formative assessment through questioning throughout the lesson
- Photographic/video evidence
- Observations of children during investigation and exploration
- Next step marking and feedback by teacher and peers.
- Book scrutiny, pupil meetings and planning audits.
- Use of surveys and questionnaires.
- Regularly monitoring of the standards of children's work and the quality of teaching and learning in lessons

**This is the impact of the teaching:**

- Children who are confident talking about science.
- Children who enjoy their learning in science.
- Inquisitive learners who make observations and ask questions.
- Pupils develop detailed knowledge and skills in science and achieve well.
- Pupils use acquired vocabulary in science lessons.
- Children who have the scientific skills to investigate independently and show resilience when tackling problems.
- Reflective learners.
- Children will be ready for the next stage in their education. Pupils with SEND will achieve the best possible outcomes.
- Children who are inspired by the achievements of scientists.
- Pupils with an awareness for our world and beyond. They know about different ways that science can be used to support their future potential.