

# Ripponden J&I School



## Science Policy November 2021

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## Science Policy

### Ripponden 2021

#### Science Intent

At Ripponden J and I School we recognise the importance of science in our everyday lives. A solid knowledge of science is essential for understanding of the world around us. Children at Ripponden will learn science through the strands of physics, biology and chemistry following the guidelines of the National Curriculum. Our science curriculum will deliver teaching that is relevant and child-centred, using real-life contexts to inspire children in science. We will also develop scientific enquiry to answer the children's questions about the world around them. They will develop knowledge and scientific vocabulary through high quality teaching and teachers will have high expectations of all pupils of every ability and background. Children at Ripponden will gain an enthusiasm for science, for discovery and a respect for living things and the world around them.

Our main aims will be:

To ask and answer scientific questions.

To work scientifically, carrying out investigations using scientific equipment.

To understand the processes of living things. (Biology)

To understand the processes of materials, electricity, sound, light and forces. (Physics)

To understand about materials and their properties. (Chemistry)

To understand our evidence and to record our conclusions based on our evidence.

#### Science Implementation

##### Teaching and Learning

Teachers will have high expectations of all pupils and create a positive attitude towards science in their lessons. In KS1 science is taught in blocks throughout the year with approximately one block in each half term. In KS2 there is a weekly science lesson. In Early Years Foundation Stage (EYFS), science is taught through the children learning about the world around them in their learning through play both indoors and outside. They will also have a science-focussed theme for part of each term.

The teaching method employed will vary according to the age, ability and experience of the children and the concept being taught. Teachers will base their planning on the programme of study for their relevant year group. Where possible, children will devise and carry out their own investigations, which will derive from activities and starting points instigated by the teacher. At other times, the teacher may find it more appropriate to demonstrate a concept to the children and guide them through teacher-led activities.

Children will be encouraged throughout the units of work to work scientifically using scientific equipment, digital technology, models, books and practical, first-hand

experience where possible. Teachers will help children to learn the key vocabulary for the science concepts they will learn and help them to discuss their ideas with their peers as well as recording their work in their science books. Children will have opportunities to ask and answer their own scientific questions through teacher- guided enquiry-based learning. Children will have a clear understanding of what they are learning about and why it is relevant to their own lives. In Early Years Foundation Stage (EYFS), children will have access to tools, creatures and plants, people who help us in our locality, objects to observe and feel as well as simple class experiments.

Teachers will deliver their science lessons using combinations of whole class learning with directed questioning and tasks as well as small group work. Teachers will address the different abilities in the class by differentiated questioning, and using open-ended tasks which can be completed by all children. Teachers can use higher level questioning to develop children's understanding and provide extension tasks for those who need them. Some ability grouping may be used to enable all children to access the learning. Teachers are to be confident in their own subject knowledge prior to delivering a lesson and have a responsibility to ensure that the content is up-to-date and correct.

**In the Early Years Foundation Stage (EYFS)**, Science forms the basis of one of the seven areas of learning, specifically 'Understanding the World'. It is also part of the characteristics of effective learning: in particular, Finding out and Exploring and Active Learning and Creating as well as Thinking Critically. Children are taught the required science elements through cross-curricular themes. At the end of the EYFS, children should:

- know about similarities and differences in relation to places, objects, materials and living things;
- talk about the features of their own immediate environment and how environments might vary from one another;
- make observations of animals and plants and explain why some things occur, and talk about changes.

### **The National Curriculum - Key Stage 1**

The main focus of science teaching in Key Stage 1 is to enable children to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs, power points and videos.

Children should read and spell scientific vocabulary at a level consistent with their reading and spelling knowledge at Key Stage 1. 'Working scientifically' must **always** be taught through and clearly related to substantive science content in the programme of study.

### **The National Curriculum – Lower Key Stage 2 (Years 3 and 4)**

The main focus of science teaching in Lower Key Stage 2 is to enable children to broaden their scientific view of the world around them. They should do this through exploring,

talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. Children should read and spell scientific vocabulary correctly and with confidence, using their growing reading and spelling knowledge. 'Working scientifically' must **always** be taught through and clearly related to substantive science content in the programme of study.

### **The National Curriculum – Upper Key Stage 2 (Years 5 and 6)**

The main focus of science teaching in Upper Key Stage 2 is to enable children to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas, asking their own questions about scientific phenomena and analysing functions, relationships and interactions more systematically. At Upper Key Stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out fair tests and finding things out using a wide range of secondary sources of information. Children should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. Children should read, spell and pronounce scientific vocabulary correctly.

'Working and thinking scientifically' must **always** be taught through and clearly related to substantive Science content in the programme of study.

### **Planning**

Teachers' planning at Ripponden J and I School follows the National Curriculum guidelines for science. Teachers are able to use online planning schemes such as Twinkl or the Hamilton Trust to inform their planning and to gain resources. Planning is recorded on a half termly document for each year group from Year 1-6. EYFS science planning is part of the Understanding the World planning on an EYFS planning document. The plans for science show progression in teaching and learning across each unit, and it informs teachers of previous learning, key vocabulary as well as the sequence of lessons to be taught. Progression not only occurs across one unit, but it also continues to build on prior learning from previous year groups. In this way teachers at Ripponden J and I School want to provide science lessons that are meaningful, that build on children's knowledge and enable their knowledge to be memorable.

### **Display**

Every class should have a science display which features key vocabulary and other information related to the current science topic.

### **Cross Curricula links**

Science links with English through both verbal and written forms. Science encourages discussion of ideas, use of language to explain and increases children's vocabulary of scientific terms. Children will record their questions and observations and conclusions through logs, diaries, diagrams and charts. Science also links with maths in the use of measuring equipment such as scales, thermometers and data loggers. Numbers translate into scientific information which informs our conclusions. This can then be recorded on tally charts, tables and graphs for example to represent information in numbers.

Computing is linked to science through the use of digital technology to help record children's findings and at Ripponden J and I School we have access to the internet, computers, iPads, data loggers and cameras to enhance our learning of science. Science also has links with Design Technology and Physical Education in the strands of our understanding and looking after our physical health through exercise and through healthy eating. PSHE and British Values also link with science in this way, through learning about how to look after ourselves and others, also how to care for our community, country and our planet.

Learning beyond the classroom is also an important part of science at Ripponden J and I School. We are lucky to have access to learning opportunities on our fields and in our woods. We have an outdoor classroom which encourages us to learn science immersed in our natural environment. Many educational trips link with science, such as trip to farms, zoos and science museums. We involve speakers in school to showcase science and science themed days to focus children and parents on science.

### **Equal Opportunity and SEND**

Science is part of the broad and balanced curriculum for all children at Ripponden J and I School. We plan to provide for all children to achieve and ensure that all children have the opportunity to gain scientific knowledge and understanding regardless of gender, race, class, physical or intellectual ability. We will ensure that expectations do not limit children's achievements and that assessments do not involve any cultural, social, linguistic or gender bias. Teacher's planning will include children of all abilities and appropriate tasks will be set for children with SEND. Teachers will plan with a knowledge of children's strengths and needs referring to their Learning and Development Plans.

### **Support Staff and Intervention**

Support staff where available, will support children with SEND or Learning Development Plans as directed by the class teacher. Intervention may take place as a form of small group or 1:1 catch-up with support staff during times designated by the class teacher.

### **Role of the Subject Leader**

The science subject leader will be knowledgeable about science from EYFS to Year 6 and will be responsible for being informed about current developments in primary science. The science subject leader is responsible for communicating these developments to other members of staff and ensuring that all staff are confident to teach their subject (both in knowledge and use of scientific equipment). This may be done through discussion or training at staff meetings, or through physical or on-line CPD courses. The science subject leader will know expected standards in science at the end of EYFS, KS1 and KS2 and make sure that the science policy and planning are followed by all members of staff. The science subject leader will produce an action plan each year to show the direction of



science at Ripponden J and I School as well as evidence throughout the year to show its progression towards completion.

## Resources

Science resources will also be looked after by the science subject leader and kept tidily in their rightful places. (KS1 learning zone, shelves outside Busy Bees, and data loggers in Saplings class) All staff are responsible for returning science equipment when they have finished using it. Any damaged equipment should be reported to the science subject leader as soon as possible, as well as any missing items or items that may need replenishing. A review of teachers' training and equipment needs will be carried out in the summer of each school year to make sure that all teachers are equipped to teach science in the new school year from September.

## Health and Safety

It is important that all teachers are aware of the responsibility they have regarding health and safety both inside and outside the classroom. Teachers need to take account of both the children's and their own health and safety when involved in science activities. Safety hazards should always be pointed out to children at the beginning of any work. Children's medical plans should be referred to, taking into account allergies and potential reactions to any science activities planned.

If teachers are unclear as to whether a material can be used in school, they should refer to **Risk Assessments and COSHH sheets** for permission to use a specific material and its method of use.

For further information on health and safety issues and safety points specific to individual science investigations, teachers should refer to the following sources:

- Science National Curriculum documentation.

- **CLEAPPS website (using school sign-in/password issued to all teachers).**

Teachers should be clear as to the purpose of the work and ensure that any testing that needs to be carried out complies with the Health and Safety procedures and has been practised prior to the lesson.

## Impact

### Recording

Science work is produced by the children from Year 1 to Year 6 in their science books. Some science work may be recorded in books in EYFS. Children will produce written work in the form of explanations, logs, diaries, diagrams, tables and charts. A combination of worksheets from planning websites, teacher documents and the children's own ideas, question and answers in written and drawing forms will be seen in science books. Books may include digital work in the form of photographs, word or power point documents or print outs from apps.

### Marking and feedback

Teachers follow the marking policy of Ripponden J and I School when marking in science. In KS1 the owl stamps will be used to show children 'Got it' (green), 'Nearly there' (orange) or 'Ooops' (red). In KS2 traffic light stamps are used without the owl feature. The emphasis of marking is on scientific understanding. Feedback to children will be given as

much as possible in the lesson to encourage on the spot learning and enable the embedding of knowledge.

### Assessment

Assessment in science is done through teacher observations, questions, discussions during tasks and marking. Marking will always inform teachers' next steps planning and teachers will make judgements about children's knowledge of unit at the end of each unit. Assessments from website schemes of science such as Twinkl may also be used by teachers to aid their judgements. Specific assessment tasks may be given to individuals or small groups that are planned by the class teacher. Science judgements are then added to Target Tracker (the school online assessment tool). End of year assessments are based on the culmination of the results of the units throughout the year which are summarised in Target Tracker. Schools can be randomly selected to take part in a science SATS paper, which occurs biannually. In Year 6 there is an overall judgement on each child's science ability submitted to the DfE.

### Reporting

The science subject leader will keep a science subject file up-to-date and on-hand for inspection by the SLT. Inside will be the science policy and action plan, curriculum and planning across the school. Resources, new information and evidence towards completion of the action plan will also be added throughout the school year. Teachers will be informed of teacher actions for science through staff meetings with time given to the science subject leader to present ideas/plans/CPD. Science books will be looked at annually and they will be examined to see if planning is followed and opportunities for working scientifically are in place. Feedback on the 'book look' will be given to teachers at the soonest opportunity at staff meeting. Pupil Voice will also be carried out the subject leader, to determine the impact and enjoyment of science on the children themselves. Data from Target Tracker will also be analysed by the science subject reader and reported to SLT.

### Revisiting and revising

Teachers need to be aware of the progression of each strand of science and how and when it has been taught before. This prior knowledge should be recalled before beginning the new content. Teachers should make time to revisit previous science learning. This could be achieved through the use of Explorify or mini low stakes quizzes.

### Impact of science on children at Ripponden J and I School

Children will achieve age expectations in science at the end of their year.  
Children will be able to question their ideas and reflect on their knowledge  
Children will be able to explain their thought processes and be able to reason scientifically.  
Children will work collaboratively and practically to investigate and experiment.  
Children will retain a knowledge of science that is related to real life.

<b>Date of Ratification:</b>		<b>Signed:</b>  <b>(HEAD TEACHER)</b>
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		(CHAIR OF GOVERNORS)
Review date:		Signed:  (HEAD TEACHER)  (CHAIR OF GOVERNORS)