River View Primary & Nursery School

SCIENCE POLICY

2022 – 2025

Rationale

Science at **Riverview Primary and Nursery School** *is about developing children's ideas and ways of working that enable us to make sense in the world in which they live through investigation, as well as using and applying process skills.*

Aims of our Science Curriculum

- *Engage children as learners at many levels through linking ideas with practical experience;*
- *Help children to learn to question and discuss scientific issues that may affect their own lives;*
- *Help children develop, model and evaluate explanations through scientific methods of collecting evidence using critical and creative thought;*
- *Show children how major scientific ideas contribute to technological change and how these impacts on improving the quality of our everyday lives;*
- *Help children recognise the cultural significance of science and trace its development*
- *To increase the child's knowledge and understanding of the world.*
- *To develop attitudes of curiosity, originality, co-operation, perseverance, open mindedness, self-criticism, responsibility and independence in thinking.*
- *To enable children to effectively and confidently communicate their scientific predictions and discoveries as they are given the opportunity to observe, describe, illustrate, hypothesise, evaluate and interpret, using appropriate scientific vocabulary.*
- *To develop children' understanding of the effects of their actions on the environment.*

Implementation of Policy

We have used the best research to create a well sequenced and progressive curriculum map containing the key concepts children need to be procedurally fluent in to work and think like professional scientists.

Science pedagogy is based on the development of these key scientific concepts:

- **Conceptual understanding**
- **Processes**
- **Skills of enquiry**
- **Scientific attitudes**

At **Riverview Primary and Nursery School** scientific method is about developing and evaluating explanations through experimental evidence and modelling. This is

an ignition to critical and creative thought. Through science, children understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life. Children recognise the cultural significance of science and trace its world-wide development. They learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

At **Riverview Primary and Nursery School** good science lessons should:

- ✓ *Give a learning objective at the start which is referred to throughout the lesson and is evaluated at the end.*
- ✓ *Give opportunities for speaking and listening.*
- ✓ *Have questions of different levels and styles with opportunities for children to confer and discuss their ideas.*
- ✓ *Have interesting and varied activities.*
- ✓ *Have opportunities for assessment for learning such as self marking to evaluate own understanding.*
- ✓ *Allow for discussion of misconceptions.*

Science is not just a question of knowing facts and understanding concepts. It is also about encouraging children to behave scientifically (posing questions to be investigated, hypothesising, recording and analysing).

At **Riverview Primary and Nursery School** teachers aim to present science in practical contexts which are relevant to the children's experiences. This will involve learning in class, group and individual situations. Some content is taught directly but enlivened through practical demonstrations. Small group activities follow on from class discussion and encourage collaboration. Where possible, children are encouraged to investigate their own questions, making decisions for themselves and maintaining a high level of motivation. Children communicate their findings in a variety of ways such as poetry, drama, written reports, short talks and demonstrations.

At **Riverview Primary and Nursery School** we use ICT widely in science. Children are given the opportunity to practice science skills and enhance their presentation using software. We use ICT (Chromebooks and Ipads) for enquiry work, video capture of images and activities, and data logging.

At **Riverview Primary and Nursery School** science is celebrated around the school through displays of work, materials and objects. We use cross-curricula links to science with, for example, design and technology. We develop science informally through nature club, school visits and other out-of school activities.

At **Riverview Primary and Nursery School** to deliver the national curriculum, staff aims to promote a broad and balanced science education which enables progression and continuity between classes. We aim to teach science in ways that are

imaginative, purposeful, well managed and enjoyable. Teachers will give clear and accurate explanations and offer skilful questioning, whilst making links between science and other subjects.

At **Riverview Primary and Nursery School** additionally, the practical nature of science is recognised and opportunities for learning through play and firsthand experience should be provided, especially in the early years. Science plays an important role in the development of investigative skills and draws upon strong mathematical links, for example measurement, pattern recognition, graphical skills and data handling. Curricula links to other areas, for example, language, are recognised and developed.

Early Years Foundation Stage

At **Riverview Primary and Nursery School** children in EYFS will be introduced to science through the Early Years Foundation Stage (EYFS) Curriculum Guidance. The Early Learning
Goals (ELGs) for 'Understanding of the World' forms the foundation for later work in science, design and technology, history, geography and ICT.

Wherever possible the children are provided with activities based on firsthand experience that encourage exploration, observation, problem solving, prediction, critical thinking, decision making and discussion. We provide an environment with a wide range of indoor and outdoor experiences that stimulate their interest and curiosity.

KS1

At **Riverview Primary and Nursery School** children observe, explore and ask questions about living things, materials and physical phenomena. They begin to work together to collect evidence to help them answer questions and to link this to simple scientific ideas. They begin to evaluate evidence and consider whether tests or comparisons are preparing for the future in a caring environment.

They use reference materials including ICT to find out more about scientific ideas. They share ideas and communicate them using scientific language, drawings, charts and tables with the help of ICT where appropriate.

The KS1 curriculum follows the National Curriculum, ensuring all areas of the Programme of Study are covered across both Years 1 and 2. Children further develop their understanding of the world around them which they have gained in the Foundation Stage. Children are able to observe, explore and ask questions about living things, materials and physical phenomena.

Children begin to work collaboratively with others, enabling them to develop their scientific knowledge and understanding and to link scientific concepts. Children communicate ideas orally using taught scientific language and begin to develop written methods for communicating their ideas (to include drawings, diagrams, use of ICT, tables and charts).

KS2

At **Riverview Primary and Nursery School** children learn about a wider range of living things, materials and physical phenomena. They make links between ideas and explain things using simple models and theories. They apply their knowledge and understanding of scientific ideas to familiar phenomena, everyday things and their personal health. They think about the effects of scientific and technological developments on the environment and in other contexts. They carry out more systematic investigations, working on their own and with others. They use a range of reference sources including ICT in their work. They talk about their work and its significances, using a wide range of scientific language, conventional diagrams, charts, graphs and ICT to communicate their ideas.

Our KS2 curriculum follows the National Curriculum, ensuring all areas of the Programme of Study are covered across Years 3, 4, 5 and 6. Children learn, explore and ask questions about a wider range of living things, materials and physical phenomena. Children think about the impact of scientific developments and technologies on themselves and the world around them.

Children are encouraged to develop an independent approach to their science learning, through asking questions, suggesting improvements to their work and supporting each other towards achieving a heightened understanding of scientific concepts.
Sc1 is promoted across KS2 with children being given the opportunity to plan, carry out and evaluate experiments. Children are encouraged to develop their own methods for presenting their ideas (to include drawings, diagrams, use of ICT, tables and charts.)

Progression

At **Riverview Primary and Nursery School** as children move from Early Years to KS1 and up to KS2, science teaching and effective assessment should allow opportunities for them to progress in a range of ways.

- *We have used the best research to create a well sequenced and progressive curriculum map containing the key concepts children need to be procedurally fluent in to work and think like professional scientists.*

We ensure progression in the following key concepts:

- Conceptual understanding
- Processes
- Skills of enquiry
- Scientific attitudes

- From *using everyday language to increasingly precise use of technical, scientific vocabulary, notation and symbols;*

- *From personal scientific knowledge in a few areas to understanding in a wider range of areas and knowing how these links together;*
- *From describing events and phenomena to explaining events and phenomena;*
- *From explaining phenomena in terms of their own ideas, to explaining phenomena in terms of scientifically accepted ideas or models;*
- *From participating in adult lead practical, scientific investigations to developing and undertaking their own scientific investigations, independently;*
- *From unstructured exploration to more systematic investigation of a question or questions developed independently;*
- *From using simple drawings, diagrams and charts to represent and communicate scientific information, to using more conventional diagrams and graphs.*

Health and Safety

At **Riverview Primary and Nursery School** all children will be made explicitly aware of the relevance of health and safety issues when undertaking scientific work. This will be specifically highlighted when they are asked to undertake scientific investigations, with additional adults being used effectively to assist with the safe running of all science lessons.

Resources

At **Riverview Primary and Nursery School** there is generic science equipment within this storage area. Equipment will be updated as required, within the allocated science budget.

ICT

At **Riverview Primary and Nursery School** children will be given opportunities to apply and develop their ICT capability throughout their science lessons, through the use of science/ICT software.

Monitoring

At **Riverview Primary and Nursery School** monitoring of the standards of children's' work and of the quality of teaching in science is the responsibility of the science coordinator to ensure continuity and progression throughout the school. The role of science coordinator also involves being informed about current developments in the subject, and providing a strategic lead and direction for the subject in school. An annual summary of science is made in which strengths and weaknesses in the subject are evaluated, and an action plan to address any issues arising is formulated

for the forthcoming year.

Equal Opportunities

We believe that every individual within the school has the opportunity to achieve their full potential has the same chance and equal access to all areas of the curriculum.

In science this means that all children will have the opportunity;

- *To develop the process of systematic enquiry*
- *To relate their understanding of science to everyday life and in environmental contexts*
- *To communicate using appropriate vocabulary and present scientific information in a number of ways*
- *To explore aspects of health and safety when working with living things and materials*
- *To carry out experimental and investigate science*
- *To develop and apply their ICT capability in their study of science Staff members make every effort to use stimuli that reflect the cultural diversity of our school and to draw on children own experiences.*

Our aim is to create a rich scientific enquiring environment.

Assessment

At **Riverview Primary and Nursery School** a range of assessment techniques will be used depending on the nature of the lesson, knowledge acquired, or the process skills used. They may be assessed through close teacher observation or discussion and sometimes small tests or problem-solving tasks may be set.

Science will be assessed in line with the assessment policy.

The Role of the Science Subject Leader

At **Riverview Primary and Nursery School** the Science subject leader will:

- *Ensure the development of a progressive curriculum map, monitor its implementation and impact.*
- *Promote the integration of Science within appropriate teaching and learning activities;*

- *Manage the provision and deployment of resources and give guidance on classroom organisation support;*
- *inspire colleagues to deliver high quality teaching and learning opportunities;*
- *lead INSET within the school, and investigate suitable courses elsewhere;*
- *Act as a contact point between the school and support agencies, including the LA;*
- *Analyse data to identify strengths and weaknesses in outcomes; planning for improvement accordingly.*
- *write, monitor and evaluate an action plan for Science for the School Improvement Plan*
- *Lead the evaluation and review of the school's Science policy.*
- *Bid for and manage the budget for this curriculum area;*
- *Monitor and review the science provision within the school*
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Any questions or concerns regarding this policy should be made to Miss Martin