

RYHALL CE ACADEMY

Science Curriculum Statement



INTENT

Science teaching at Ryhall CE Academy aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of science, today and for the future. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence.

At Ryhall, scientific enquiry skills (procedural knowledge) are embedded within each topic the children study and these topics are revisited and developed throughout their time at school. Topics, such as plants, are taught in Key Stage One and studied again in further detail throughout Key Stage Two. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this declarative and procedural knowledge into the long-term memory. Throughout Key Stage 2 pupils also develop an understanding of the discrete nature of the different aspects of Science (i.e. Biology, Chemistry, Physics).

All children are encouraged to develop and use a range of 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. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged. Concepts taught should be reinforced by focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions.

The specific aims for science, which help deliver the wider school aims, are:

- To provide appropriate and stimulating scientific experiences which encourage pupils to make sense of the world around them;
- To develop a positive attitude to scientific enquiry and an awareness of the influence of science in everyday life;
- To deliver activities that meet the requirements of the National Curriculum in a way that is appropriate to the needs and interests of all pupils and which challenge them to fulfil their potential;
- To develop children's scientific knowledge and understanding;
- To develop children's investigation skills;
- For pupils to apply their scientific knowledge and skills to solve problems in a wide variety of contexts;
- To develop children's explanatory and communicative skills;
- For pupils to be able to work both collaboratively and independently on scientific tasks;
- For pupils to develop a caring attitude to the environment and living things;
- For pupils to develop an understanding of safe ways of working and to take increasing responsibility for managing their own investigations safely;
- To use scientific contexts to develop and consolidate the basic cross curricular skills of English, Maths and Computing.

IMPLEMENTATION

Science is taught as an integral part of whole school topics, with some topics having a science 'driver'. It is taught as a discrete weekly session to allow weekly reinforcing and revisiting of declarative and procedural knowledge. Some areas of the science curriculum are taught in an ongoing way throughout the year, for example seasonal changes in Key Stage One.

Learning:

Pupils will be provided with a range of learning experiences. These will include first-hand experience of:

- exploratory play to gain experience of a topic and to develop their own ideas;
- experimentation to try out ideas and find out what happens;
- investigation to test ideas or hypotheses in an increasingly systematic way;
- focused observation to develop the ability to notice detail and changes that take place over time;
- focused practical tasks to promote understanding of a concept or skill;
- sorting and classifying to group things by observable characteristics;
- discussion and debate of ideas and conclusions to consolidate understanding and develop the ability to explain clearly;
- gaining respect for evidence and appreciating the views of others;
- working collaboratively and independently;
- using secondary sources to widen experiences, enhance understanding beyond the classroom environment and provide evidence;
- presenting the results of their work in appropriate and varied ways, including verbal reports and discussions; drawings, diagrams, charts and graphs; written work in a variety of styles and for different audiences; artistic and dramatic presentations; using IT.
- gain an awareness and understanding of the work of Scientists linked to each topic covered.

Teaching:

- Foundation stage 'Science' learning will have a strong emphasis on developing basic enquiry skills and high quality observations as set out in the early learning goals, developing knowledge and their understanding of the world around them.
- The working scientifically strand of the National Curriculum is embedded in all teaching – knowledge of a topic is acquired through applying scientific enquiry skills (procedural knowledge).
- Key vocabulary will be displayed pertinent to each topic and pupils will be encouraged to use the technical vocabulary in all levels of communication.
- There will be frequent opportunities for pupils to make choices and take decisions both collaboratively and independently.
- Enrichment opportunities are planned for both within the school day and in after school activities.
- Teachers plan their science using the National Curriculum programmes of study and the EYFS Curriculum Framework using a wide range of resources to support their planning, and wherever possible links are made to the whole school curriculum theme being covered.
- Teachers in Key Stages One and Two track the coverage of National Curriculum objectives so that all objectives are covered within a key stage, and progression is ensured by referring to the declarative knowledge statements for each topic. In addition, teachers complete a tracking document for procedural knowledge strands to ensure balanced coverage across topics.
- Medium term planning highlights the NC objectives to be covered in a topic, broken into procedural and declarative knowledge strands, and weekly planning includes the specific learning intentions and activities for that lesson.
- Through enrichment children are Secondary Science prepared (i.e. Key Stage Three). There are opportunities for children to be taught by secondary staff. There are links with the local secondary school (Casterton College Rutland) where Year 5 attend an Inspiring Science Day and experience the Science laboratory in the secondary setting – having early exposure to using equipment such as Bunsen burners, etc. A secondary colleague also attends and delivers Science session in house such as heart dissection.
- Teachers also have access to the experts and science equipment from the STEM Ambassador Hub. This can enhance school-based equipment and inviting ambassadors into school to share their expertise and work enhances Science learning.

Inclusion:

Inspiring and preparing every child to live 'life in all its fullness' (John 10:10) so that they may look back with pride and move forward with confidence.

We teach science to all pupils, whatever their ability. Science forms part of the school's aim to provide a broad and balanced curriculum for all, and activities are planned to provide learning opportunities for the range of scientific abilities within a class. We achieve this in a variety of ways by:





- Planning open-ended tasks which can have a variety of responses;
- Planning tasks of increasing difficulty;
- Taking into account the targets set for children with SEND and providing the necessary support for those children to access the activities;
- Having special awareness of those identified as highly able and planning opportunities for them to extend their thinking and experiences to deepen their understanding.

IMPACT

Our science curriculum is high-quality, well thought out and is planned to demonstrate progression. If children are keeping up with the curriculum, they are deemed to be making good or better progress. In addition, we measure the impact of our curriculum through the following methods:

- Informal assessments are made through observation and discussion in lessons.
- Work will be marked regularly against lesson objectives shared with pupils and in accordance with the school's marking policy.
- Children will be encouraged to review their own progress and knowledge is tracked using low stakes pre and post-learning quizzes and assessments.
- Progress against end of year expectations is recorded using O'Track formative assessments as a result of teacher assessment, at the end of each unit and collated at the end of the school year.
- Assessment in EYFS informs everyday Understanding the World planning and is based on on-going observational assessment of each child's achievements, interests and learning styles. Formative assessment may take the form of anecdotal observations, focused observations, baseline assessment, other focused assessments, annotated examples of work, photographs, video footage and information from parents. The EYFS Profile summarises all of the formative assessment undertaken and makes statements about the child's achievements against the 'World' aspect of 'Understanding the World.'

Our Golden Threads

Subject Name: SCIENCE		Subject lead: Mrs Dawn Jesson		Date 2021-2022			
How do the following 'Golden Threads' work within this subject?							
CHRISTIAN VALUES		LANGUAGE RICH		KNOWLEDGE RICH		ACTIVE AND ENRICHED	
							
This subject supports our Christian Values by...		This subject supports children's language use and acquisition by...		This subject provides children with rich knowledge by...		This subject allows for active and engaged learners by...	
Developing Resilience , by allowing pupils to step out of their comfort zone when learning Science.		Teaching and exploring key scientific language connected to each key learning point and embedding this within and across lessons.		Making links between science and everyday living, how has this invention/creation/finding impacted our lives?		Providing pupils with the opportunity to be set up their own investigations, allowing for an increase in child led learning.	

<p>Developing Respect, by instilling respect for the equipment and others ideas/suggestions and conclusions.</p>	<p>By highlighting key language and having the opportunity for pupils to use this confidently in their writing/explanations/conclusions and develop the use of sentence stems allows the pupils to articulate their findings/make confident explanations.</p>	<p>Making observations within investigations and concluding their findings with the knowledge learnt.</p>	<p>Allowing exploration with equipment when pupils find their own conclusions, rather than teacher led.</p>
<p>Developing Compassion and Respect, through understanding that their scientific enquiries may conclude different results.</p>	<p>Providing children with quality cross-curricular texts/reading opportunities to support ongoing topics of the curriculum and refer to when in lessons.</p>	<p>Providing children with the knowledge to be able to plan, predict, test and analyse observations and results in a range of contexts</p>	<p>Ensuring pupils are engaged by the observations they are making and planning and performing investigations for a hands on approach.</p>