This policy should be read in line with The National Curriculum in England: primary Curriculum https://www.gov.uk/government/publications/national-curriculum-in-england-primary-curriculum

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The National Curriculum in England (2014)

The Importance of Teaching Science

The National Curriculum (2014) deems the teaching of Science as essential, stating that, "high-quality science education provides the foundations for understanding the world through the specific disciplines of Biology, Chemistry and Physics." It goes on to state that, as a subject, science "is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science." (p.144)

At John Clifford School, we strive to develop children's natural curiosity through experience, enquiry and participation in Science-based activities.

Aims and Purposes

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.

Equality of Access and Differentiation

Science is taught within the guidelines of the school's Equal Opportunities Policy.

- We ensure that all our children have the opportunity to gain science knowledge and understanding regardless of gender, race, class or ability.
- Our expectations do not limit pupil achievement and assessment does not involve cultural, social, linguistic or gender bias.
- We aim to teach science in a broad global and historical context, using the widest possible perspective and including the contributions of people of many different backgrounds.
- We value science as a vehicle for the development of language skills and we encourage our children to talk constructively about their science experiences.
- In our teaching, science is closely linked with literacy and mathematics.
- We recognise that science may strongly engage more able children and provide opportunities to extend their learning.
- We exploit science's special contribution to children's developing creativity; we develop this by asking and encouraging challenging questions and encouraging original thinking.

Our School Curriculum: Key Areas of Focus (including continuity and progression).

In the Early Years Foundation Stage, children first learn about scientific concepts through:

- Developing the crucial knowledge, skills and understanding that help them make sense of the world around them;
- First-hand experiences that encourage exploration, observation, problem solving, prediction, critical thinking, decision-making and discussion;
- Experiencing a range of play activities, both indoors and outdoors, including both adult-initiated and independent play.

Key Stage 1

The main focus of science teaching in KS1 is to enable pupils to:

- Experience and observe scientific phenomena.
- Look more closely at the natural and humanly constructed world around them.
- Be curious and ask questions about what they notice.
- Develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions. This includes: observing changes over a period of time, noticing patterns, grouping and classifying items, carrying out simple comparative tests as well as discovery using secondary sources of information.
- Use simple scientific language to talk about what they have found out and to communicate their ideas to a range of audiences in a variety of ways.

The majority of learning in Science should be done through first-hand practical experiences; however, there should also be some use of appropriate secondary sources, such as books, photographs and videos. Pupils should read and spell scientific vocabulary at a level consistent with their reading and spelling knowledge at Key Stage 1.

Key Stage 2

The main focus of Science teaching in **Lower Key Stage 2 (Years 3-4)** is to enable pupils 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.
- Asking their own questions about what they observe and making some decisions about which types of scientific enquiry are likely to be the best ways of answering them. This includes: observing changes over time, noticing patterns,

grouping and classifying things, carrying out simple fair tests and finding things out using secondary sources of information.
• Drawing simple conclusions and using some scientific language, firstly to talk about and later to write about, what they have found out.
• Reading and spelling scientific vocabulary correctly and with confidence, using their developing reading and spelling knowledge.

'Working scientifically' must <u>always</u> be taught through and clearly related to substantive Science content in the programme of study.

The main focus of Science teaching in **Upper Key Stage 2 (Years 5-6)** is to enable pupils 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.
• Encountering more abstract ideas and beginning to recognise how these ideas help them to understand and predict how the world operates.
• Beginning to recognise that scientific ideas change and develop over time.
• Selecting 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.
• Drawing conclusions based on their data and observations, using evidence to justify their ideas, and using their scientific knowledge and understanding to explain their findings.
• Reading, spelling and pronouncing scientific vocabulary correctly.

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

<u>The Teaching of Science</u>

At John Clifford School, we teach science in a discrete lesson once a week, when children have regular opportunities to carry out practical investigations.

<u>Planning and Evaluation</u>

Class teachers are responsible for planning, evaluating and teaching Science. The National Curriculum stipulates the expectations which form the long-term plan from which the teachers write a detailed medium-term plan to achieve balance and coverage over each half term.

Assessment, Recording and Reporting

This is achieved through:
- Observation of pupils engaged in scientific tasks and activities.
- Marking of work.
- Tracking subject coverage across year groups.
- Tracking Working Scientifically.

The role of the school Science coordinator is key in monitoring and evaluating teaching, learning and assessment.

Pupil progress is reported to parents/carers through two progress meetings when parents are informed about their child's progress, as well as part of our annual written report.

Links with Other Subjects

We aim to include Science teaching through our Broad and Balanced Creative Curriculum as appropriate. In addition, mathematical concepts can be taught through Science, especially data collection, data presentation and interpretation.

ICT in Science

We use ICT widely in science. Children are given the opportunity to practise science skills and enhance their presentation using carefully-chosen software.

At both key stages, children have the opportunity to:

- Locate and research information using the internet.
- Record findings using text, data and tables.
- Log changes to the environment over time using sensing equipment and data loggers.
- Use digital cameras, tape recorders and microscopes.
- Explore a variety of activities and resources using the IWB (Interactive Whiteboard).

Outdoor Learning in Science

At John Clifford School, we aim to enhance our Science curriculum and learning through the use of and exploration of our extensive outdoor environment. The nature area, pond, outdoor classroom and new learning lodge provide a variety of learning opportunities in a natural environment and promote eco-awareness throughout the school. Learning that takes place outside the classroom can improve pupils' teamwork, motivation and enthusiasm for science. We provide a safe and stimulating outdoor environment where space is used effectively to enable children to explore a challenging and engaging curriculum.

The Role of the Science Leader

At John Clifford School, the Leader for Science is Zareena Argent. Her role within school in leading Science is to:
- Inspire others to teach science in a practical, engaging and challenging way.

- Monitor the effectiveness of science within the school.
- Support teachers in their planning and strategies for classroom management.
- Keep up to date with any new, relevant government documents and disseminate new information.
- Ensure continuity and improvement of the teaching and learning of science across the school by monitoring and by professional development opportunities.
- Ensure that the science assessment across the school is consistent and accurate and to judge whether data is in line with national averages.
- Attend relevant CPD courses for Science as appropriate in line with the School Development Plan.
- Carry out a regular audit of the school's Science resources and operate an efficient storage system for these resources.

Resources

All resources are stored centrally in the science cupboard on the second floor next to the PPA room.
• Resources are organised in boxes.
• Staff are responsible for informing the Science Leader, when extra resources are needed, when there are breakages and when consumables are running low.
• The Science Leader will update and replenish resources when needed.

Promoting Science

• School visits for Science are organised where possible in line with the current unit of work, to enhance and extend learning.
• Local resources, such as scientists from industry are used to support units of work where possible.
• Each year, the school participates in British Science week.
• Science homework can be set as mini projects or as a one-off task linked to a topic.
• Parent/carer involvement is actively encouraged as part of their children's learning in and through science.
• Science displays in classrooms and around the school will celebrate children's work and progression.

Risk Assessment

At John Clifford School, children should be taught the correct and safe use of equipment and the carrying out of simple safety procedures as an intrinsic part of their science lessons. A risk assessment should be carried out in line with school policy in regards to any school trips or experiments out of school grounds. Safety equipment is available in the science cupboard. It is the teacher's responsibility to ensure any investigations carried out are done so in a safe way for the protection of their class and that all risks are recorded on planning.

This policy was written in Spring Term 2019 and will be reviewed Spring Term 2020.