**INTENT**

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| **Purpose of Study** |
| A high-quality Science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and 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. Through 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. |
| **Intent from Subject** |
| The science curriculum at Roby Park not only fosters a healthy curiosity about our universe and promotes respect for the living and non-living; it delivers contextualised learning that challenges students to become effective problem solvers and critical thinkers. This enables them to gain a thorough knowledge and understanding of science and how it impacts on every aspect of life. We provide opportunities for children to develop as independent and confident learners, with high aspirations. We commence with the study of non-complex concepts and simplistic themes, applying the structure and knowledge of National Curriculum Science. Children acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children’s time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings. |
| **Aims from National Curriculum** |
| The 2014 National Curriculum for Science aims to ensure that all children:   * 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 skills required to understand the uses and implications of Science, today and for the future. We understand that it is important for lessons to have a skills-based focus, and that the knowledge can be taught through this |

**IMPLEMENTATION**

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| **Teaching & Learning** |
| **Organisation and Curriculum Coverage**  Teachers create a positive attitude to Science learning within their classrooms and reinforce  an expectation that all pupils are capable of achieving high standards in Science. Our whole  school approach to the teaching and learning of Science involves the following;   * Science is delivered through lessons developed by Developing Experts which promotes depth in the teaching and learning of each Science strands Biology, Chemistry and Physics. Every unit includes a strong focus on the skills of scientific inquiry through an investigative and exploratory approach that makes learning meaningful and memorable. Children will take away a deep understanding of both Science content and scientific method. * Developing Experts provides a broad but comprehensive experience of primary Science that systematically covers the objectives of the National Curriculum for England. * Science lessons focus on the key features of scientific enquiry, so that children learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. * Teachers use precise questioning in class to test conceptual knowledge and skills,   and assess pupils regularly to identify those children with gaps in learning, so that all  pupils keep up.   * Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom. * At Roby Park, teachers ensure that the quality and variety of language that children hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. * We build upon the knowledge and skill development of the previous years. As the   children’s knowledge and understanding increases, and they become more proficient  in selecting, using scientific equipment, collating and interpreting results, they  become increasingly confident in their growing ability to come to conclusions based on real evidence.   * Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children’s school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics. * Teachers demonstrate how to use scientific equipment, and the various Working   Scientifically skills in order to embed scientific understanding. Teachers find opportunities to develop children’s understanding of their surroundings by accessing outdoor learning and workshops with experts.   * Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class. * Regular events, such as Science Week or project days, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events often involve families and the wider community. * Activities are planned to meet the needs of all pupils. Differentiation is achieved through careful planning an organisation. Learners should be supported and challenged to progress within Science. Differentiation enables all students to engage in the curriculum by providing learning tasks and activities that are tailored to their needs and abilities. Pupils are encouraged to work in groups or individually where appropriate.   **EYFS**   * Science in EYFS Play underpins the delivery of all the EYFS. In playing, children behave in different ways: sometimes within their play, they may describe and discuss what they are doing and sometimes they may be more reflective and quiet as they play. Within a secure and challenging environment with effective support, children can explore, develop and experiment as they play to help them make sense of the world. * The EYFS strand ‘Understanding the World’ leads directly to scientific elements of the curriculum and leads to more formalised Science learning in KS1 and then KS2.   **Resources**  Existing Science resources are stored in class stock cupboards and are organised into topic themes, which are clearly labelled. The School Library Service provides a range of topic related books to each class, every half term.  There is also a £25 budget per half term for Y1-6 however staff should add notes in the Monday morning memos, in advance, to see if resources can be collated from amongst the staffing team.  Teaching and learning in Science is supported by a number of apps which can be accessed with the support of the Subject lead.  It is the responsibility of the class teacher to ensure they pack away all resources in the relevant class topic box for the subject at the end of each half term and to ensure all resources, artefacts and books are well looked after in class. All communal resources should be returned to their homes so all staff can access them.  **Displays**  Each class is expected to have a topic table for each of the Science schemes of work where books and other artefacts are displayed and easily accessible for children.  Every class will display a half termly A3 size Knowledge Organiser along with key vocabulary in their classroom. Examples of processes and learning will be displayed as well as end of unit outcomes.  Whole school Science displays will be produced in communal areas around the school, led by the Science subject lead.  **Presentation**  Handwriting and presentation is a whole school priority and the highest standards are expected across the curriculum. Presentation reminders will be glued in the front of all books and children will be reminded in all lessons of handwriting and presentation expectations. Staff will model the expectations throughout the curriculum.  **Planning**  All planning should be readily available in planning folders. Teacher plans should be dated, printed and annotated, planning specifically for pupils in the class. Annotations should include evaluations of lessons to inform assessment.  Plans should be available from the beginning of the week, should anyone need to take your class. |
| **Cross Curricular Links** |
| At Roby Park, pupils see every subject as part of a bigger picture. Developing Experts allows teachers to build links across the curriculum, keeping pupils switched on to learning and helping to build their confidence. Science pervades every aspect of our lives and we will ensure that pupils realise the positive contribution of both men and women to Science and the contribution from those of other cultures. We will not only emphasise the positive effects of Science on the world but also include problems, which some human activities can produce.   * **English -** Science contributes significantly to the teaching of English at Roby Park by actively promoting the skills of thinking, reading, writing, speaking and listening. The children develop oral skills in Science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information * **Mathematics** – Science contributes to the teaching of mathematics in a number of ways. Through working on investigations, children learn to estimate and predict. They develop the skills of accurate observation and recording of events. Children use numbers in many of their answers and conclusions. Developing skills in data handling, measurements and mathematical relationships. * **Computing** - Children use computing 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. Children use computers to record, present and interpret data and to review, modify and evaluate their work and improve its presentation. * **Art** – understanding of materials and their properties, designing and creating own inventions * **Geography** – exploring physical processes * **History** – researching Scientist, their discoveries and the impact in today’s society * **IT** – data handling and research * **PSHE** – health and safety education |
| **Inclusion** |
| Lessons are pitched so that children with different starting points can access them. Pupils need to have a large amount of subject knowledge stored in their long-term memory in order to become competent at any subject, and this is especially true of science. For this reason, these lessons are designed to teach science in a clear and deliberate fashion, emphasising secure content knowledge before moving on to tasks. To build aspiration, our lesson expert often from industry or university enables everyone to learn and deepen their understanding about how the subject relates to the world of work. The Developing Experts resource is designed to support the teacher to deliver the story presentation in each lesson with a clear focus being placed on equipping the teacher to teach science with confidence. Teachers will use the school’s inclusion planning key to ensure that a range of strategies are used which include and motivate all learners, ensuring that optimum progress is made throughout each part of the lesson. |
| **Equal Opportunities** |
| At Roby Park Primary School we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class. |
| **British Values** |
| At Roby Park, our values are at the heart of everything we do. We strive to provide opportunities for pupils to develop their own core values whilst instilling the Fundamental British Values in many opportunities within units of work.   * **Democracy -** Take the views and opinions of others into account. Take turns and instructions from others * **The rule of law** - Understand the importance of safety rules when working scientifically. Know that there are consequences in rules are not followed. * **Individual liberty** - Make choices when planning an investigation. Others may have different points of view as to where to start * **Tolerance** - Scientific discoveries have come from other cultures. Religious beliefs often compete with scientific understanding * **Mutual respect** - Work as a team, Discuss findings. Offer support and advice to others |
| **Enrichment Opportunities** |
| At Roby Park, we believe that children learn best when they are engaged, inspired and motivated to learn. We offer a wide range of experiences and challenges that enrich our core curriculum. This allows our pupils to learn outside the classroom and develop the skills for the world beyond the primary education. Below are some examples of how we achieve this through:   * Theme weeks – STEAM week, World Religion Week, Growing Up Week * WOW days at the entry and exit points of topics – art gallery exhibitions, workshops, dress up, food tasting * Celebration afternoons to celebrate and exhibit our learning with the wider community * Invite visitor’s in – local artists, historians * Educational visits, workshops and residential trips – art galleries and museums * Fundraising and awareness days – Harvest/food banks, Macmillan Coffee Mornings, Yellow Day, Sports Relief, Comic Relief, CiN, Cycle4Sepsis, Christmas Jumper Day * Enterprise week – Y5/6 Fiver Challenge * ‘Keep safe’ curriculum – Bikeability, Friendship Week, Road Safety, Bonfire Night safety, Internet Safety, Gang Awareness, Say No to Knives workshops * Wider opportunities – Languages Day, Musical Instruments, Extra-curricular club offer * Sporting events – inter and intra competitions with the collaborative schools and KSSP * Collaborative events with local schools * Festivals, celebrations and performances – Musical concerts, Peace Proms, Pantomimes, Christmas productions, Easter celebrations, class assemblies   At Roby Park, every child has the chance to access enriching experiences, through a variety of ways. We plan for our lessons to be broad and enriching. In addition to this, we organise special events, visitors, off-curriculum days and family events to enrich our pupils’ lives and challenge them to aspire to be people who leave a mark on the world. |
| **Community Links** |
| At Roby Park we believe that community links are essential in the growth, development and wellbeing of all our pupils. Links with our local community help us to build relationships with groups and individuals who will provide positive role models for our children whether within the world of work, spiritual and moral development or everyday experiences. |
| **Wellbeing** |
| At Roby Park, we are committed to supporting the positive mental health and wellbeing of our whole school community (children, staff, parents and carers). We recognise that mental health and emotional wellbeing is just as important to our lives as our physical health.  At Roby Park, we endeavour to ensure that children are able to manage times of change and stress. We ensure that children learn about what they can do to maintain positive mental health, what affects their mental health, how they can help reduce the stigma surrounding mental health issues, and where they can go if they need help and support. The promotion of positive wellbeing is woven throughout our curriculum. |

**IMPACT**

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| **Impact** |
| The innovative practice across the school provides a strong foundation and opportunities for children to collaborate and develop social skills both indoors and out. This curriculum design ensures that the needs of individual and small groups of children can be met within the environment of high quality first wave teaching, supported by targeted, proven interventions where appropriate. In this way it can be seen to impact in a very positive way on children’s outcomes.  Enjoyment of the curriculum promotes achievement, confidence and good behaviour. Children feel safe to try new things. High quality visits and visitors to the school enhance the curriculum and provide opportunities for writing for a purpose.  Children have opportunities to share their learning with each other, their parents and carers and other learners through school-based and external exhibitions, performances, competitions and events involving other schools. Developing their independence and motivation as learners and their sense of responsibility as future citizens is at the heart of all our teaching and learning**.**  The successful approach at Roby Park results in a fun, engaging, high-quality Science education, that provides children with the foundations and knowledge for understanding the world. Our engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. Frequent, continuous and progressive learning outside the classroom is embedded throughout the Science curriculum. Through various workshops, trips and interactions with experts and local charities, 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, as a result of our community links at events like our Career’s Week.  From this exposure to a range of different scientists from various backgrounds, all children feel they are scientists and capable of achieving. Children at Roby Park overwhelmingly enjoy Science and this results in motivated learners with sound scientific understanding |
| **Assessment** |
| Teachers will assess children’s Science work in a variety of ways to ensure they gain a full understanding of what each child has learnt, and what is needed to progress their understanding. Teachers will observe and feedback.  Teachers draw upon observations and continuous assessment to ensure children are stretched and challenged and to identify those children who may need additional support. At the end of each unit a knowledge quiz is completed by each child. At the end of KS2 teacher assessments are recorded and data is reported to the Local Authority.  Half termly assessments of objectives taught will be updated on Insight for foundation subjects. Steps that children are working at will be recorded at the end of each term. Teachers will record children’s performance against the age related objectives for the curriculum and decide whether children are working towards, at or above age related expectations. Assessments are used to inform planning and close gaps, in order to accelerate progress. Subject leaders will analyse termly data and address areas for curriculum development.  Pupils’ work is recorded on Seesaw where pupils are able to self and peer assess. |
| **Monitoring and Evaluation** |
| 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 Lead 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.  Subject leads play an active role in the school self-evaluation cycle and throughout the year they will participate in:   * Ensure there is clear progression throughout the school * Creation of termly data reports * Reporting to SLT & Governors * Pupil voice * Work samples * Learning exploration blinks * Developing cultural capital opportunities and events * Identify any training needs and offer extra support and guidance to staff when it is appropriate * Ensure that there are suitable resources to help with the teaching and learning of their subject |
| **Review Date** |
| **Policy Agreed:** September 2024  **Policy Review:** September 2026 |