



## Dobcroft vision for science

At Dobcroft Nursery Infant School we know that every question a child asks is a spark of curiosity that fuels passion to make the world a better place. We aim to inspire all our children to develop self-belief and follow their science dream.

### Through the national curriculum, we will support children at Dobcroft to:

In Year 1, children will be supported to:

- **Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees**  
by exploring the school grounds, using plant hunts, handling real specimens, and learning key vocabulary through practical observation and discussion.
- **Identify and describe the basic structure of common flowering plants and trees**  
by labelling diagrams, examining roots, stems, leaves and flowers first-hand, and growing simple plants in class.
- **Identify and name a variety of common animals (fish, amphibians, reptiles, birds and mammals)**  
by using images, videos, storybooks and, where possible, real-life encounters to compare features and group animals.
- **Identify and name animals that are carnivores, herbivores and omnivores**  
by sorting animals into groups, discussing diets and linking learning to simple food sources.
- **Describe and compare the structure of common animals, including pets**  
by observing similarities and differences in body parts and discussing how these help animals survive.
- **Identify, name, draw and label the basic parts of the human body and link them to the senses**  
by engaging in practical activities that explore sight, hearing, touch, taste and smell.
- **Distinguish between an object and the material from which it is made**  
by handling everyday items and discussing what they are made from and why.
- **Identify and name everyday materials (e.g. wood, plastic, glass, metal, water and rock)**  
through sorting activities, classroom investigations and real-life examples.
- **Describe the simple physical properties of everyday materials**  
by investigating texture, hardness, transparency and flexibility through guided exploration.
- **Compare and group materials based on their properties**  
by conducting simple tests and recording findings using tables, pictures or charts.
- **Observe changes across the four seasons**  
by making regular observations outdoors and recording changes in weather, plants and daylight.
- **Observe and describe seasonal weather and changes in day length**  
by keeping simple weather charts and discussing patterns across the year.
- **Ask simple scientific questions and recognise they can be answered in different ways**  
by modelling questioning skills and encouraging curiosity during investigations.
- **Observe closely using simple equipment**  
by using magnifying glasses, measuring tools and simple recording sheets.
- **Perform simple tests and record observations**  
by carrying out structured investigations and drawing or writing about what they notice.
- **Use simple data to answer questions**  
by creating pictograms, tally charts or simple tables to interpret results.

In Year 2, children will be supported to:

- **Explore and compare the differences between living, dead and non-living things**  
by sorting examples, discussing life processes and exploring the school environment.
- **Identify that living things live in habitats suited to their needs**  
by investigating local habitats and discussing how animals and plants are adapted to them.
- **Describe how habitats provide for the basic needs of plants and animals**  
through outdoor learning, habitat surveys and class discussions.
- **Identify and name plants and animals in their habitats, including microhabitats**  
by exploring areas such as under logs or in leaf litter and recording findings.
- **Describe how animals obtain food using simple food chains**  
by constructing visual food chains and discussing predator and prey relationships.
- **Observe and describe how seeds and bulbs grow into mature plants**  
by planting and caring for seeds, making regular observations and recording growth.
- **Describe what plants need to grow and stay healthy**  
by carrying out simple comparative tests involving light, water and temperature.
- **Notice that animals, including humans, have offspring that grow into adults**  
by sequencing life cycles and comparing stages of growth.
- **Describe the basic needs of animals, including humans, for survival**  
by linking learning to everyday experiences and discussing water, food and air.
- **Understand the importance of exercise, healthy eating and hygiene**  
by exploring balanced diets, discussing physical activity and learning about handwashing and dental care.
- **Identify and compare the suitability of materials for particular uses**  
by testing materials for strength, waterproofing and flexibility in practical investigations.
- **Explore how the shapes of solid objects can be changed**  
by bending, twisting, squashing and stretching materials to observe changes.
- **Ask questions and use different types of scientific enquiry**  
by planning simple investigations with support and choosing ways to test ideas.
- **Observe closely using simple equipment**  
by measuring, comparing and recording accurately.
- **Perform simple comparative tests**  
by following clear steps and discussing fair testing in age-appropriate ways.
- **Identify and classify**  
by sorting and grouping living things and materials using clear criteria.
- **Use observations and ideas to suggest answers to questions**  
by encouraging children to explain their thinking verbally and in writing.
- **Gather and record data to help answer questions**  
By using charts, tables and simple graphs to present findings clearly.

**Our implementation:**

Science is delivered through a carefully sequenced and progressive curriculum that builds substantive and disciplinary knowledge over time. Key concepts are revisited and developed to ensure secure understanding and long-term retention. Lessons are structured to promote curiosity, enquiry and problem-solving, enabling pupils to apply their knowledge in meaningful and practical contexts. Children are explicitly taught how to work scientifically: they ask and refine questions, plan and carry out fair tests, use appropriate equipment, gather and interpret evidence, and draw reasoned conclusions using accurate scientific vocabulary.

Learning is further enriched through purposeful educational visits, workshops and partnerships with external organisations that provide real-world contexts for scientific understanding. Extracurricular opportunities, including Science Club and the Science Ambassadors programme, promote leadership, responsibility and a sustained enthusiasm for the subject. Teachers make clear and deliberate links

between science and other curriculum areas, particularly mathematics and English, ensuring that pupils recognise how scientific knowledge and enquiry skills underpin and strengthen their wider learning.

## EYFS

Science in the Foundation Stage is covered within the 'Understanding the World' area of the EYFS Curriculum. It is introduced both directly and indirectly through activities that encourage every child to explore, observe, ask questions, and talk about the natural world around them.

Science is planned into termly themes as part of the area of learning 'Knowledge and Understanding of the World'. In working towards the Early Learning Goals, children develop skills, knowledge, and understanding that help them make sense of living things, materials, seasonal changes, and their environment. This forms the foundation for later work in Science in Key Stage 1.

In the Foundation Stage, children find out about the natural world around them and begin to develop scientific vocabulary. Science activities are planned to provide opportunities for exploration, observation, discussion, and recording. These activities are based on first-hand experiences and aim to inspire children's curiosity, wonder, and enthusiasm, making learning imaginative and enjoyable.

Role play and drama are used to make science meaningful, allowing children to develop scientific language and concepts. For example, children may engage in activities like exploring plant growth through storytelling, investigating seasonal changes by acting out weather patterns, or observing animals in familiar settings.

Throughout the year, children develop early scientific enquiry skills such as observing closely, using their senses, asking simple questions, and making predictions. They also begin to use a variety of resources such as magnifying glasses, natural materials, pictures, and simple charts to support their learning and understanding of the world.

Science		
Three and Four-Year-Olds	Understanding the World	<ul style="list-style-type: none"> <li>• Use all their senses in hands-on exploration of natural materials.</li> <li>• Explore collections of materials with similar and/or different properties.</li> <li>• Talk about what they see, using a wide vocabulary.</li> <li>• Explore how things work.</li> <li>• Plant seeds and care for growing plants.</li> <li>• Understand key features of the life cycle of plants and animals.</li> <li>• Begin to understand the need to respect and care for the natural environment and all living things.</li> <li>• Begin to understand the importance of healthy food choices, physical exercise and good hygiene.</li> </ul>
Reception	Understanding the World	<ul style="list-style-type: none"> <li>• Explore the natural world around them.</li> <li>• Make observations and draw pictures of animals and plants.</li> <li>• 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.</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>
Early Learning Goals (ELG)	The Natural World	<ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• 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.</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>

## Impact of our science curriculum

Science teaching begins in foundation stage and continues to the end of Year 2. It is delivered in a developmentally appropriate way, beginning in foundation with exploration of the natural world through stories, high-quality non-fiction texts, play-based learning and first-hand investigation. Learning builds progressively across Key Stage 1, with careful curriculum design, clear sequencing and subject leader monitoring ensuring strong coverage, depth and breadth in line with the National Curriculum.

Scientific vocabulary is progressive and embedded within planning. Key scientific terms are explicitly taught, modelled and revisited so that children build on prior knowledge and develop confidence in using accurate vocabulary to explain their thinking.

We follow a concept-led science curriculum. Six key scientific concepts underpin our long-term and medium-term plans: plants; animals including humans; everyday materials; seasonal change; living

things and their habitats; and working scientifically. These interrelated concepts are revisited in a range of contexts from Foundation stage to Year 2 and reflect the strands of the National Curriculum. For example, in Foundation stage children explore seasonal change through observation and discussion; in Year 1 they observe and record changes across the four seasons; and in Year 2 they apply this understanding when learning about habitats and how living things depend on their environment. The concept of working scientifically runs throughout, enabling children to progressively develop skills in observing, questioning, identifying, classifying, testing and recording.

Children use a wide range of practical resources to support their science learning, including magnifying glasses, simple measuring equipment, natural materials, plants, models, photographs, non-fiction texts and digital resources. Practical enquiry and first-hand experiences are central to developing secure understanding.

Children experience a rich and progressive science curriculum at Dobcroft Nursery Infant School. They are enthusiastic about science and can explain what science is and recognise when they are engaging in scientific enquiry. They develop curiosity about the world around them and confidence in exploring, investigating and explaining what they observe.

### **Inclusion**

All children will have full access to the science curriculum, regardless of ability, gender, race or background, in line with the school's Equal Opportunities Policy. Science is taught inclusively within the classroom, enabling all pupils to participate in practical enquiry and discussion. Teaching is carefully adapted to ensure that every child can access both substantive scientific knowledge and disciplinary skills. Teachers use targeted questioning, scaffolding, pre-teaching of key vocabulary and differentiated tasks to support or extend thinking, enabling pupils to work scientifically at an appropriate level.

Where appropriate, teachers adapt the depth and breadth of content, provide additional adult support, or offer increased challenge through open-ended investigations and higher-level questioning. Pupils with special educational needs and disabilities are supported through practical, visual and structured approaches to learning, while those who are more able are provided with opportunities to deepen their reasoning, apply knowledge in unfamiliar contexts and design more complex investigations. Pupils learning English as an additional language are supported through explicit vocabulary instruction, modelling and collaborative learning. In rare cases, individualised programmes may be implemented to meet complex or significant needs. We are committed to ensuring that every pupil achieves well in science and develops confidence, curiosity and competence as a young scientist..

### **The importance of scaffolding for pupils with SEN**

Article 29

I have the right to become the best  
I can be.



Scaffolding is widely considered to be an essential element for effective teaching, and all teachers use various forms of instructional scaffolding in their teaching. It is particularly useful for pupils with SEN for the following reasons:

1. It can enable them to access the same curriculum content as their peers.
2. Pupils are more likely to be able to learn independently.
3. It builds confidence and can reduce negative emotions and self-perceptions that pupils with SEN may experience.

#### **For all children:**

- Breaking tasks down into constituent components when first setting up independent practise
- Starting expositions at the point of pupils' current understanding
- Combining a verbal explanation with a relevant graphical one where appropriate
- Using concrete representation of abstract ideas

- Making the steps in a process memorable and ensuring pupils can recall them

<u>Strategy</u>	<u>How the strategy is used</u>
Talking partners	Children can rehearse ideas and get feedback and ideas from their peers
Use of visuals such as pictures/videos	Supports children's understanding of the science they are learning. Give the children a visual 'hook' to help them remember and use the information given
Scribing for the children	Some children can demonstrate their science knowledge orally and asking them to write for themselves might put a barrier on the knowledge they can demonstrate.
1:1 work, small group work, adult supervision	T/TA to be placed near to children who may need support to access the lessons. T/TA to work 1-1 or in a small group with children who may adult supervision to achieve the task.
Child's carpet space/position in the room	Have children with any visual or hearing impairments near the front. Place the T/TA with children who may need help with listening, focus, discussing or sharing and need a good role model for language.
Concrete objects such as plants/everyday materials	Where possible, children have access to real objects which they can explore and use to aid their understanding
Physical/practical activities	Many science lessons involve practical activities such as sorting, exploring, investigations, grouping and experiments. These activities support children's understanding and to work collaboratively with others,
Assistive technology	Clicker 8, talking postcards, computer games and ipads may be used in science lessons to support children with SEN to access their learning Explofy stimulates conversations.
Accessible/appropriate resources	Pencil grips, standing desks and wobble cushions are some of the resources that may be used in a science lesson to make it accessible to all pupils
Pre-teaching and reinforcing vocabulary (knowledge organisers)	Star words at the beginning of the lesson, topic displays, word mats, sentence starters etc used throughout science topic to build understanding of key vocabulary
Changing/adapting questioning	Formative assessment is used to adapt questions to meet the needs of the children where appropriate. This may be for the whole class or individual children.
Timers	Timers can be used to support the whole class/small group/individual. They may be used to give children time to answer questions or to help them with focus and attention.

WAGOLs and modelling	Activities are modelled for children to help scaffold their understanding. WAGOLs can be shown and created by staff or child to emphasise expectations and aid understanding.
Parallel activities	Where children cannot access the main class activity, they will be given parallel activities which mirror the learning done by the rest of the class at an appropriate level.
Regular retrieval practice	Lessons include links back to previous lessons or topics to help children retain essential vocabulary and information they could draw on more easily in order to apply their knowledge.
Reading aloud	Written sources can be read aloud or supported with visuals to help children's understanding.
Explicit teaching of tricky concepts	Key word banks, explicit teaching of challenging concepts using clear and simple vocabulary, use of visuals and actions to help with understanding.
Learning stops	Used to check understanding and help keep children on task
Books – schools Library service	Have access to relevant books/texts to revisit learning e.g. Books about mini beasts
Phonic frames for spelling, sound/phonic mats, phonic workbooks	Used as required for written task.

### Assessment in Science at Dobcroft Nursery Infant School

At this school, the purpose of assessment is to check what children have understood, know and remember. This helps us to identify what we need to teach them next. We use both **formative** and **summative** strategies for different reasons.

<b>Formative assessment</b>	Occurs during the learning. Allows teachers and children to change strategies mid-learning. Identifies areas for improvement. Gives opportunities for children to implement feedback and get additional support.
<b>Summative assessment</b>	Occurs at the end of the learning process. Provides a final evaluation of knowledge and skills. High stakes testing that often involves ranking children. Provides children with a grade.

### Our assessment strategies

The table below describes the range of assessment strategies used at DNIS. These strategies are used for a number of reasons including: improve recall and fluency of crucial knowledge, skills and concepts, to check understanding, to inform teaching/planning and to assess children's starting points and progress.

Method of assessment	Formative/summative	Notes Use the questioning guide in the table below to support question generation
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Questioning Low stakes	formative	Tips for effective questioning: Start Broad, Then Narrow: Begin with open-ended questions and follow up with specifics. Pause for Thought: Allow children time to process and respond. Tailor Questions to Levels: Adapt prompts to suit different learning abilities.
Observation Low stakes	formative	Observing children's interactions, thought processes and skills when completing tasks, answering questions or in conversation informs feedback and future teaching.
Flash back Low stakes	formative	Each section should have a clearly defined purpose e.g. retrieval from previous lesson, last week and last block etc. Or Retrieval of component knowledge required e.g. for time: 5 times table, fractions, 1/2 and 1/4, etc.
BBQ (bring it back questions) Low stakes	formative	These are questions based on crucial knowledge (pre written) across all subjects for the teaching done so far. These can be used at any point in the day when you have a spare few minutes. You can use them as you wish, e.g. as a whole class or as a "best of 3" type scenario.
Purple Mash quiz Low stakes	formative summative	Quizzes are made to test crucial knowledge.
Concept map Low stakes	formative summative	Linked to crucial knowledge. Teacher gives a blanked out knowledge organiser with key words left as aide memoires for children to add to. It can be used as a tool to inform teaching at the start of a block, through out the teaching block to embed new learning or as an end of block assessment to show progress.
Standardised Testing High stakes	summative	White Rose Science end of topic assessment White Rose of term assessments.

### How we ensure progress as a result of assessment

When gaps in knowledge or misconceptions are identified, we use the following strategies to ensure these are addressed.

Strategy	Notes
In the moment	Address misconceptions verbally to individuals or small groups
Same day interventions	Conducted with children who have been identified as not gaining secure understanding within the lesson. Recorded in books or verbal.
Morning work	Used as pre-learning, or to address misconceptions or to further embed knowledge to improve fluency.
Adapting future lessons	<ul style="list-style-type: none"> <li>Altering the sequence of lessons as required i.e. adding in an additional lesson based on observation/assessment of starting points of children's knowledge and skills.</li> <li>adding misconception in to flashback/BBQ etc. so it is revisited as part of the lesson/day</li> <li>Implementing a learning stop.</li> <li>Providing additional 1:1 or small group support to identified children in subsequent lessons.</li> </ul>

Adaptations	Learning is adapted (based on previous lessons and/or knowledge of the child) to ensure all children are successful
Communication with parents	Ongoing with parents of children that don't have an individualised home learning book but occasionally need additional support and personalised learning is sent home.