SCIENCE SCIENCE AT SOUTHDALE

Southdale C of E Junior school
Shining like stars in the universe

Mission Statement

At Southdale, we strive to provide a science curriculum that sows the seeds for encouraging the next generation of aspirational scientists, engineers and designers.

We aim to provide as 'hands-on' an experience as possible, by giving children the skills necessary to explore scientific concepts through investigative practice, wherever and whenever possible.

Through this approach, children are given the opportunity to pose questions and discover scientific phenomena through their own initiative, fostering curious and inquisitive minds, and above all, a genuine love of science.

We intend to fulfil our aims by: providing a consistent approach across school in purposeful and practical activities; using and promoting scientific vocabulary correctly in all science lessons; ensuring staff have the knowledge and confidence to lead science effectively across all year groups; making science accessible to all through innovative approaches to recording; having up-to-date and adequate resources – in both equipment and in our teaching and learning, and finally, raising and maintaining the high-profile of science as core subject that it is.

How we teach Science

Science is taught discretely at Southdale through a practical approach, which promotes working scientifically and 'hands-on' learning wherever possible. If there are obvious links to be made with our narrative curriculum then this is encouraged (e.g. in Year 5, during the narrative 'The Land of Neverbelieve', the children study lines of latitude, longitude etc. this is then applied in their Earth and Space topic when looking at times zones). If there are no obvious links to our narrative curriculum, then teaching should continue to discretely follow the National Curriculum programs of study.

Misc: Low-stakes testing

Whiteboard questioning and quizzing – much like maths oral-mental starters – to test prior learning. E.g.

- Show me on your whiteboard the correct symbol for a bulb…
- On your whiteboard write and I for irreversible or an R for reversible: melting chocolate, burning wood, etc…

iPads quizzes on SMART (Monster Quizzes) to activate prior knowledge from throughout the year.

Phase 1: Pre-assessment

Mind maps are given to the children with the core learning from previous years and the current topic. A short discussion takes place where the children are then able to write down anything they can remember from previous topics. Once the children have written everything they can remember, they will then be reminded of their prior learning by the class teacher (these slides are used by each year group so there is consistency). Anything extra they add to their mind-map (what they should already know) is underlined in green. This highlights to the class teacher where the gaps or misconceptions are from previous year groups to inform their planning. Throughout the topic the children add anything they have learnt to their mind-map, in a different colour.

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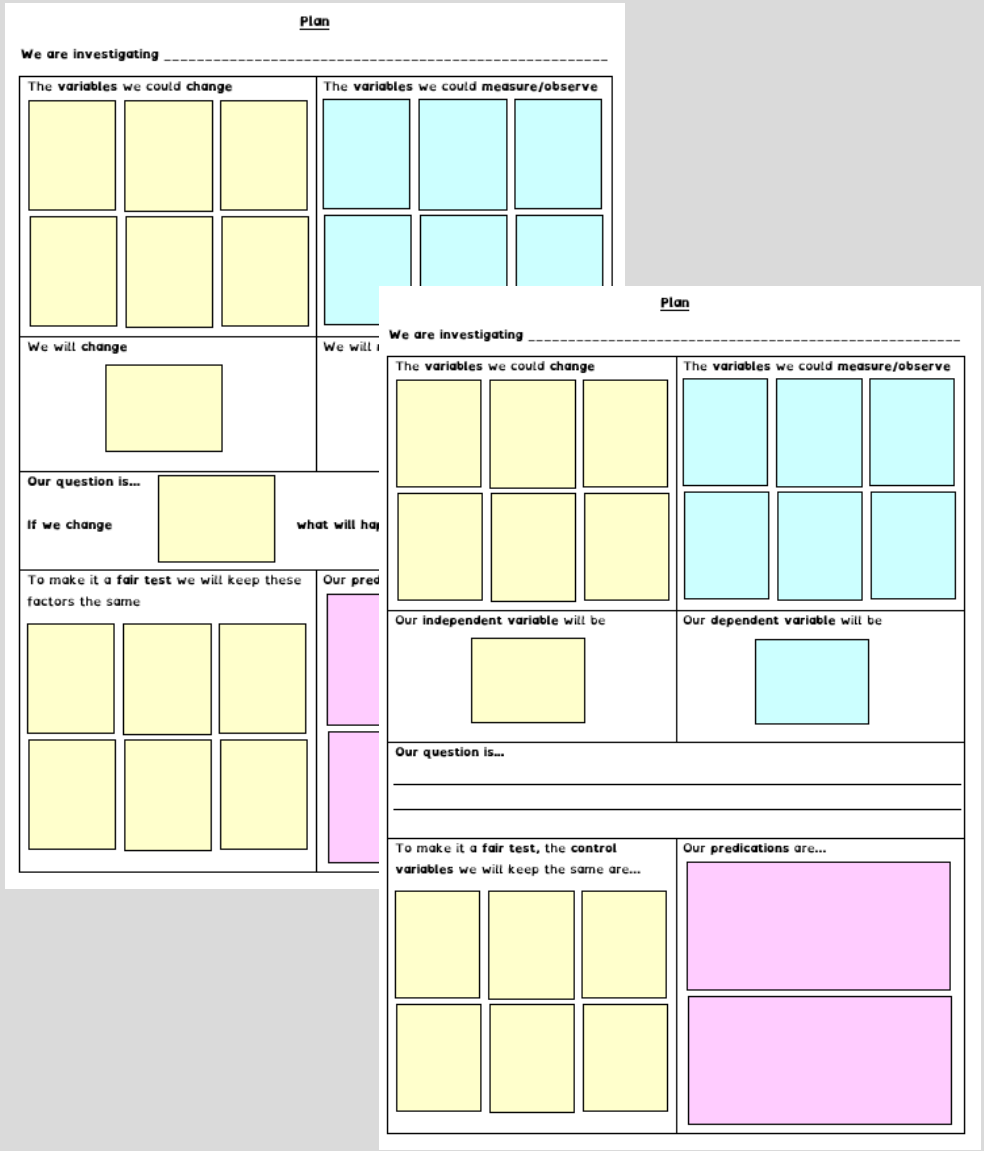
Phase 2: Programs of Study

This is preferably through practical activities – working scientifically to develop science skills. E.g. Light – children will learn that light travels in straight lines by using mirrors and torches to observe and discover this phenomenon themselves. Southdale promotes investigative activities so that the children can grasp concepts through a practical approach. Using the National Curriculum's array of practical scientific methods, processes and skills in working scientifically, there are many ways that the teaching of the programme of study content can be evidenced.

In some instances, there is no requirement to 'write-up' everything for the sake of it: activities can be evidenced through filming and presenting on iPads, for example. In Light (Y3), the requirement to 'notice that light is reflected from surfaces' can be done through filming or pictures. Any Evidence of this nature is to be placed on SEESAW. Any written work e.g. creating life cycles, drawing graphs, annotating diagrams are to be put into their science books.

Phase 3: Working Scientifically – Fair Testing

1. Use post-it plan to identify variable and create data table. Ensure that the teacher models the use of the correct vocabulary through the test.
2. Children 'tinker' with any equipment to gain ideas on how they may conduct the fair test they are undergoing.
3. Children plan their own scientific enquiries using the post-it planning format to isolate variables and create a plan of how they will conduct the enquiry.
4. Children undertake enquiry. Class teacher or a child (Question Asker) to film and record questioning throughout the enquiry/test.
5. Discussion of their findings using question stems.
6. The "Write up".



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Lower KS2:

Findings from enquires and investigations can be presented on SEESAW. This could include: the setting up of the investigation or observing and taking measurements. The class teacher or children (Question Askers) can film any child whilst they are working and ask questions relating to their enquiry methods and what they are aiming to find out. When initially planning the investigation and making predictions, this should be done in small groups and written together. Findings could be linked in a cross-curricular manner to English (Letters, reports, etc.), maths (tables, charts) and other subjects, e.g. issues such as plastics' impact on the environment if covering insulation, etc. (A plastic material may be the best insulator, but is it the best for our world?). Children can literally 'present' their findings by filming their activities on the class iPads. Where scientific diagrams, labels, classification keys, tables, scatter graphs, etc. are concerned, these are presented in children's own science book.

Upper KS2:

Findings from enquires and investigations can be presented on SEESAW. This could include: the setting up of the investigation or observing and taking measurements. The class teacher or children (Question Askers) can film any child whilst they are working and ask questions relating to their enquiry methods and what they are aiming to find out. Findings could be linked in a cross-curricular manner to English (Letters, reports, etc.), maths (tables, charts) and other subjects, e.g. issues such as plastics' impact on the environment if covering insulation, etc. (A plastic material may be the best insulator, but is it the best for our world?). Children can literally 'present' their findings by filming their activities on the class iPads. Where scientific diagrams, labels, classification keys, tables, scatter graphs, etc. are concerned, these are presented in children's own science book. Children can 'present' their findings by filming their activities on class iPads or writing a short explanation.

Where scientific diagrams, labels, classification keys, tables, scatter graphs, etc. are concerned, these are presented in children's own science book. As the national curriculum specifies findings to be recorded with 'increasing complexity', more individual write ups may be necessary than in lower KS2, however, a full traditional 'write-up' is not required all of the time. It may be that the focus of an activity is presenting data: a graph may be the only outcome (as long as the statutory requirements of working scientifically are evidenced throughout the year).

Phase 4: Assessment

Written SATS-style questions (known as topic tests) at the end of a unit provide a book-based evidence that topics have been well taught and well understood by children, thus informing teacher assessment. HeartStart is an excellence source of these. The questions can be read to the children and discussed as they are there to deepen and support the learning.