Teaching and Learning Strategy for Science

At Bibury, one of the values underpinning our school vision is curiosity. This is key in science, where we aim to foster curious, enquiring minds and provide the means with which pupils can seek answers to their own questions.

We teach specific scientific concepts alongside skills and knowledge which will help them to think and act scientifically. We aim to develop an understanding of the uses and implications of Science, today and for the future.

Planning

Our science is planned carefully on a 2-yearly cycle using 'Switched on Science' so that the requirements of the National Curriculum are taught at an age-appropriate stage, with scientific topics revisited and developed throughout a pupil's journey through school so that there is clear progression in their understanding and skills.

This resource takes a practical and investigative approach to learning, whilst also ensuring that misconceptions are addressed and correct vocabulary is embedded in learning. Knowledge organisers identify the key skills, knowledge and vocabulary for each unit. Our progression of skills document ensures that teachers plan carefully to ensure an appropriate level of challenge.

Teaching Expectations

Over a unit of work

- Lessons should be planned in a coherent sequence, based on the key elements of the Rising Stars Science units and our long term plans.
- Science should be taught weekly.
- Each unit of work should include elements of knowledge and understanding and opportunities to develop scientific skills appropriate to age and level of development.
- Links between different areas of science should be highlighted to pupils at every opportunity.
- Pupils should be to encouraged to use mathematical skills in the context of science wherever it is appropriate to do so.

- A knowledge organiser should be stuck into their books and appropriate vocabulary displayed in their learning space (where possible).
- Teachers should assess pupil learning at the end of each unit, highlighting any relevant statements on SONAR tracker and assessing against ARE. Key Stage 2 pupils should be assessed with written tests (Rising Stars)

Science Lessons

- Each lesson should contain an element of retrieval of prior learning, including a review of learning so far using knowledge organisers.
- All work in books should be dated and lesson objectives and success criteria should be shown.
- Pupils' work should be neatly presented.
- Pupils should be encouraged to ask questions and to think about the answers in light of their learning.
- All work should be marked with errors / next steps identified and pupils encouraged to revisit.

How we help pupils to retain knowledge over time

- We have a long- term document that sets out the progression in common areas of study. This enables teachers to help children recall what they have learned in prior key stages and to identify what comes next.
- We begin each unit of work with a recap of (expected) prior knowledge. For KS2, this is often in the form of a quiz, where answers are recorded in quiz books.
- We provide knowledge organisers for each unit that pupils refer to in each lesson. Pupils are encouraged to revisit these at home and learn the key facts and vocabulary. These are also displayed in classrooms.
- Each lesson begins with a recall activity (question, concept cartoon, game, quiz) linked to the key learning to help pupils consolidate and build on their knowledge.
- At every opportunity, where appropriate, links are made with other areas of science – this strengthens understanding and aids application of knowledge and skills in different contexts.
- Mini no-stakes tests throughout the unit of learning promote recall.
- End of unit tests (KS2)encourage pupils to recall information and to apply this to this situations.

- Spaced recall of previous topics throughout the year helps to embed key knowledge in long term memory.

How are pupils supported and challenged in science?

Challenge for HAPs

Although the government only requires the assessment of science against age-related expectations, we recognise that some pupils will be able to engage with the subject at a deeper level, either because of interests outside school or because of their ability to make conceptual links and to work logically to analyse scientific information (this may be linked with high achievement in mathematics).

To support these pupils to reach their potential in primary science we

- Provide challenge through targeted questioning to deepen understanding.
- Encourage pupils to present their ideas and understanding in different ways.
- Provide problems /scenarios that require pupils to apply their understanding
- Encourage pupils to consider and explain 'Why' questions.
- Encourage pupils to use more complex scientific terminology to explain ideas.
- Encourage pupils to pursue their own lines of enquiry and present their findings.

Adapting Learning in Science

Some pupils will require support to achieve alongside their peers, so lessons will be adapted to enable this. Examples of adaptation include:

- Sentence stems
- Pre-drawn diagrams
- Cut and paste labels, rather than write
- Scribing
- Pre-drawn tables and bar chart lines / labels
- Pre-teaching of vocabulary

- Support with measuring / fine motor activities

Oracy

Teachers plan for and model the correct scientific language in each lesson. Teachers also promote oracy through discussion of 'Big Questions' linked to the topic and by using techniques to improve oracy such as 'say it again better'..

Assessment

Mini no-stakes tests throughout the unit support teacher assessment.

Teachers will assess pupil skill levels during practical activities and by marking of completed work. Questioning during questions will provide information on pupil understanding.

KS2 will complete written tests on the key learning from each unit, with results recorded on Sonar.