



# Buckden CE Primary English Subject Guidance

## Science Subject Guidance

It is our intention to help children develop skills and knowledge that will equip them with the skills and attitudes to prepare them for life in our ever-changing scientific world. We aim to build on children's enthusiasm and natural sense of wonder about the world through practical skills.

### **Purpose of this statement:**

- ◆ To establish an entitlement for all pupils in the subject of *Science*;
- ◆ To establish expectations for teachers and pupils
- ◆ To promote continuity and coherence across the school;
- ◆ To promote a shared understanding of *Science*, within the community;
- ◆ To explain how *Science* is taught in Buckden CE School
- ◆ To give further guidance about *Science*

### **Entitlement:**

All pupils, appropriate to their ability, have the entitlement to:

- ◆ an awareness of the fascination of science and the world around us;
- ◆ competence and confidence in scientific knowledge, concepts and skills;
- ◆ initiative, an ability to work both independently and in cooperation with others;
- ◆ an ability to communicate science with others using correct scientific language;
- ◆ 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 specific questions about the world around them;
- ◆ are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future;
- ◆ the ability to record their work in a variety of different ways as appropriate to their age, ability and the task;
- ◆ an ability to apply previously acquired concepts, skills and knowledge to new situations;
- ◆ encourage and enable pupils to offer their own suggestions, be creative in their approach to science and gain enjoyment from their scientific work;
- ◆ encourage children to collect relevant evidence, to question outcome and to persevere;
- ◆ understand that we do not always know the answers and results when carrying out scientific enquiry;
- ◆ assess and engage with their own learning.



### **Time Allocation**

In order to provide the effective teaching of science, every class allocates a specific science focused lesson each week. This enables pupils to be taught science specific skills and allows them adequate time to put these into practice. The allocated time for science lessons is the same across both key stages, with every class allocating 2 hours a week to science. Reception follow the Early Years framework which does not contain specific science focuses, however every effort is made to include activities that will help to develop the children's scientific enquiry skills.

### **Teaching and Learning**

The National Curriculum forms the basis of teaching and learning in science for KS1 and KS2, with the Early Years Framework covering the necessary criteria for Reception. Teachers work towards independent learning and plan for different working groups e.g. whole class/small group/paired/individual.

Each year pupils cover the following areas;

Scientific Enquiry Skills

Working scientifically skills

Biology knowledge

Chemistry knowledge

Physics knowledge

Biology, pupils are taught;

- The difference between things that are living and things that have never been alive
- To relate life processes to animals and plants in their local environment
- Identify human and animal bodies, including how to care and look after them
- Recognise plants and their needs
- Identify similarities and differences between living things and different environments
- Evolution and inheritance
- Sex Education lessons in Year 6 (see separate policy for more information)

Chemistry, pupils are taught;

- To identify and group a range of different materials
- About how materials change and investigate different types of changes
- About separating mixtures of materials

Physics, pupils are taught;

- To understand electricity; what needs it, where it comes from
- How forces and motion are present in everyday life
- Where sound comes from, how we hear and how to change sounds
- About the Earth, Sun and Moon and periodic changes

Pupils are taught a range of working scientific skills throughout their science lessons. These are the skills that underpin scientific investigation and are skills that can be developed further in everyday life. Teaching should ensure that working scientific skills are taught through contexts taken from the sections of 'Biology', 'Chemistry' and 'Physics' once necessary prior knowledge is embedded.

The structure of a good science lesson should:

- ensure children understand relevant vocabulary;
- establish clear learning intentions for that lesson either expressed as an enquiry question or a formal objective;
- either provide knowledge, offer an opportunity to learn how to work scientifically or allow the consolidation of knowledge by working scientifically;
- provide the necessary information or instructions at a brisk pace to enable pupils to be practically and purposefully engaged in enquiry, involving pupils in the decision making process as much as possible;
- require children to record only the relevant aspects of their learning in line with the lesson objectives;



- develop pupils' ability to plan their own work to set criteria, carry out the task confidently and with a secure understanding of what is expected, be able to state what they found out and review their results critically, identify the challenges they overcame;
- encourage pupils to discuss ideas and justify responses in terms of prior knowledge, reflect on patterns in data and the potential for further investigative experience;
- provide opportunities for pupils to work both collaboratively and independently;
- through a plenary session acknowledge what pupils have done but also emphasise, refine, challenge or confirm what pupils have learnt;
- promotes a pride in the acquisition of scientific knowledge and skills.

### **Expectations**

By the time children leave our school, we expect them to have developed their scientific enquiry and working scientifically skills which can be adapted to use in everyday life. All pupils will also have a solid understanding of Life Processes, Living Things, Materials and their Properties and Physical Processes.

Across the school all pupils are expected to be working within and covering the objectives within the appropriate band (eg, Year 4 working on the objectives set within band 4). By the end of each academic year all pupils should have been given the opportunity to learn all of the objectives for their year group. The aim of the school is for as many children in each year group to reach age related expectation and as many as possible to reach greater depth.

### **EYFS**

Science is covered in the new EYFS curriculum and all scientific objectives that are taught in EYFS are detailed in our Buckden Science Knowledge progression document to ensure year 1 teachers know a child's prior knowledge. Topics taught and continuous provision planning identify opportunities to teach science knowledge directly.

### **British Values**

As with all aspects of our curriculum science links in with many areas of our British values.

#### **Democracy**

Democracy is taught through the appreciation of effective teamwork. Students are allowed to debate issues regularly, such as the uses of drugs. Pupil voice is sort regularly at Buckden to ensure our science curriculum and agenda of events meets the needs and desire of our children. Buckden Parliament allows children in our school to makes their own decisions.

#### **Rule of Law**

Children understand why rules are important when learning about the SDG goal 'Peace, Justice and Strong Institutions'. With an understanding of how laws work children can understand why speeding (momentum and speed) are crucial for safety and why animals need to be protected to ensure their species withstands any threats to their survival. Adhering to the rules of an investigation and health and safety rules ensures experiments are accurate, meaningful and safe. In Key Stage 2 children are made aware of the importance of rules limiting exposure to alcohol, tobacco and drugs.

#### **Mutual Respect for and tolerance of those with different beliefs.**

All of our pupils complete scientific investigations, resulting in making conclusions based on the results that have been gathered. These conclusions may not always be the same as those made by others however our pupils know how to respect the thoughts and ideas of their peers, even if they may disagree. In year 6 our children are provided the opportunity to learn about evolution and will be given time to think about their thoughts on evolution versus faith beliefs.

#### **Individual Liberty**

Children are, when appropriate, given the freedom to explore for themselves or to record and present their own ideas in a format that suits them during science lessons. Children are actively encouraged to share their scientific interests that they explore at home through avenues such as Show & Tell in Key Stage 1.

### **Inclusion**

All children receive quality science teaching on a weekly basis and activities are adjusted and scaffolded as necessary to individual needs accordingly.

Teachers will identify any pupils who may require targeted support and ensure that their needs are met when planning their lessons.

More able pupils are planned for in line with our policy for teaching more able, gifted and talented pupils. Greater Depth activities allow children to extend their thinking. Science lessons are taught in active ways where understanding



can be shown via drama, presentations, model making and art work which allow children who find written work more challenging and may limit their full involvement during lessons. Adults are encouraged to scribe children's ideas as much as possible to ensure they can express their full understanding.

### **Assessment, Recording and Reporting**

Assessments are made in line with the school assessment policy.

- Teachers report to parents twice a year at parents' evenings and half termly via 'How is it going?' and an annual written report to parents.
- Ongoing assessment in the form of Insight is used to aid the half-termly teacher assessment, these are moderated through staff meetings.
- GLS assessments conducted in the Autumn term 2021 allowed us to assess the impact of two COVID disrupted years.

Teachers use Assessment for learning to ensure planning is based on prior attainment and that pupils know what they need to do to achieve the next steps. Assessment for learning is a powerful means of helping teachers and practitioners to tailor their teaching to get the best improvement for each child. Key elements include:

- Learning intentions clearly identified and shared with pupils and reviewed at the end of a lesson;
- Learning opportunities and success criteria clearly identified during lessons;
- Evidence of continuous assessment taking place in lessons and informing planning: use of whiteboards, informal checks on learning and discussions with pupils
- Identification of next steps for learning and discussion with children;
- Marking for learning – comments indicating on what pupils need to do next;
- Involving pupils in peer and self assessment;
- Time for evaluation, reflection and discussion of learning strategies;
- 'Talking learning and progress' on a regular basis;
- Child friendly mark schemes;

Marking is in line with the school's quality marking and feedback policy.

Analysis of assessment data is used to track individual progress and set end of year targets. It is also used to identify vulnerable groups.

### **Resources**

- Science resources are kept in a central location which everyone has access to.
- Interactive resources are available on the shared network.
- The resources available enable pupils to experience the required areas of the curriculum and develop their scientific enquiry skills.
- A science lesson is in place

### **Culture Capital**

Encouraging children to extend their scientific learning outside of school is essential when it comes to science. Living in Cambridgeshire, we have a resource of museums, science centres and botanical gardens. Whilst many can, not all children can access these places so it is essential to utilise virtual tours in lessons or allow the children to explore websites during lessons. These websites can be placed on class blogs and the school website to allow these to be explored with parents. Talk homework with a scientific emphasis will allow children to discuss science with their parents.

### **Dyslexic Friendly School**

We recognise that some pupils, despite intellectual and other abilities, have unexpected difficulty learning to read and/or to spell and write fluently. These pupils may be described as having dyslexia.

We recognise that some of these pupils have special educational needs; that these needs have to be met to the best of our ability and resources; and that these pupils have the same right of access to the curriculum and to all the activities of





the school as all other pupils. We will therefore make the following arrangements to try to ensure that their needs are met.

- We will operate an early identification and monitoring programme to try to ensure that all pupils who are experiencing difficulties with reading and spelling are identified as early in their school career as possible.
- Where necessary we will assess and make provision for the pupil's difficulties within the accepted framework for Special Educational Needs. We will prepare an individualised education plan setting out the provision we propose to make for the pupil and the objectives for that provision.
- If, despite our efforts to ameliorate the pupil's difficulties, it is felt that there is still a noticeable mismatch between a pupil's oral skills (talking and listening) and his/her attainment in reading, spelling and general English skills, we will, following consultation with parents, refer the pupil for assessment by an Educational Psychologist. This assessment will address the need for specialist support.
- Following discussion with the Educational Psychologist we will formulate a revised individualised education plan for each pupil.
- The plan will set out the provision which we can make from within our own resources and the strategies which class teachers can adopt to help the pupil access the curriculum. All teachers who teach the pupil will be made aware of his/her difficulties and will be made aware of the agreed plan and the agreed strategies to help give the pupil access to the printed aspects of the curriculum.
- These strategies will include the use of word banks, personal (illustrated) dictionaries, the use of spellcheckers and other spelling aids. We will try, within the limits of our resources, to promote the use of Information and Communication Technology (ICT) where appropriate to support learning (e.g., reinforce basic literacy skills, editing and revising text, etc.).
- We will try to be as sensitive as possible to sources of anxiety and embarrassment e.g. being asked to read aloud in class without adequate preparation, being asked to copy large amounts of written material from the board.
- Teachers will take account of the pupil's difficulties when marking work by, for example, concentrating on content. They will also be aware of the need to find alternative ways of assessing progress rather than always through written tests and examinations.
- We will try, as far as is possible within our resources, to make appropriate arrangements for pupils to undertake tests or examinations. This may involve giving the pupil additional time; allowing the questions to be read to him/her; allowing the pupil to use I.C.T.
- We are aware that pupils with dyslexia have experienced "failure" and that often their motivation for reading and written work is low. We are conscious of the need to make these tasks as attractive and stimulating as possible and of the need to find ways of raising the pupil's motivation generally. This is particularly important since the nature of their difficulties means that there will need to be a lot of repetition of basic work to ensure that reading vocabulary, spellings etc. are learned and retained.
- We will try to suggest ways in which parents can help us help their child. We believe that parents can contribute a great deal to an educational programme by, for example, reading to their child on a regular basis; participating in paired-reading schemes; hearing their child read every day, making and illustrating personal dictionaries and word-banks; supporting the child while doing homework etc.

## **Review**

This statement will be reviewed regularly in order to reflect current trends and practice.