



## Science at Ludlow Primary School

### **Our Curriculum Drivers at Ludlow Primary School**

**Confident communicators**

**Citizens of the world**

**Growth mindset**

**Healthy body, healthy mind**

### **Our Core Values**

**Independence**

**Happiness**

**Honesty**

**Kindness**

When Ludlow Primary School was created in 2019 from the amalgamation of Ludlow Infant and Ludlow Junior School, we had the exciting opportunity to consider our school community's needs and create a curriculum specifically tailored for them.

We have devised four drivers that run through our school curriculum. They are tailored to our pupil's specific needs and take account of the opportunities and challenges in the context of our school community and our pupils' lives.

These join with our core values to help children understand and appreciate the world around them so they can develop into responsible, knowledgeable and inquisitive citizens of the 21<sup>st</sup> century.

**What Science looks like in our school:**

- Exciting science topics to provide children with the opportunity to explore and investigate the world around them.
- All science topics are explored in each year group to ensure that children are experiencing all areas of science year on year.
- A variety of activities which take place inside and outside of the classroom to engage children about the world around them.
- Investigations/practical exploration with the children being able to plan, record, carry out and conclude their learning.
- Opportunities to work individually, in pairs or groups.
- A range of scientific resources to enable the children to carry out engaging experiments.
- Subject specific vocabulary which is focused upon at the start of each topic and is then embedded within each lesson.
- Different aspects of science are focused upon: physics, chemistry, and biology.
- Use of a range of media to help the children to learn about the world and space.
- Learning about the achievements of famous scientists.
- Opportunities for children to talk about their observations and discoveries using scientific vocabulary.

**This is our philosophy:**

- Children learning through exploring different topics whilst acquiring new skills.
- Using the children's understanding as a starting point.
- Making links to the world around us.
- High quality modelling of scientific skills and techniques.
- Promoting the use of the scientific method to extend learning.
- Cross-curricular links where possible.
- To foster a healthy curiosity in our children and a passion for science.

**This is the knowledge and understanding gained at each stage:****By the end of EYFS pupils will:**

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

**By the end of Key Stage 1 pupils will:**

- Experience and observe phenomena, looking more closely at the natural and humanly constructed world around them.
- Develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions.
- Begin to use simple scientific language to talk about what they have found out.
- Mostly use first-hand practical experiences, but also appropriate secondary sources, such as books, photographs, and videos.
- Read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

**By the end of Key Stage 2 pupils will:**

- Develop a deeper understanding of a wide range of scientific ideas and begin to recognise that these change over time.
- Select the most appropriate ways to answer science questions using different types of scientific enquiry.
- Draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to first, to talk about and, later, to write about what they have found out.
- Read, spell and pronounce scientific vocabulary correctly.

**This is how it works:**

- Science is taught in the EYFS as an integral part of the topic work covered throughout the year. Children are encouraged to explore and investigate independently during continuous provision.
- All children in Y1-6 receive a minimum of 2 hours quality Science teaching a week.
- Knowledge and understanding are taught in blocks with a new topic each term/half term and scientific experiments are carried out each half term.
- Science days and half days are used each half term to cover other areas of science and enable children to make links and build their science knowledge year on year.
- Where possible links are made with other subjects to enrich learning.
- There are regular practical sessions where children have opportunities to develop their investigative skills.
- Lessons incorporate the use of technology where appropriate.
- Pre-teaching of scientific vocabulary takes place at the start of each topic so it can be used in the following lessons.
- Purposeful displays support current learning which include vocabulary and reflect progression in learning.
- A range of engaging resources enable the children to carry out exciting experiments to deepen their learning and develop their understanding of the concept that is being taught.
- There are opportunities for paired, group and class discussion and debate to consolidate learning.
- Children learn about the achievements and contributions of key scientists from the past and modern times.

**This is what adults do:**

- Plan exciting progressive lessons which build on prior knowledge.
- Support, encourage and nurture a love of Science.
- Create a learning environment that supports learning and engages children's interest in the topic being studied.
- Use Bloom's Questioning in class to assess conceptual knowledge and skills and allow pupils to develop strategies for questioning and thinking.
- Demonstrate how to use scientific equipment, and the various 'Working Scientifically' skills in order to embed scientific understanding.
- Regular book scrutiny, pupil meetings and planning audits.
- Whole school professional development.

**This is how we support:**

- We use teacher and self-assessment to quickly identify any child who requires additional support in specific areas.
- Differentiated ability tasks enabling children to progress at their own pace.
- We celebrate individual pupil progress in their learning journey.
- We make cross curricular links whenever possible.
- Provide visual and practical prompts.

**This is how we challenge:**

- Lessons will be differentiated.
- Additional activities/targets to stretch the learning within the lesson.
- Activities with alternative/extended discussion points.

**This is how ensure all children can access the curriculum:**

- Children who have SEN or EAL needs are taught key vocabulary prior to/at the start of the topic.
- Seating children alongside good role models to support one another.
- More frequent repetition and revisiting to help make it stick.
- By providing visual/practical prompts.
- Teaching lessons using a range of different techniques to appeal to different learning styles e.g. videos, interactive websites, drama, artefacts, texts etc.

**This is what you might typically see:**

- Engagement and perseverance from all learners.
- Children practising and applying knowledge to different situations.
- Happy, confident, and independent learners.
- Children posing their own questions and hypothesis for investigation
- Children working cooperatively in paired/group work.
- A classroom environment with displays including vocabulary, to support learning.
- Children discussing, reflecting and sharing their learning.

**This is how we know how well our pupils are doing:**

- Use of assessment at the start and end of each topic enables progress in knowledge and understanding and working scientifically to be monitored.
- Lessons are planned with children's prior knowledge/assessed level known to ensure progression.
- Teachers assess the individual progress of a child against the learning objective for the lessons/units of work. At the end of the year, the teacher makes a summary judgement about the work of each child in relation to the National Curriculum 2014 and Quigley Milestones. These are reported to parents as part of the child's annual school report.
- Next step marking and feedback by teacher and peers.
- Displays of work around school.
- Book scrutiny, pupil meetings and planning audits.
- Use of surveys and questionnaires (pupils and staff).
- Regularly monitoring of the standards of children's work and the quality of teaching and learning in lessons.

**This is the impact of the teaching:**

- Children who are confident talking about science.
- Children who enjoy their learning in science.
- Inquisitive learners who make observations and ask questions.
- Pupils develop detailed knowledge and skills in science and achieve well.
- Children who know more and remember more.
- Pupils use acquired vocabulary in science lessons.
- Children who have the scientific skills to investigate independently and show resilience when tackling problems.
- Reflective learners.
- Children will be ready for the next stage in their education. Pupils with SEND will achieve the best possible outcomes.
- Children who are inspired by the achievements of scientists.
- Pupils with an awareness for our world and beyond. They know about different ways that science can be used to support their future potential.

### **What is Cultural Capital?**

Cultural capital can be defined as powerful knowledge. Knowledge that is one of the key ingredients a child will draw upon to be successful in society, their career and the world of work.

Cultural capital gives a child power. It helps them achieve goals, become successful, and rise up the social ladder without necessarily having wealth or financial capital.

In science, this powerful knowledge can be split into two categories: powerful subject knowledge and powerful personal knowledge.

### **Powerful subject knowledge in Science**

- The Science curriculum
- The Health Education dimension of the PSHE programme, including strands on drugs, smoking and alcohol
- Design and Technology units related to food preparation and nutrition
- The knowledge of how and why children need to take care of their personal fitness and wellbeing.
- The knowledge of how and why children need to understand the elements of safety relating to science.
- The knowledge of local, national and worldwide scientific events/discoveries and their importance on society.
- The knowledge of famous scientists that have affected the world today.

### **Powerful personal knowledge in Science**

- Healthy Eating policies and catering provision
- Activity-based visits related to specific scientific topics.
- Understanding what opportunities are available to children in the future to allow them to become life-long learners.
- Eliciting, valuing and linking students' prior knowledge and experiences from home, family and social contexts to school science.
- Highlighting the relevance and transferability of science for students' daily and future lives.

## SMSC links in Science at Ludlow Primary School

Spiritual, Moral, Social and Cultural (SMSC) development is the over-arching umbrella that encompasses personal development across the whole curriculum. In science at Ludlow Primary School, links to SMSC are made across the science curriculum and lessons to create a child centred approach to learning science knowledge and skills.

### Spiritual

- Pupils use imagination and creativity by developing their own predictions, thoughts and ideas
- Reflecting and critiquing on investigations
- Questioning pupils throughout lessons – WHY, WHAT, WHERE and HOW?
- Pupils experience awe and wonder
- The beauty of natural objects or phenomenon

### Moral

- Respect with equipment both when using it and when storing it
- Discussing the human impact upon our planet and environment
- Listening to teacher and peer feedback and understanding different point of views
- Promote trust with peers through team investigations
- Respect scientists' theories and other beliefs
- Recognition that discoveries in science can have both harmful and beneficial effects

### Social

- Creating a sense of community in lessons and clubs
- Encourage pupils to recognise and respect social differences and similarities
- Encouraging extra-curricular activities
- Considering the safety of others during practical work
- Promoting teamwork throughout lessons
- Encourage children to have scientific discussions with science professionals and visitors
- Highlighting the effects of science on their lives
- Promote scientific discussion/debate in lessons

### Culture

- Use of international examples of different scientists and their achievements
- Understanding and appreciating personal influences of famous scientists
- Considering the historical context that influenced the way new theories are considered e.g. motion of the Earth, evolution, plate tectonics, Big Bang theory

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