



Rudston Primary School

Science Policy

Date: October 2020

Subject Lead: Mr. T. Carney

This policy and all school policies are produced in accordance to guidance set out in our school legislation and guidance policy.

Approved By Governors: December 2020

Review: October 2022

Our Mission Statement:

To develop a love of learning,
enabling all children
to reach their full potential.

* Respect * Resilience *
* Responsibility * Enjoyment *
* Challenge *

Safeguarding Statement:

“Rudston Primary school is committed to safeguarding and promoting the welfare of children and young people and expects all staff and volunteers to share this commitment.”

Science Curriculum Intent

At Rudston Primary we are fully committed to providing a science curriculum that allows children to explore and experience the world and phenomena around them.

Through our science curriculum we aim to encourage and develop inquisitive thinkers and learners, with high aspirations. Through science children are able to work as a team, develop and challenge scientific concept and develop their skills through questions and inquisitive thought.

There are opportunities for children to explore scientific theory and challenge their own understanding, whilst developing a love and enjoyment for the subject.

Children leave Rudston Primary School with the ability to question and challenge whilst articulating scientific arguments and theories with confidence.

Implementation statement

Teachers at Rudston Primary School offer children a progressive curriculum; building on skills and knowledge of the previous year group and developing within the year groups. Teachers at Rudston Primary generate enthusiasm and ensure that children are afforded the opportunity to succeed with high expectations.

Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of, 'The National Curriculum programmes of study for Science 2014' and, 'Understanding of the World' in the Early Years Foundation Stage. Science teaching at Rudston Primary School involves adapting and extending the curriculum to match all pupils' needs. Where possible, Science is linked to class topics. Science is taught as discrete units or alongside main or key topics and lessons to ensure coverage. Science units are taught on a year rolling programme in line with the coverage of the National Curriculum. This ensures progression between year groups and permits children to have a spiral, developing experience of Science. Teachers plan to suit their children's interests, current events, their own teaching style, the use of any support staff and the resources available.

We ensure that all children are provided with rich learning experiences that aim to:

- Prepare our children for life in an increasingly scientific and technological world today and in the future.
- Help our children acquire a growing understanding of the nature, processes and methods of scientific ideas.
- Support children in using a variety of resources to support enquiry opportunities and to work individually as well as a part of a team to answer key scientific questions. These are demonstrated by staff and used effectively.
- Help develop and extend our children's scientific concept of their world and to comprehend a range of scientific phenomena.
- Build on our children's natural curiosity and developing a scientific approach to problems.
- Working Scientifically skills are at the heart of all learning in the Science Curriculum and staff are shown the pathway for threshold concepts and how learning builds and develops throughout their time at Rudston Primary School.
- Encouraging open-mindedness, self-assessment, perseverance and developing the skills of investigation, including: observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- Opportunities to access the five key areas of enquiry: pattern seeking, research through secondary sources, observation over time, comparative and fair testing and identifying, classifying and grouping
- Develop the use of scientific language, recording and techniques.
- Children are given ample opportunity to discuss their Science learning and to ask key questions, helping to shape future learning pathways and opportunities using resources such as Explorify.
- Develop the use of computing in investigating and recording.
- Make links between science and other subjects; particularly those within the branch of STEM. They should then use these links to develop their understanding of future career opportunities and to enhance learning between subjects in a reciprocal manner.
- Enhance children's Science Capital to ensure that Science is valued and recognised as a part of their daily lives.

Science is taught across half-terms and related sometimes directly to the topic focus for the half term but is discretely taught in many different contexts throughout all areas of the curriculum. For example, through History, i.e. reflecting on Scientific theory and considering famous scientists and theorists through time. Teachers also consider the threshold concepts and skills that are shared so that a thread for learners in Science can be traced throughout their time in our school. Staff will also assess Science in line with the assessment procedures and continue to

formatively assess throughout the topic with early opportunities to establish initial understanding offered and worked from.

Teachers at Rudston Primary have a focus on scientific vocabulary and value scientific discussion through resources such as Explorify. This is used during a topic in order to show clear progression and to contribute and enhance children's newfound knowledge and understanding. These tasks also enable the children to articulate scientific concepts clearly and precisely, assisting them in making their thinking clear, both to themselves and others. Furthermore, Teachers present enthusiasm for the subject and draw attention to the impact of skills; ensuring that children are able to develop their Science Capital.

Impact Statement

The approach at Rudston Primary results in a fun, engaging, high-quality science education, that provides children with the foundations for understanding the world. Our engagement with the local environment and current developments in Science ensures that children learn through varied and first-hand experiences of the world around them. So much of science lends itself to outdoor learning and so we provide children with opportunities to experience this and to also experience Science through practical activities and productive discussion of theory and questions for current and future learning.

Through enrichment opportunities and creative planning and learning opportunities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science and have opportunities to link skills to careers in older year groups. Pupil voice is used to further develop the Science curriculum, through questioning of pupil's views and attitudes to Science to support the children's enjoyment of science and to motivate learners.

Our children's Science Capital is enhanced and developed early through developmental progression steps and exposure to science from the earliest ages. Children are afforded the opportunities to understand that Science is integral to the development of the world and understand how Science is adapting and improving our lives. Children leave Rudston Primary having developed a wealth of skills; preparing them not only for the next step in the science education but equipped with an understanding of how their science learning can help them to make sense of the world and their daily lives and, importantly, to understand where their learning will take them.

1 Aims and objectives

1.1 Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Science changes as human understanding and experience changes. It is an ongoing process as our ideas about the world around us are constantly developed and revised. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

The aims of science are to enable children to:

- ask and answer scientific questions;
- develop skills which may not be developed to the same degree in other areas of the curriculum.
- plan and carry out scientific investigations, using equipment, including computers, correctly;
- know and understand the life processes of living things;
- know and understand the physical processes of materials, electricity, light, sound and natural forces;
- know about the nature of the solar system, including the earth;
- evaluate evidence and present their conclusions clearly and accurately

2 Teaching and learning style

2.1 We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge, skills, and understanding, as well as a sense of enjoyment in science. Sometimes we do this through whole-class and small group teaching, while at other times we engage the children through our learning challenge curriculum where we encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data, such as statistics, graphs, pictures, and photographs. They use Computing skills in science lessons where it enhances their learning. They take part in role-play and discussions and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Wherever possible, we involve the pupils in practical activities as these increase enthusiasm and motivation and provide first-hand experience. Opportunities for developing the range of intelligences are presented to the children and staff teach to visual, auditory and kinesthetic learning styles.

Practical activities provide the children with a range of contexts allowing safe exploration of the world without the need to master facts and theories. By taking part in practical activities children with special educational needs are given the opportunity to develop fine motor skills and co-ordination. Knowledge and skills can be developed

in small steps through practical work. Sequencing of written work becomes easier after practical experiences.

All children have teaching from a Science specialist during the year to ensure high quality teaching, challenging experiences and ongoing CPD for all staff through lesson observations.

2.2 We recognise that there are children of widely different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- setting common tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks);
- on occasion, grouping children by ability in the room and setting different tasks for each ability group;
- providing resources of different complexity, matched to the ability of the child;
- where possible, using learning support practitioners to support the work of individual children or groups of children.
- mixed ability groups in which pupils plan and work together but record their work separately.

3 Science curriculum planning

3.1 We deliver the national Science scheme of work through the learning challenge curriculum and standalone topics. This allows us to adapt the national scheme to the local circumstances of the school in that we make use of the local environment in our fieldwork and we choose a locality where the physical environment differs from that which predominates in our immediate surroundings.

3.2 We carry out our curriculum planning in science in three phases (long-term, medium-term and short-term). The long-term plan maps the scientific topics studied in each term during the key stage. The science subject leader works this out in conjunction with teaching colleagues in each year group. In some cases we combine the scientific study with work in other subject areas, at other times the children study science as a discrete subject.

3.3 Our medium-term plans give details of each unit of work for each term. The science subject leader keeps and reviews these plans. In this way we ensure complete coverage of the National Curriculum without repeating topics.

3.4 The class teacher is responsible for writing the lesson plans for each lesson (short-term plans). These plans list the specific learning objectives of each lesson. Learning objectives for each lesson are made explicit to pupils at the start of each lesson.

3.5 We have planned the topics in science so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit and we also build progression into the science scheme of work, so that the children are increasingly challenged as they move up through the school.

3.6 The Science lead works alongside teaching staff to plan a whole school science themed topic to deepen learning and scientific investigation skills while developing high levels of motivation and enjoyment of science and generating an interest in application through STEM based learning.

3.7 Staff use Working Scientifically strand of the curriculum to guide topics and to ensure that children are engaged in discussion and participatory learning. Children are encouraged to pose questions, develop theories and hypotheses and investigate these.

3.8 Staff ensure that initial assessment opportunities are offered to allow children to engage with science early in a topic. This can be done or enhanced through the use of resources such as Explorify; ensuring children are given the chance to discuss scientific theory, understanding and phenomena.

4 The contribution of science to teaching in other curriculum areas

4.1 English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts that the children study in Literacy are of a scientific nature. The children develop oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information. Where possible, a creative curriculum is delivered and links are made between Science and Literacy skills.

4.2 Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number. Through working on investigations they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions. They also produce diagrams, charts and graphs using the data from real investigations.

4.3 Computing

Children use Computing skills in science lessons where appropriate. They use it to support their work in science by learning how to find, select, and analyse information on the Internet and on CD- ROMs. Children use computing (computer, iPads and camera) to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

4.4 Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. Science promotes the concept of positive citizenship.

4.5 Spiritual, moral, social and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

5 Teaching science to children with special needs

5.1. We teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We provide learning opportunities that are matched to the needs of children with learning difficulties. Our work in science takes into account the children's abilities in Mathematics and English.

6 Assessment and recording

6.1 We assess children's work in science by making informal judgments as we observe them during lessons. On completion of a piece of work, the teacher marks the work and comments as necessary. Where applicable, the teacher gives advice on the next steps for learning. Formal observations and completion of work is used to assess children within Key Stage 1 and 2. For some of the units, a more creative approach can be used for assessing knowledge and understanding. For example, children create a project or report about what they have learnt. This gives the children an opportunity to make decisions as to how they show what they have learnt. We use these opportunities as the basis for assessing the progress of each child against age related expectations and we pass this information on to the next teacher at the end of the year. Science is recorded in the Learning Challenge Curriculum books either through the topic or interweaving with a clearly labelled page for the discrete Science session. Discrete Science could also be recorded through visual approaches with video, images and short writing opportunities.

6.2 Progress over the course of the year is to be recorded and tracked through the O Track system. O Track is a tool that allows teachers to clearly see the areas of need for their class. Here, the individual year groups have their specific objectives available and should be covered over the course of the year through the Learning Challenge Curriculum or Standalone sessions. Using this information, we are then able to report progress in Science to parents at the end of the year.

7 Resources

7.1 We have sufficient resources for all science teaching units in the school. We keep these in a central store located in the Science room. The library contains a good supply of science topic books and the ICT suite has a range of computer software to support children's individual research. Staff inform the Science Lead of any requirements for new apparatus. With the development of the Science space in the Infant building, there is a growing stock available on both sides of the school site.

8 Monitoring and review

1.1. It is the responsibility of the science subject leader to monitor the standards of children's work and the quality of teaching in science. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The science subject leader gives the senior management team an annual summary report in which she evaluates strengths and weaknesses in the subject and indicates areas for further improvement. The science subject leader has allocated time for fulfilling the vital task of reviewing samples of children's work, looking at planning and carrying out pupil interviews.

9 Covid-19 Response

1.1 Following our school's risk assessment, all Science equipment should be sanitized and quarantined for a period of 48 hours. Staff are encouraged to make the subject lead aware of resources needed for a topic and can be supported in procuring them.

1.2 Staff to reconsider practical activities, which are still essential elements of Science learning, and should follow the risk assessment for the school and ensure that materials are used appropriately within a bubble and staff should consider the use of more demonstration activities to support these activities. There should be a consideration of condensing the activity and resources required without reducing the validity and impact of the learning.

1.3 Consider using outdoor and larger spaces to ensure that teachers can work around the class and support effectively. Teachers should consider whether the activity will require significant, hands-on support as this should be limited and avoided where possible. This may involve simplifying but not diluting the task as mentioned in the previous point.

1.4 External support to continue but this will be managed by only working in one year group per half term to protect the integrity of the bubble and to protect external staff.

1.5 Staff to refer to CLEAPSS risk assessments and exemplification for further advice and should communicate concerns and questions to the subject/Covid lead.

Date agreed by Governing Body: December 2020

Date presented to staff: October 2020

Date to be reviewed: October 2022

Signed: T. Carney.

