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| **Science**  |

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| **Date** | **Review Date** | **Subject Leader** | **Nominated Governor** |
| **March 2023** | **March 2023** | **Hayley Hewitt** | **Jen Longman** |

We believe this policy should be a working document that is fit for purpose, represents the school ethos, enables consistency and quality across the school and is related to the following legislation:

* Education Act 1996
* Education Act 1997
* Standards and Framework Act 1998
* Education (National Curriculum) (Temporary Exceptions for Individual Pupils (England) Regulations 2000)
* Education Act 2003
* Equality Act 2010

The following documentation is also related to this policy:

* Ofsted School Inspection Handbook (DfE 2022)
* Teaching a broad and balanced curriculum for education recovery (DfE)
* The Education Inspection Framework (Ofsted 2019)
* An investigation into how to assess the quality of education through curriculum intent, implementation and impact (Ofsted 2018)
* Designing and Timetabling the Primary Curriculum - a practical guide for Key Stage 1 and 2

 (Qualifications and Curriculum Authority 2002)

* Equality Act 2010: Advice for Schools (DfE)
* The National Curriculum in England Framework Document (DfE) 2014
* Race Disparity Audit - Summary Findings from the Ethnicity Facts and Figures Website (Cabinet Office)

This policy outlines the teaching, organisation and management of science taught and learnt, and what we are aiming to achieve in respect of our pupils’ science education, at Rivington Primary School. It is based on the expectations and aims of the 2014 Curriculum for Science and the revised Early Years Framework and the Early Years ‘Development Matters’ EYFS document (non-statutory). This ensures continuity and progression in the learning and teaching of science.

We believe that a thorough science education, provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. In an increasingly scientific and technological world, it is vital that children are kept informed of current scientific advances and should be taught essential aspects of the knowledge, methods, processes, and uses of science, so that as inheritors of the earth and for the world’s future posterity, informed judgements can be made about the efficacy of their application.

By building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain ‘what is occurring, predict how things will behave, and analyse causes.' (The National Curriculum in England Framework Document (DfE) 2014). Where possible our science curriculum will be linked to our school values: Respect, Protect, Give Thanks, Keep Peace.

We have a duty to ensure compliance with the revised National Curriculum and with the application of the new programmes of study and attainment targets. We understand that 'the National Curriculum provides pupils with an introduction to the core knowledge that they need to be educated citizens.'

We as a school community have a commitment to promote equality. Therefore, an equality impact assessment has been undertaken and we believe this policy is in line with the Equality Act 2010. We all have a responsibility to ensure equality permeates into all aspects of school life and that everyone is treated equally irrespective of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation. We want everyone connected with this school to feel safe, secure, valued and of equal worth.

We believe it is essential that this policy clearly identifies and outlines the roles and responsibilities of all those involved in the procedures and arrangements that relate to this policy.

**Aims**

**At Rivington Primary School, in conjunction with the National Curriculum in England Framework Document (DfE) 2014, we aim to:**

* 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.
* be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.
* develop the essential scientific enquiry skills to deepen their scientific knowledge.
* use a range of methods to communicate their scientific information and present it in a systematic, scientific manner, including I.C.T., diagrams, graphs and charts.
* develop a respect for the materials and equipment they handle with regard to their own, and other children’s safety.
* develop an enthusiasm and enjoyment of scientific learning and discovery.
* promote the teaching of numeracy and literacy within all subjects.
* evaluate the school curriculum by focusing on curriculum intent, implementation and impact.
* share good practice within the school.
* work with other schools to share good practice to improve this policy.

**Intent**

At Rivington we understand that all children are naturally curious about the world in which they live and are keen to find out more about it.  It is the job of science to harness this curiosity, so that children actively seek to discover more about and make sense of their surroundings, both natural and manmade.  As one of the core subjects taught in primary schools, we give the teaching and learning of science the prominence it requires. Practical investigations and first-hand experiences will nurture and refine this innate enthusiasm enabling the child to have a more meaningful understanding of the forces which shape the world and their place in it.

As the child progresses through the school, they will be encouraged to think in scientific terms and use appropriate scientific language and skills to investigate in an ordered and logical way. Refinement of thought processes, clarity of language and careful recording of results will lead to many links with other curriculum areas. Children will be taken on a curriculum journey that introduces them to a range of different scientists who have shaped the world and encouraged to evaluate their ideas.

The Pearson Science Bug scheme will provide a structure and skill development for the science curriculum being taught throughout the school which is developed from the National Curriculum. Children have weekly lessons in science throughout Key Stage 1 and 2, using Pearson Science Bug plans and resources.

Our commitment to the CARE curriculum values at Rivington enables us to provide opportunities to engage learners in the process of science by providing enriching experiences through school visitors, trips, British Science Week and workshops in school. We work alongside other primary schools in St Helens and The Ogden Trust to further support our physics teaching and learning. We endeavour to ensure that the science curriculum we provide will give children the confidence and motivation to continue to further develop their skills into the next stage of their education and life experiences.

**Early Years**

In Early years, Science is taught through the children learning about the world around them in their learning through play. The content of this is mapped out on our long-term science plans to ensure progression as children move into key stage one. Work undertaken within the Foundation Stage is guided by the requirements and recommendations set out in the revised Early Years Framework and the Early Years ‘Development Matters’ EYFS document. All children are given ample opportunity to develop their understanding of science through varied activities that allow them to use, enjoy, explore, practise, and talk confidently about mathematics.

**Implementation**

At Rivington, science will be taught through a half-termly science topic using the Pearson Science Bug scheme. Where possible, we will make natural links to other curriculum areas and reinforce science learning through good quality texts.

As part of our planning process, teachers plan a knowledge organiser for each half term which outlines key knowledge and vocabulary that children must master based on the Pearson Science Bug scheme. Science progression is ensured as each class follows the learning intent mapped out on the Science Curriculum Journey. Foundation stage have written their own long-term plans which complement and feed into the early stages of the Pearson Science Bug topics beginning at key stage 1.

We aim to explicitly teach children about the different types of scientific enquiry and skills that they will use throughout their time at Rivington and beyond in their science learning. Scientific enquiry objectives are weaved within the Pearson Science Bug scheme lessons. We have a consistent approach to ensuring that children recognise the enquiry types they are using within a particular investigation and use display images throughout key stage 1 and 2 to support this. The key skills for science are identified and taught explicitly within each year group as they are required.

We encourage children to reinforce their learning and interest in science by providing a science learning library in school. Children can visit this area and select a science-related book to enjoy. This complements class learning as well as enriching our curriculum provision. The Ogden Trust also enrich our science resources with a shared library and practical resources for foundations stage upwards.

Cross curricular links are made when possible, ensuring high quality science provision remains.

Where possible the science curriculum will be used to extend the children’s cultural capital. Our commitment through our CARE curriculum to provide enriching experiences ensures that teachers plan opportunities to engage children through visitors and trips. We aim to use the local area where possible to enrich our science provision. We make links with Cowley Language College to enrich our curriculum and arrange visits to explore their science resources.

Children in key stage 1 and 2 have a science book to record their learning. Each class also has a science big book in which discussions, investigations and photographs can be recorded. In any written work children should be encouraged to maintain the standard of work required in literacy lessons and grammar, spelling and punctuation should be corrected in an appropriate way.

**Impact**

Our science curriculum is high quality and cohesively planned to demonstrate progression. If children are keeping up with the curriculum, they are deemed to be making good or better progress.

Children’s learning will be informally assessed through questioning, work in books, observations, pre and post learning tasks. Children will record what they have learned at the end of each topic in relation to their starting point. We will use Pearson Science Bug assessment activities where appropriate. Children will be informally assessed half termly and will be encouraged to reflect on standards achieved and knowledge gained against the planned outcomes.

By the end of their time at Rivington Primary School, children will have developed the scientific knowledge and skills to help them use equipment, conduct experiments, explain concepts, and continue to ask questions about the world around them. Children’s knowledge and skills will develop progressively as they move through the school, not only to enable them to meet the requirements of the National Curriculum but to prepare them to become competent scientists in secondary education.

**Roles and Responsibility for the Policy**

**Role of the Governing Body**

The governing body has:

* appointed a member of staff to be responsible for the curriculum leadership of Science;
* delegated powers and responsibilities to the Headteacher to ensure all school personnel and stakeholders are aware of and comply with this policy;
* responsibility for ensuring compliance with the legal requirements of the national curriculum;
* responsibility for ensuring that the school complies with all equalities legislation;
* nominated a designated equalities governor to ensure that appropriate action will be taken to deal with all prejudice related incidents or incidents which are a breach of this policy;
* responsibility for ensuring funding is in place to support this policy;
* responsibility for ensuring this policy and all linked policies are maintained and updated regularly;
* responsibility for ensuring all policies are made available to parents;
* the responsibility of involving the school council in:
* determining this policy with the governing body;
* discussing improvements to this policy during the school year;
* organising surveys to gauge the thoughts of all pupils;
* reviewing the effectiveness of this policy with the governing body
* nominated a link governor to:
* visit the school regularly;
* work closely with the headteacher and the coordinator;
* ensure this policy and other linked policies are up to date;
* ensure that everyone connected with the school is aware of this policy;
* attend training related to this policy;
* report to the governing body every term;
* annually report to the governing body on the success and development of this policy.
* responsibility for the effective implementation, monitoring and evaluation of this policy.

**Role of the Headteacher**

The Headteacher will:

* work in conjunction with the senior leadership team to ensure all school personnel, pupils and parents are aware of and comply with this policy;
* ensure teachers:
* ‘have good knowledge of the subject(s) and courses they teach;
* have effective support for those teaching outside their main areas of expertise;
* present subject matter clearly, promoting appropriate discussion about the subject matter they are teaching;
* check learners’ understanding systematically, identify misconceptions accurately and provide clear, direct feedback and in doing so, they respond and adapt their teaching as necessary, without unnecessarily elaborate or differentiated approaches;
* design their teaching to help learners to remember in the long term the content they have been taught and to integrate new knowledge into larger concepts;
* use assessment well in order to help learners embed and use knowledge fluently or to check understanding and inform teaching;
* create an environment that allows the learner to focus on learning;
* develop a rigorous approach to the teaching of reading in order to develop learners’ confidence and enjoyment in reading;
* use reading materials at the early stages of learning to read that are closely matched to learners’ phonics knowledge’.

(Amended from the ‘Education Inspection Framework’ (Ofsted 2021))

* work closely with the curriculum leader, subject leaders and the link governor;
* ensure compliance with the legal requirements of the National Curriculum;
* consider disapplying a pupil from all or part of the National Curriculum for a period of time if this will benefit the child;
* encourage parents to take an active role in curriculum development;
* provide leadership and vision in respect of equality;
* provide guidance, support and training to all staff;
* monitor the effectiveness of this policy by:
* observing teaching and learning
* planning scrutinies and work trawls
* discussions with pupils and members of the school council
* annually report to the governing body on the success and development of this policy.

**Role of the Curriculum Leader**

The curriculum leader will:

* provide strategic leadership and direction;
* provide a curriculum that provides pupils with the essential knowledge they need to be educated citizens in democratic Britain;
* coordinate a number of working parties in order to explore ways of improving the curriculum and the way in which we deliver it with a view of ensuring the highest standards of delivery and consistency in pupil’s learning and teaching experiences and opportunities throughout the school;
* provide an environment that is fun, stimulating and challenging to all pupils;
* promote an awareness of and respect for a diversity of cultures, values, beliefs and abilities;
* equip children with a range of skills and a desire for lifelong learning;
* ensure appropriate coverage of the curriculum;
* provide support and advice;
* monitor pupil progress;
* ensure sufficient and up to date resources are in place.

**Role of the Subject Leader**

The Subject Leader will:

* lead the development of this policy throughout the school;
* work closely with the Headteacher, curriculum leader, the nominated governor and SENCO;
* promote the teaching of numeracy and literacy within all subjects;
* be accountable for standards in this subject area;
* monitor standards by:
* auditing the subject area
* review of the scheme of work
* monitoring teachers planning
* lesson observations
* scrutinising children's work
* discussions with pupils
* work in conjunction with the Headteacher, Senior Leadership Team, the Curriculum Leader, Subject Leaders, teaching and support personnel to provide statements on each of the following:

(Quotes taken from the Education Inspection Framework (Ofsted 2021))

* ensure continuity and progression throughout the school;
* devise a subject improvement plan;
* provide guidance and support to all staff;
* provide training for all staff on induction and when the need arises regarding;
* attend appropriate and relevant INSET;
* keep up to date with new developments;
* undertake an annual audit and stock take of resources;
* purchase new resources when required and in preparation for the new academic year;
* manage the subject budget effectively;
* undertake risk assessments when required;
* review and monitor;
* annually report to the governing body on the success and development of this policy.

**Role of Teachers**

Teachers will:

* comply with all aspects of this policy;
* work closely with the subject leader to develop this policy;
* devise medium and short term planning;
* develop mathematical fluency, numeracy and mathematical understanding in all subjects;
* develop pupils' spoken language, reading, writing and vocabulary in all subjects;
* plan and deliver good to outstanding lessons;
* plan differentiated lessons which are interactive, engaging, of a good pace and have a three part structure;
* have high expectations for all children and will provide work that will extend them;
* assess, record and report on the development, progress and attainment of pupils;
* achieve high standards;
* celebrate the success of pupils in lessons
* implement the school’s equalities policy and schemes;
* report and deal with all incidents of discrimination;
* attend appropriate training sessions on equality;
* report any concerns they have on any aspect of the school community.

**Role of Pupils**

Pupils will:

* be aware of and comply with this policy;
* be encouraged to work in partnership with the school by making decisions and exercising choice in relation to their educational programme;
* listen carefully to all instructions given by the teacher;
* ask for further help if they do not understand;
* participate fully in all lessons;
* participate in discussions concerning progress and attainment;
* treat others, their work and equipment with respect;
* support the school Code of Conduct and guidance necessary to ensure the smooth running of the school;
* liaise with the school council;
* take part in questionnaires and surveys

**Role of Parents/Carers**

Parents/carers will:

* be aware of and comply with this policy;
* be encouraged to take an active role in the life of the school by attending:
* parents and open evenings
* parent-teacher consultations
* curriculum development workshops
* be encouraged to work in school as volunteers;
* be encouraged to respond to curriculum information newsletter;
* be informed via termly newsletters of their child’s topics;
* asked to provide suggestions and ideas for improving this subject;
* be asked to take part periodic surveys conducted by the school on curriculum development;
* be invited to make presentations to pupils on aspects of this subject area;
* encourage effort and achievement;
* encourage completion of homework and return it to school;
* provide the right conditions for homework to take place;
* expect their child to hand in homework on time;
* join the school in celebrating success of their child's learning.

**Policy Procedure**

**Teaching and Learning Style**

We use a variety of teaching and learning styles to develop children's knowledge, skills and understanding.

**Curriculum Planning and Organisation**

Science is taught weekly to ensure that sequences of lessons are delivered over a half term. In science, we follow the National Curriculum, enhancing and tailoring it to meet the needs of our community and pupils. To ensure robust consistency and progression, we have made the decision to use the Pearson Primary Science Curriculum, a fully resourced, intelligently sequenced, knowledge-rich curriculum informed by the best research evidence available. Our science curriculum is intended to support teachers and their planning, ensuring high quality teaching takes place and that learning is progressive as children move up the school. Each unit has its own Knowledge Map that is shared with the children at the beginning of their learning journey, detailing key knowledge, vocabulary and endpoints so they know what they are working towards.

**Links with ICT**

The use of information and communication technology will promote, enhance, and support the teaching of this subject area. Teachers should use their judgement about when ICT tools should be used.

**Spoken Language**

The National Curriculum for Science reflects the importance of spoken language in pupils’ development across the whole curriculum – cognitively, socially, and linguistically. The quality and variety of language that pupils hear and speak, are key factors in developing their science vocabulary and presenting scientific justification, argument, or proof. They must be assisted in making their thinking clear, to themselves as well as others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

**Inclusion**

At Rivington Primary School, we aim to provide equality of opportunity for all children whatever their age, ability, gender, race, religion or background. We aim to create an environment that values each pupil and enables them to achieve their full potential. We provide a broad and balanced curriculum appropriately differentiated to respond to pupils’ diverse learning needs. The opportunities and experiences we provide, enable our pupils to participate fully and give their best across all aspects of school life. We place great value on the quality of relationships within our school community and celebrate the achievements of all pupils.

We appreciate that children may have special educational needs throughout, or at any time during their school career. At Rivington, we aim to facilitate the full inclusion of pupils with special educational needs. A range of inclusion strategies are embedded in practice and teachers are aware of the special educational needs of the children in their class, as well as those who have English as an additional language.

Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states: ‘Decisions about when to progress should always be based on the security of children’s understanding and their readiness to progress to the next stage.’ If a child’s needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be directed by the SENDCo, in collaboration with the class teacher and with the knowledge of SLT. Specific arrangements for the provision of children with SEND will be communicated to parents and carers during SEND reviews using Provision Mapping.

**Differentiation**

Differentiation is best defined as 'the process by which differences between learners are accommodated so that all students in a group have the best possible chance of learning.' (Geoff Petty)

At Rivington, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. There is little differentiation in the content taught, but the questioning and scaffolding individual children receive in class as they work through content will differ, Children’s difficulties and misconceptions are identified through immediate formative assessment and addressed rapidly.

The main feature of effective differentiation is good planning resulting in effective teaching and learning with children making good progress. Also, we expect to see in all classes interested well motivated children responding to challenges, children working productively on task and being aware of their own progression.

**Assessment for Learning**

Teachers are responsible for formatively assessing learning ‘in the moment’ through carefully crafted questioning, work in books, observations, pre and post learning tasks and retrieval quizzes. Provision is then made for the children, whether it be immediately or in the next lesson to unpick misconceptions, deepen or reinforce their learning

Children will record what they have learned at the end of each topic in relation to their starting point. We will use Pearson Science Bug assessment activities where appropriate. Children will be informally assessed half termly and will be encouraged to reflect on standards achieved and knowledge gained against the planned outcomes. These judgements are inputted onto Insight Tracker and the information used to inform future teaching and learning and curriculum decisions. Our school marking and feedback policy outlines marking and feedback expectations within our science curriculum.

Teachers will:

* carry out continuous assessment;
* use short-term assessments matched to the teaching objectives to adjust their planning;
* make comments in pupil's books related to the teaching objective;
* carry out medium-term assessments to measure progress against key objectives to adjust planning;
* carry out long-term assessment to assess progress against school and national targets;
* use long-term assessments to help them plan for the next academic year;
* inform parents and carers of their child's progress and targets.

**Monitoring and Review of the Subject**

Monitoring of standards of children's work and the quality of teaching is the responsibility of the Subject Leader supported by the Headteacher and the SLT.

Standards will be monitored by:

* Teaching and learning subject observations
* Looking at pupils’ work
* Discussion with pupils
* Scrutiny of curriculum planning
* Rigorous auditing of subject
* General curriculum discussion

**Contribution of the Subject to other Areas of the Curriculum**

Science contributes to many subjects within the primary curriculum and every opportunity is

sought to draw scientific experience out of a wide range of activities. This allows children to

begin to use and apply scientific skills and knowledge in real contexts.

**Resources**

The school has a full range of resources to support the teaching of this subject throughout all year groups. Resources are upgraded and replenished when the need arises. An annual stock take and audit is undertaken by the Subject Leader in the summer term in preparation for the next academic year.

**Raising Awareness of this Policy**

We will raise awareness of this policy via:

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| * School handbook/prospectus;
* School website;
* Staff handbook;
* Meetings with parents such as introductory, transition, parent-teacher consultations and periodic curriculum workshops;
* School events;
* Meetings with school personnel;
* Written communications with home such as weekly newsletters and of end of half term newsletters;
* Annual report to parents;
 | * Headteacher reports to the governing body;
* Information displays in the main school
* Text messages
* Email
* Social media:
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**Training**

We:

* have in place appropriate training for this policy that is undertaken by a registered training provider that covers:
* All aspects of this policy
* National Curriculum programmes of study and attainment targets for all subjects
* Curriculum
* Teaching and learning
* Planning
* Differentiation
* Assessment
* Monitoring and Evaluation
* Special Educational Needs
* Academically More Able, Gifted and Talented Pupils
* Key skills
* Equal opportunities
* Inclusion
* ensure the content of all training is correct, delivered well and engages staff as we believe that the more engaging training is, the better the outcomes that we need to measure
* ensure an awareness of any gaps in knowledge amongst staff and address this with suitable training opportunities.

**Equality Impact Assessment**

Under the Equality Act 2010 we have a duty not to discriminate against people on the basis of their age, disability, gender, gender identity, pregnancy or maternity, race, religion or belief and sexual orientation.

This policy has been equality impact assessed and we believe that it is in line with the Equality Act 2010 as it is fair, it does not prioritise or disadvantage any pupil and it helps to promote equality at this school.

**Race Disparity Audit**

We acknowledge the findings of the Race Disparity Audit that clearly shows how people of different ethnicities are treated across the public services of health, education, employment and the criminal justice system.

The educational section of the audit that covers differences by region; attainment and economic disadvantage; exclusions and abuse; and destinations, has a significant importance for the strategic planning of this school.

**Monitoring the Implementation and Effectiveness of the Policy**

The practical application of this policy will be reviewed annually or when the need arises by the coordinator, the Headteacher and the nominated governor.

The effectiveness of the policy is demonstrated through subject leadership reports to governors which include impact statements on outcomes for pupils and the quality of teaching and learning.

We believe that this school policy:

* is an essential part of the school;
* supports staff in managing certain situations;
* forms an important framework that will ensure consistency in applying values and principles throughout the establishment;
* provides guidance, consistency, accountability, efficiency, and clarity on how the school operates;
* provides a roadmap for day-to-day operations;
* ensures compliance with laws and regulations, gives guidance for decision-making, and streamlining internal processes;
* is designed to influence and determine all major decisions, actions and all activities taking place within the boundaries set by them;
* stems from the school’s vision and objectives which are formed in strategic management meetings

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| **Headteacher:** | Mrs C L Powel | **Date:** | March 2023 |
| **Chair of Governing Body:** |  | **Date:** |  |

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| **Addendum** |