OAKDENE PRIMARY SCHOOL

SCIENCE POLICY

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This document is a statement of the aims, principles and strategies for the teaching and learning of Science at Oakdene Primary School.

Aims and Intent

Science is a core subject and at Oakdene we believe that it is crucial to provide a rich, exciting and ambitious science curriculum. Science learning begins in the Early Years through understanding the world with those key early experiences forming the beginning of key concepts that are built upon in Year 1 and beyond.

The curriculum at Oakdene is designed to build the children's knowledge and understanding using underlying concepts to weave a golden thread throughout the curriculum. The teaching of science through models allows children to make links throughout different subjects and year groups and supports their deeper understanding. Furthermore, science skills are taught alongside knowledge in each lesson to ensure the skills are meaningful and are taught regularly.

At Oakdene children come to school with very varied scientific backgrounds based on situations which have arisen naturally in their day-to-day experiences inside and outside the home. We enhance our science curriculum by providing experiences from visitors and trips to give the children a real world understanding of science. We believe that our job is to increase the science capital of the children, providing the foundations for a range of valuable science careers.

Oakdene have been awarded the PSQM (Primary Science Quality Mark) at Gilt Level (previously Gold). This was a fantastic achievement for Oakdene and developed and strengthened our Science curriculum ensuring it was outstanding throughout school. PSQM focused on the development of Science across all key stages including leadership, teaching, assessment, monitoring and most importantly the children's enjoyment of Science including strengthening science capital.

Science Principles at Oakdene

At Oakdene, we have a set of five key principles that underpin our science teaching and learning. These have been created by pupils, staff and governors to ensure science teaching and learning are outstanding across school.

1. Teaching shows progression of skills and vocabulary throughout year groups

2. Science is practical and encourages enquiry skills

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3. Science is engaging and exciting

4. Science is challenging and encourages independent learners

5. Learning in science is enriched by trips and visitors linked to topics

Science Teaching

Science is taught using a dual objective curriculum in which lessons have a knowledge focus and a skills focus.

Knowledge

At Oakdene, we ensure that science learning is meaningful by providing the children with an extensive and connected knowledge base. New knowledge builds on previous learning and the curriculum is planned to increase in complexity, while models bridge across topics and are memorable to the children. The teaching of science through science models allows children to make connections and progress through different years and subjects.

There are four key science models:

The Particle Model
Force Arrow Model
Big Picture Model
Energy Transfer Model

Skills

At Oakdene we ensure that working scientifically is not taught discretely but is woven into all of our science lessons. The curriculum is designed to ensure that the children leave our school with the key skills they need to be successful scientists.

There are five key science skills:

Explaining Science
Classification
Designing Experiments
Data, Tables and Graphs
Making Conclusions

Using the skills progression board, teachers from Reception to Year 6 know explicitly what skills look like in their year group. Furthermore, each skill is built upon year by year and increases in complexity.

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Focused Recording

In order to do more practical work, at Oakdene we use focused recording in science lessons. This means that one skill will be focused on and recorded in one lesson e.g. prediction writing, writing a clear method, drawing a graph. This means that skills are focused on in more detail and practical work doesn't involve a full investigation write up every time. The designing board should be used in KS2 to plan a full experiment at least once per topic to combine the skills and allow the children to put all of the elements together.

Key Scientists

Each year group from Y1-Y6 have 'Key Scientists' to focus on, one 'classic' scientist and one modern scientist. The Key Scientists are linked to careers in Science and each year group dedicates a lesson to learning about the scientist and their career. We hope this will increase the science capital of the children and their understanding that Science is a career choice available to them.

Pupils' Scientific Experiences

1. Each child enters Oakdene Primary School with a range of experiences built up in the home and in the environment. The school recognises that children learn in different ways, and at different rates. We respond to different needs and provide opportunities to achieve high personal standards of scientific understanding by matching children's learning to previous experience and by setting high expectations.

2. In Early Years, Science (Understanding the World) is a Specific Area of Learning and will be a visible part of the indoor and outdoor learning environment on a daily basis.

3. From Y1 – Y6 teachers will endeavour to teach science in the outdoor environments, utilising our forest school and natural environment where possible.

4. We believe that every child should experience the world beyond the classroom as an essential part of learning and personal development, whatever their age, ability or circumstances. Pupils not only experience science in concrete and novel settings, but also on trips such as to the Life Centre and with visitors to school.

5. From Year 1 to Year 6 children will be taught a dedicated Science lesson for one afternoon each week.

6. Science should be taught through practical work as often as possible and from Y1 to Y6 children should be planning and conducting their own experiments with increasing difficulty.

7. Techniques and practices from 'Thinking, Talking, Doing Science' should be implemented throughout school in Science.

8. Excellence in Science is celebrated through our Practical Science displays in each classroom. Furthermore, each class has a Lightbulb award, in which children are encouraged to ask scientific questions and the most interesting questions are rewarded.

The Role of the Teacher

1. All class teachers are responsible for the planning, preparation, teaching and assessment of Science.

2. The style of classroom organisation and management should ensure a positive learning environment. Teachers should consider the appropriateness of methods employed given the requirements of the National Curriculum and school philosophy.

3. Lessons should be taught using dual objective planning focusing on a knowledge objective and a skills objective.

4. Science teaching, at all levels should include:

    - Exposition by the teacher (directing, instructing, demonstrating, explaining, questioning, evaluating).
    - Discussion between teacher and pupils and between pupils.
    - Regular practical work and investigations
    - Focus on the five science skills
    - Links with Mathematics through recording of results and methods used to obtain results.
    - A focus on the acquisition of scientific vocabulary

5. The class teacher is expected to:-
    - Early Years to deliver Statutory Early Years Foundation Stage Framework.
    - Deliver Statutory National Curriculum Science.
    - Carefully plan and evaluate lessons.
    - When planning, consider the principles and techniques from 'Thinking, Doing, Talking Science' and implement these in lessons.
    - Differentiate to meet the needs of all children.
    - Mark children's work on a regular basis, in accordance with the agreed marking policy.

- Assess outcomes of activities and learning objectives.
- Be aware of available resources, ensuring ready access to resources in the classroom for all children.
- Think carefully about vocabulary used within science lessons and about the style and nature of questions, using open ended questions where possible and develop children's ability to process questions and stretch their thinking.
- Involve parents/carers in children's learning where possible such as through open mornings/afternoons.

Role of the Science Subject Leader

1. To take the lead in policy development and the implementation of the National Curriculum to ensure progression and continuity throughout the school.

2. To monitor progress in Science to ensure consistency of approach and the quality of teaching and learning.

3. To take responsibility for the purchase and organisation of central resources and classroom resources.

4. To keep up-to-date with developments in Science education.

5. To disseminate information to colleagues as appropriate.

6. To identify individual and whole school professional development needs and opportunities. To deliver staff training in related to Science.

7. To identify long term goals in the sustained school improvement plan.

Role of Parents and Carers

1. Attending open days, parent teacher consultations etc. so they stay informed about the Science work of the school.

2. Supporting the efforts of teachers in classrooms by offering to help at home if difficulties arise.

3. Discuss with children the world around them and encourage and answer their questions.

Resources

1. Each teacher has access to a wide range of Science resources in the Science cupboard. These have been organised by each strand of science. These resources should be used regularly and returned.

Science should be 'visible' in all classrooms through the Practical Science display. This is the class teacher's responsibility.

2. Each year group has ready access to commercially produced science materials. Focus education learning challenges, Thinking Doing Talking Science Staff meeting materials.

3. Class teachers will liaise with Team Leaders and Science Subject Leader if the need for new resources is identified.

Evaluation and Monitoring

The subject leader and senior leadership team are involved in a system of regular review which:

- examines policy and practice
- monitors the quality of teaching
- scrutiny of work
- monitors and evaluates the effective use of pupil records
- enables adjustments to be made, where necessary
- advises and informs planning

Assessment

1. From Y1-Y6 formative assessment is used at the end of each lesson to assess the children against the skill that has been focused on. This is recorded in pupils' books using 'Assessment Rockets'.

2. Knowledge is assessed formatively throughout the topic and summatively using a short test at the end of the topic. Teachers record their final judgements for each child using the assessment trackers.

3. Observational assessment is used within Early Years against the early learning goals.

Reporting to Parents/Carers

Annual written reports are made to parents in the summer term. Reporting in Science focuses on attitudes to science, achievements in all the aspects of 'Understanding of the World' in early Years or achievements in all areas of National Curriculum Science.

Parents' consultations take place in the Autumn term and Spring term. The annual report to parents is shared during July.

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Where there is concern about a child's progress, parents will be contacted by the class teacher. The SENCO will also be informed. Parents can also liaise with class teachers at any time during the school year to discuss their child's progress.

Marking Policy

Work in Science is marked against the skills objective that has been focused on and is then recorded on the 'science rockets' at the end of each lesson. Work is marked and shown feedback through the use of stickers. No written marking in Science.

Special Educational Needs

All children are entitled to first quality teaching and class teachers must ensure that children who are considered SEND have an entitlement to personalised teaching from the class teacher.

Evaluation and Development

The successful delivery of science and its development throughout the school will be seen in the following criteria...

1. A higher level of child progression and attainment (e.g. Foundation Stage Profile results, termly assessments, SATs results and teacher assessment).

2. An increase in confidence and enthusiasm in, and for the subject both by children and staff.

3. Successful implementation of the EYFS and the National Curriculum for science.

4. Visual evidence of scientific work around the school e.g. an investigation area indoors and outdoors in Foundation Stage, graphs; shape and measurement work; evidence of children 'doing' practical and investigation tasks recorded as photographs or through display as well as work in books.

5. Positive feedback from parents, children, governors, visitors, School Improvement Partners, external validation, Ofsted etc.

<u>Online Science Provision during COVID-19 – Remote Learning</u>

During the pandemic, we remain ambitious for all pupils and continue to offer a broad curriculum. Science continues to have a high profile and all children can access Science provision at home through remote learning.

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In each Key Stage, children are provided with weekly learning linked to Science. This is provided in a variety of ways including: online videos from both internal and external providers, practical activities easily accessed from home with household items and knowledge-based activities. Virtual visits have also been a key feature to bringing learning to life and to consolidate prior knowledge of key scientific concepts, for example, STEM projects

canalrivertrust.org.uk/explorers/learning-bundles

Rights Respecting Schools Article 29 states that education must develop every child's personality, talents and abilities to the full. This adheres to our approach to the teaching of Science.

L. Bestwick
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