



Science Policy

Reviewed:
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Aims and Objectives:

Science at Ryhill Junior School aims to teach our children the skills, knowledge and understanding they need to question and understand concepts that occur in the world around them. The National Curriculum for Science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future

As well as these, Ryhill Junior, Infant and Nursery School aims to:

- enable pupils to make decisions about the uses and values of scientific work and achievements
- enable pupils to develop an understanding and respect for the natural world
- enable pupils to question, hypothesize, test and discover for themselves about our world
- develop the skills required to investigate the world around them

Outdoor learning

Wherever possible, teachers will use the outdoor environment to enhance the teaching of science. Outdoor learning means learning outside of the classroom and can include the school grounds, local parks or green spaces, museums and the local high street. The benefits of outdoor learning in science include:

- making first hand observations of living things that cannot be brought into the classroom
- observing and interacting with living things where they naturally occur or would usually be found
- observing how the natural world changes throughout the year

Other benefits of learning outdoors about, for and in the environment include improvement in:

- engagement in learning levels
- physical levels
- mental health and wellbeing
- behaviour and attendance
- belonging and involvement with the community
- engagement and understanding of nature
- social skills

we have a trained forest schools teacher who works with each class at least once a term outside in our grounds for half a day. The children experience activities linked wherever possible to our long-term plan in subjects such as science, geography and art and design.

Science in EYFS:

We teach science in the Foundation stage as an integral part of the topic work covered during the year. It comes under 'Understanding the World' in the EYFS. Children will be supported in developing the knowledge, skills and understanding that help them to make sense of the world. This will involve hands-on experiences such as exploring senses and materials, exploring how things work and change, respecting and caring for the environment and understanding seasonal change. Other areas of the curriculum will feature in these lessons such as Communication and Language when questioning their scientific knowledge, explaining their observations and learning new vocabulary. Physical skills will be developed when making healthy choices and talking about their health and wellbeing.

Their learning will be supported through offering opportunities for them to encounter creatures, people, plants and objects in their natural environments, through stories and in real-life situations; undertake practical 'experiments'; and work with a range of materials. Children use the school grounds as well as their own outdoor area throughout their time in Early Years. They will also have the opportunity to go beyond the school into the community where this features in the curriculum or on trips to places such as to the farm. The EYFS strand 'Understanding the World' leads directly to scientific elements of the curriculum and leads to more formalised Science learning in KS1 and then KS2.

Teaching in Y1-Y6

The areas of study are outlined by the National Curriculum and these have been divided and allocated to year groups, with specific content to cover. These are outlined on our long-term plan. Where no science unit is explicitly taught, a recap unit will be taught on all prior units taught to help the children 'know more, remember more.' We carefully plan our science units of work to link with other areas of the curriculum such as teaching mining in Y3 after they have learned about rocks and soils; in year 4 we teach about states of matter before the water cycle in geography; in year 1 we teach plants alongside DT unit about which plants we can eat. Our units of work are posed as questions for the children to investigate and answer at the end of the unit.

A progression document of knowledge for science, working scientifically and vocabulary have been generated so we know exactly what our children should achieve at the end of each unit of work in each year group. Developing our children's science vocabulary is an important part of our science curriculum and we endeavor to teach them subject specific vocabulary in every science lesson. We also feel it is very important to constantly revisit prior vocabulary so the children 'know more, remember more'.

Our medium-term plans pull all these documents together so we can see prior, current and future NC expectations, key learning, vocabulary, sequence of lessons and science enquiry. A science enquiry document shows how the children are taught the full range of science enquiry types and are given the opportunity to use working scientifically skills along with relevant maths skills.

Our knowledge organisers produced for each unit of work show key vocabulary, knowledge and concepts which the children will be taught. These are used in class with the children, shared with our children with SEND before lessons to help pre-teach vocabulary and key concepts, and are also shared with parents and carers on our class Dojo site.

Activities are planned to meet the needs of all pupils. Differentiation is achieved through careful planning and organisation. Learners should be supported and challenged to progress within science. Pupils are encouraged to work in groups or individually where appropriate. Our skills builder curriculum is part of our science teaching. Children are encouraged to use skills such as teamwork and speaking when working practically. SMSC is a feature of science lessons wherever possible and when relevant.

Science enquiry

Science enquiry is an integral part of our science teaching in all year groups. We ensure we teach and give children the opportunity to learn and experience the five types of scientific enquiry which are:

- Observation over time
- Comparative and fair testing
- Identifying and classifying
- Pattern seeking
- Researching using secondary sources

Working scientifically

Our children work scientifically in many science lessons. We also ensure that children have the opportunity to take part in different practical science lessons which will give them opportunities to use the following skills:

- Ask questions
- observe carefully
- take accurate measurements
- gather and record
- present data in various ways
- use simple scientific language
- predict
- explain and come to conclusions.

We have a working scientifically progression document to ensure we cover all areas of scientific enquiry from years 1 to 6. These skills will be demonstrated by the teacher and modelled carefully. Children will take part in experiments but also watch them modelled. We use our working scientifically document to ensure we are teaching the right skills at the right time. This is used to track children's skills throughout the year. Maths is applied explicitly in these lessons but is relevant to the year group.

Enrichment

We have a gardening club each term so children can see how food is grown from seed or bulb and harvested. We take care of the school grounds and talk about plants which attract pollinators, birds and small mammals. We discuss the life cycle of plants. This revisits learning in the curriculum for our children. We feel that trips, visits and visitors to school contribute to our children's entitlement to a rich cultural capital and therefore we try to find opportunities to incorporate these experiences wherever possible. The children have visited farms, zoo, sculpture park, and a science museum. We have chicks and butterflies every year so they can see them grow and change over time. We have pet guinea pigs who the children care for, study and watch grow. Science bags are sent home so children can experience working practically with parents. We have had science days linked to science week and competitions such as designing a garden, and making something from a material which would end up in landfill. Carefully selected books in classrooms link to science units of work and can be borrowed and taken home for further research or enjoyment.

Wherever possible, children are introduced to and taught about scientists linked to the unit of work they are studying to enrich their cultural capital. We want children to aim high, and see scientists can be both male and female and from different cultures and backgrounds.

Assessment

Teachers will assess children's science work in a variety of ways to ensure they gain a full understanding of what each child has learnt, and what is needed to progress their understanding of key concepts and skills. We will assess what the children have remembered prior to teaching the unit and try to correct misconceptions or 'plug' any gaps in learning.

Teachers will observe and provide written and oral feedback throughout the year before making an overall judgement of scientific ability at the end of the year.

Quizzes and other low stakes tasks will also inform staff of children's understanding and gaps in learning at the start of lessons and at the end.

Teachers also have a resource pack with examples of expected work for their year group to compare work from their own class. This will help form judgements throughout the year as to whether children have reached the expected level of achievement for their year group. These resources are from PLAN science. We use our knowledge from retrieval practice tasks to inform us of attainment for all children at the end of the year in working scientifically and science concepts.

Safe Practice:

Teachers will provide a safe and secure environment for children to learn at all times as well as encouraging children to consider their own safety and the safety of others around them. Any experiments or activities which are considered a particular risk will need to be risk assessed by the class teacher. Support and guidance for teachers on risk assessing any activities can be found on the

CLEAPPs website. (Please refer to the Health and Safety in Primary Science Policy for more information on this area.)

Equipment and Resources:

There is a wide range of resources available to the school which will be maintained and monitored by the Science Co-Ordinator. Children are expected to, where appropriate, choose their own equipment. This should be done under adult supervision with Health and Safety requirements in mind. By doing so, they:

- make sensible choices about which equipment to use
- treat the equipment with care
- use the equipment with their own and other's safety in mind
- become independent learners

our school grounds are also a rich environment for us to learn aspects of science such as plants and animals.

Leadership Role:

The Science Co-Ordinator is responsible for ensuring that the aims of the Science Policy are met. In addition to this, the Science Co-Ordinator should:

- encourage and support staff in the implementation of the curriculum and school approaches to Science teaching
- co-ordinate assessment procedures and record keeping to ensure progression and development throughout the school
- monitor the teaching and learning of Science throughout the school
- organise and review all science-based resources, ensuring they are readily available and maintained.
- support staff by encouraging the sharing of ideas and organising training as appropriate
- monitor through looking at work, observing lessons and speaking to children