Science EYFS-KS4: Developing Experts' Design & Approach

1. Intent

At Developing Experts, our science curriculum from EYFS to KS4 aims to inspire pupils to become analytical and reflective thinkers who question the world around them. Curiosity and deeper thinking are at the heart of our approach, and we aim to equip pupils with the disciplinary skills and substantive knowledge to think like scientists.

Our curriculum purposefully embeds careers into lessons, helping pupils see how their learning connects to real-world contexts. From the earliest years, pupils encounter a wide range of science professionals and learn how scientific understanding contributes to solving global challenges.

Aligned fully with the National Curriculum and the AQA specifications at KS4, our curriculum builds both disciplinary and substantive knowledge. We also emphasise transferable skills that support pupils beyond the classroom. These include scientific enquiry, problem-solving, mathematical reasoning, critical thinking and communication.

2. Implementation

Our curriculum is coherently sequenced and progressively designed to reflect the requirements of the National Curriculum for each key stage. Knowledge and skills build cumulatively through a spiral and cyclical structure, enabling pupils to revisit key topics at increasing levels of depth and complexity.

2.1. EYFS–KS2

In the primary years, pupils develop a foundation of scientific understanding through practical, enquiry-based learning. They build working scientifically skills, including observing, classifying, testing, predicting, measuring and evaluating. Lessons balance substantive content with opportunities for hands-on investigation, open-ended questioning and application to everyday scenarios.

Lessons are coherently sequenced to ensure progression across year groups, enabling pupils to build and retain knowledge over time. Recap prompts, AfL questions and topic threads are embedded throughout, ensuring continuity and reinforcement. Each lesson includes a full set of teaching resources: presentations, plans, quizzes, handouts, videos and

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knowledge organisers. Cross-curricular links to literacy, maths, art, design and technology and other subjects are included where appropriate and helpful.

2.2. KS3

At Key Stage 3, pupils deepen their understanding of key scientific principles and begin to appreciate the interconnections between biology, chemistry and physics. Lessons emphasise retrieval practice to build long-term memory, progression of knowledge from KS2 and the development of scientific literacy and vocabulary.

Our KS3 curriculum prepares students for the increased cognitive demands of GCSE by embedding exam-style questions and opportunities for extended reasoning and data analysis. Each unit builds explicitly on prior knowledge while supporting teachers with resources that ensure continuity and clear progression across Years 7–9.

2.3. KS4

At Key Stage 4, our AQA Trilogy GCSE Science curriculum lets students explore scientific principles through an interconnected and sequenced series of units. Each unit builds on prior learning and builds understanding through teacher-made resources and clear real-world applications.

Fully aligned with the AQA specification, the curriculum ensures comprehensive coverage of required practicals, which are contextualised to everyday experiences and career pathways. Retrieval practice, problem-solving and exam-style tasks are embedded throughout to support long-term retention and confidence in assessment.

Students are guided to see how scientific ideas connect across disciplines. This integrated approach strengthens understanding and shows science as a unified body of knowledge that explains and influences the modern world.

Research-informed pedagogical strategies underpin every unit, supporting the development of exam technique, analytical thinking and scientific literacy. Lessons consistently highlight the relevance of science to health, sustainability, technology and global challenges, with explicit links to diverse careers.

3. Impact

Throughout our science curriculum, pupils develop curiosity, independence and a lifelong interest in scientific enquiry. They leave each lesson better able to question, reason and apply their understanding to the world around them.

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Assessment is embedded throughout every key stage:

- **In EYFS–KS2, class discussions, formative assessments and recap tasks help teachers track progress and address misconceptions.**
- **In KS3, retrieval tasks, revision lessons and formal assessments encourage deeper reflection and build knowledge securely.**
- **In KS4, exam-style questions and unit tests prepare students for GCSE assessments while building exam technique and confidence.**

Our approach ensures that pupils not only achieve academic success but also appreciate the real-world value of science and the breadth of careers it offers.

4. Practical Work and Resources

Practical work is included at every stage of our science curriculum. Across EYFS to KS4, pupils develop essential skills through observation, investigation, measurement and evaluation.

- **In EYFS-KS2, practical activities create excitement and build scientific thinking. These are accessible activities and are usually linked to familiar, everyday contexts.**
- **In KS3, investigations become more structured and analytical, encouraging students to plan and interpret results more independently. Additional practicals and demonstrations are included to further enhance the teaching of key scientific content and provide greater depth of understanding.**
- **In KS4, required practicals provide opportunities to apply theoretical understanding and prepare for GCSE exams. These are supplemented by lesson demonstrations and extension practicals that consolidate and extend students' grasp of scientific principles.**

Every investigation includes clear learning outcomes and opportunities for reflection and discussion, ensuring pupils understand not only what they observe but why it matters.

To deliver our curriculum effectively, schools should have access to basic scientific equipment such as measuring cylinders, beakers, thermometers, stopwatches, magnets and materials for experiments, alongside digital tools for data collection and analysis. Some equipment and materials for KS3 and KS4 are more specific to certain topics; however, all lesson plans and curriculum maps include detailed equipment lists to support effective planning and ordering in advance.

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