🔬 Science at Lambourne Primary School: An Overview

Introducing the Subject Leader:

Jessica Kipps - I have been teaching at Lambourne since September 2024 and I currently teach in year 3. I have been the subject leader of science since joining Lambourne School. At my previous school I was the science lead for 4 years, leading science week activities and introducing an end of unit assessments. I believe science is a vital subject to be taught in schools as it is the foundation of understanding the world and how things work. It also has strong cross-curricular links and has many different job opportunities for children who are passionate about the wider world.

Our Vision for Science

Our vision is to inspire all children to be **curious, resilient, and resourceful scientists**. We aim to provide a high-quality science education that lays the foundations for understanding the world through the specific disciplines of **biology, chemistry, and physics**. We strive to ensure children develop a deep understanding of key scientific concepts, methods, and processes, fostering a lifelong interest in science and its implications for the future. We encourage **'working scientifically'** so children can ask questions, investigate, experiment, and draw conclusions with confidence.

Our Informed Research on Science

We have selected the Developing Experts scheme as the online lessons come with experts from universities and industry who each share their expertise. The lessons provide images and science videos with opportunities for discussions and interactive quizzes. The information presented is child friendly and provides recap videos of key information at the end of each lesson before hands-on activities.

Our curriculum design is based on research highlighting the importance of **substantive knowledge** (the facts and concepts) and **disciplinary knowledge** (the 'working scientifically' skills, such as observing, predicting, and experimenting) being taught in an **interleaved and progressive manner**. We draw upon research showing that:

- **Misconceptions** must be actively identified and addressed. This is often presented through discussion questions.
- **Practical work** is most effective when explicitly linked to the underlying scientific concept.
- **Vocabulary** acquisition is crucial for accessing scientific understanding. We use a **knowledge-rich approach** to ensure key terminology is introduced, reinforced, and used accurately across all year groups at the start of each lesson.
- **Retrieval practice** is built into our planning to help children remember and connect prior learning over time.

The Teaching of Science

The teaching of science is **practical, engaging, and enquiry-based**. Lessons follow a clear structure to ensure effective learning:

1. **Engage:** Hook children's interest, often through a practical demonstration or real-world problem.
2. **Explore:** Provide opportunities for hands-on investigation and exploration of the concept.
3. **Explain:** Formal teaching of the core scientific concept and key vocabulary, addressing any misconceptions that arose during the 'Explore' stage.
4. **Elaborate:** Apply the learning to different contexts, developing 'working scientifically' skills through planned, focused investigations.
5. **Evaluate:** Review learning and assess understanding.

Science is taught through discrete, weekly lessons and is enhanced by **cross-curricular links**, especially with Maths (data handling) and English (report writing, technical vocabulary). We utilize our school grounds and local environment to provide **contextual learning opportunities**.

How we Assess Progress in Science

Assessment is **ongoing and formative**, used primarily to identify gaps in knowledge and adapt future teaching. We use a variety of methods:

- **Daily Informal Observations:** Teachers observe children during practical investigations and class discussions to gauge understanding of concepts and scientific skills.
- **Questioning:** Strategic questioning during and after lessons to probe deeper understanding and correct misconceptions.
- **Book Scrutiny & Feedback:** Reviewing recorded work (e.g., predictions, results tables, conclusions) provides evidence of knowledge application and working scientifically skills.

- **Vocabulary review:** At the end of each lesson, children are asked about the lessons 'Rocket Words' to assess their understanding of the vocabulary and can apply to real-world context.
- **Self and Peer Assessment:** Encouraging children to reflect on their own work and that of their peers to develop metacognitive skills

- **Deeper Questioning Stickers:** These questions are used to allow children to extend their understanding of a concept and apply this to a real-world situation or to make further comparisons.

The Impact of Science

The impact of our science curriculum is measured by the extent to which children:

- **Attain Age-Related Expectations:** Children consistently meet or exceed the expected standard for their key stage in both substantive knowledge and disciplinary skills.
- **Demonstrate a Rich Scientific Vocabulary:** They use precise and technical language confidently in discussions and written work.
- **Are Scientifically Literate:** They can explain scientific phenomena, understand the uses and implications of science, and can critically evaluate evidence.
- **Exhibit Positive Attitudes:** Children show a genuine **excitement and curiosity** about the world around them and are keen to pursue science-related interests.
- **Are Ready for the Next Stage:** They transition to secondary school with the foundational knowledge and investigative skills required for success at Key Stage 3

- **Career Knowledge:** The curriculum introduces a range of careers linked to each topic which exposes children to jobs within the STEM industry, as well as the roles and responsibilities of those jobs.