

How to use Switched on Science in the Early Years



Children make fantastic scientists because they have naturally inquisitive and creative minds. The *Switched on Science in the Early Years* teaching units, accompanying online resources (available on My Rising Stars) and posters have been created specifically for practitioners working with young children in Foundation Stage. Each unit provides engaging, quality science experiments to harness curiosity and develop children's scientific ability and personal development.

The Early Years Framework

This is at the heart of teaching and learning in Foundation Stage. The framework is an integral part of this resource and the activities cover the prime areas and Early Learning Goals. The activities in this book are suggestions and should be used alongside the practitioner's personal observations of each individual child's interests, personal learning styles and developmental stages.

Using the units

Switched on Science in the Early Years promotes thoughtful, well-planned learning through play and the children learn mainly through independent choice. The flow of the activities in each unit begins with an Introductory Activity, followed by a choice of Focussed Explorations and Free-flow Explorations. Finally, there is a section to extend learning. While the activities in each unit might appear to suggest a sequence, it is essential that you look through the activities and think about the best way to use them with your children. Follow the children's lead when they become fascinated with something in order to direct their experience and understanding. You may also choose to use a popular story or a theme as a base for the unit.

Using the setting

This book offers flexibility, and we would encourage you to respond to children's interests and use the activities as part of providing a setting that is rich with

motivating opportunities extending across all areas, so that there are:

- opportunities for children to generate ideas and initiate activity
- contexts for learning linked to everyday experiences
- opportunities for children to develop personal independence.

Questioning and assessment

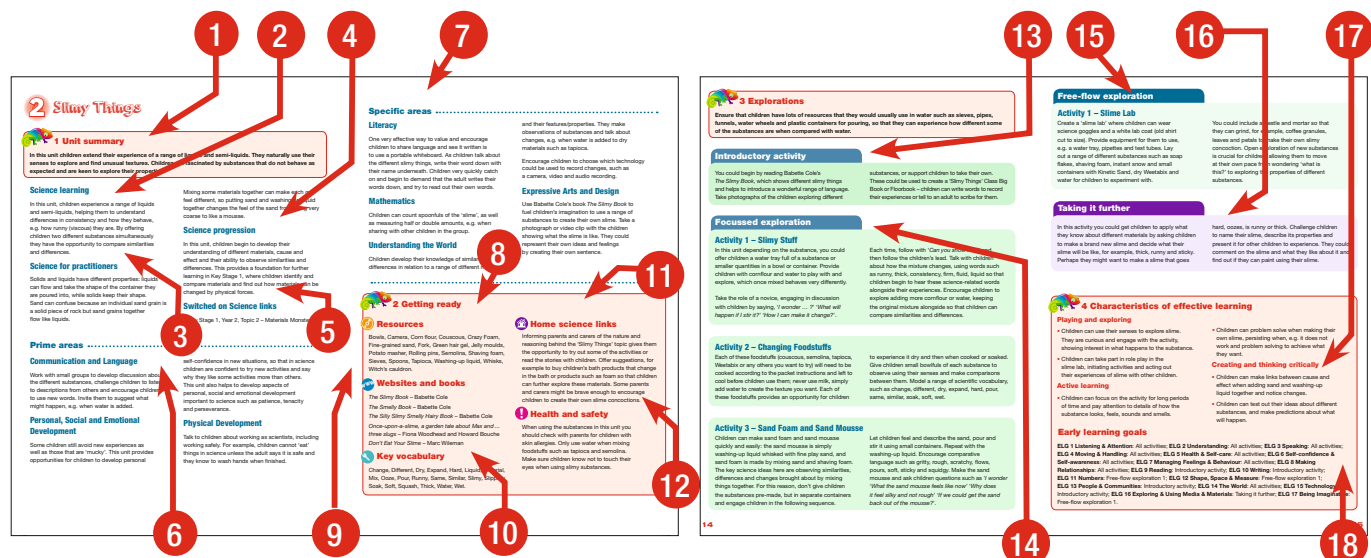
'I wonder ...' statements are used throughout this resource to scaffold dialogue between practitioner and child, encouraging reflection and decision making. When using the activities you will know when to observe and listen, and how to extend children's experiences by using statements and questions to challenge and extend. Assessment forms an integral part of this book. Each unit covers a range of Early Learning Goals and contains clear guidance on how to link an activity to characteristics of effective learning.

Timings

There is a lot of flexibility built into how you choose to use this book; you may devote several weeks to a single unit or dip into units to use one or two activities. You may find that the children's engagement is higher if you are prepared to be flexible about the timings. For example, one of the authors introduced the 'Frozen' topic to her class in response to their fascination with reindeer; although the plan was to spend four weeks on the topic, their explorations lasted from Christmas until Easter!

Some units, such as 'Whatever the Weather' and 'Food of the Seasons', will work best if revisited throughout the year alongside other topics. Although it is likely that you will find yourself using some material from all of the units, you will probably only explore four or five topics in depth over the school year.

Using the sections in this book



- 1. Unit summary** – A quick overview of the purpose and content of the unit.
- 2. Science learning** – Explains the intended science learning to be developed with children.
- 3. Science for practitioners** – Offers specific science background knowledge for teachers and support staff.
- 4. Science progression** – Suggests how the science learning in this unit lays the foundation for learning in later primary years.
- 5. Switched on Science links** – Identifies links for progression in the *Switched on Science* Key Stage 1 materials.
- 6. Prime areas** – Offers suggestions for following the areas essential for the healthy development and future learning of children: Communication and language, Personal, Social and Emotional Development, Physical Development.
- 7. Specific areas** – Offers suggestions for the specific areas which help children develop learning in the following areas: Literacy, Mathematics, Understanding the World, Expressive Arts and Design.
- 8. Resources** – Provides a list of the main resources required for the unit. Additional resources and activities can be downloaded from My Rising Stars (www.risingstars-uk.com).
- 9. Websites and books** – Contains suggestions for children's books and useful websites. Full website links are available on My Rising Stars.
- 10. Key vocabulary** – Aims to support practitioners by suggesting key words to use with children.

- 11. Home science links** – Activities designed to encourage parents to use and extend children's experiences in science beyond the school.
- 12. Health and safety** – Issues relating to health and safety are highlighted. You are advised to refer to your copy of: *ASE Be Safe 4th Edition* (9780863574269) available from the Association for Science Education website or log on to the CLEAPSS website.
- 13. Introductory activity** – Suggests ways in which you could introduce children to a topic, e.g. reading a story, introducing a character.
- 14. Focused exploration** – Teacher-directed activities focussing on specific ideas and ways of working in science.
- 15. Free-flow exploration** – Suggestions for free-flow exploration activities where children are in control and can lead their learning.
- 16. Taking it further** – Suggestions for additional activities to further extend learning and challenge more able children.
- 17. Characteristics of effective learning** – Suggestions to illustrate where the activities link to learning.
- 18. Early learning goals** – Links each of the Early Learning Goals to the activities that promote that learning. The table on the following page shows which activities in each unit cover the 17 Early Learning Goals.

	Switched on Science in the Early Years Units							
Early Learning Goals	1	2	3	4	5	6	7	8
1 – Listening & Attention	All	All	All	All	All, especially Focussed 2 & 4	All	All	All
2 – Understanding	All	All	All	All	All, especially Focussed 2 & 4 and Free-flow 2	All	All	All
3 – Speaking	All	All	All	All	All, especially Focussed 2 & 4	All	All	All
4 – Moving & Handling	All Focussed	All	All	Focussed 1	Focussed 5	All	Free-flow 1, Physical Development	N/A
5 – Health & Self-care	All	All	All	Focussed 1	Introductory activity and Focussed 3	Focussed 1 & 2	N/A	Health and safety
6 – Self-confidence & Self-awareness	All	All	All	All	All, especially Focussed 2 & 4	All	All	All
7 – Managing Feelings & Behaviour	All free-flow	All	All	All	All Free-flow	All Free-flow	Free-flow 1	All
8 – Making Relationships	All free-flow	All	All	All activities, especially cooking	All Free-flow	All Free-flow	Free-flow 1	All
9 – Reading	All focussed	Introductory activity	Introductory activity	Introductory activity, Focussed 1	Free-flow 1	Introductory activity, Focussed 4, Free-flow 1	Focussed 2	Free-flow 1
10 – Writing	Focussed 2	Introductory activity	Free-flow 1	Focussed 3	Focussed 1, Free-flow 1	Free-flow 1	Focussed 2	Focussed 3
11 – Numbers	Free-flow 1	Free-flow 1	Free-flow 1	Free-flow 1	Focussed 3, Free-flow 1	All	Mathematics section	Focussed 2
12 – Shape, Space & Measure	All focussed	Free-flow 1	Free-flow 1	Focussed 1	Focussed 3, Free-flow 1	All	Focussed 1	N/A
13 – People & Communities	Finding out about crops grown by people in the school community	Introductory activity	N/A	Introductory activity	N/A	N/A	N/A	Where children access instruments and songs from other cultures
14 – The World	All growing activities	All	All	Introductory activity	All	All	Free-flow 1	Free-flow 1
15 – Technology	All growing activities	Introductory activity	Free-flow 1, focussed 1	Focussed 1	Focussed 2 and Free-flow 2	Focussed 2, 3, 5 & 6	Introductory activity, Focussed 2	Free-flow 2
16 – Exploring & Using Media & Materials	All growing activities	Taking it further	All, especially focussed 2	Focussed 1, Free-flow 1	Focussed 5	Free-flow 1 & 2	Expressive Arts and Design section, Free-flow 1	Free-flow 1, Taking it further
17 – Being Imaginative	Free-flow 2	Free-flow 1	All	Free-flow 2 & 3	Focussed 1 & 5	Free-flow 1 & 2	Free-flow 1	Free-flow 1 & 2 and Taking it further

Switched on Science in the Early Years Units

9	10	11	12	13	14	15	16	17	18
All	All, especially Focussed 2 & 5	All	All	All, especially Free-flow 1	All	All	All	All	All
Focussed 2	All	All	All	All	All	All	All	All	All
Focussed 2	All	All	All	All	All	All	Focussed 1	All	All
All	Focussed 3 & 4, Free-flow 1	Focussed 1, Taking it further, Free-flow 2	Focussed 3, Free-flow 2	Preparing fruit and vegetables is a valuable context for improving fine motor skills	Focussed 2	All	Focussed 2	Focussed 3	Focussed 1 & 2, Free-flow 1, 2 & 3
Introductory activity	Focussed 3	N/A	All activities requiring children to go outside	All	All activities, especially Focussed 2	N/A	Focussed 1 & 2	Focussed 1	Focussed 1 & 2, Free-flow 1 & 2
All	All	Personal, Social and Emotional Development section	All, especially Free-flow activities	All of the activities where they taste different foods	All	All	Focussed 3, Free-flow 1	All	All
All free-flow	Focussed 2	Focussed 2	All, especially Focussed 3	All	All	All	Focussed 1 & 2	All activities, especially Free-flow 1	All Free-flow
All Free-flow	All, especially Introductory activity and Focussed 2	Free-flow 1	All activities, especially Focussed 3	All	All activities, especially Free-flow 1	All	Free-flow 1	All activities, especially Free-flow 1	All Free-flow
Introductory activity	Focussed 4	Introductory activity	N/A	All	Focussed 4	Introductory activity, Focussed 1	N/A	N/A	Introductory activity, Focussed 1 & 2, Free-flow 2
Free-flow 1	All	Taking it further	All	All	Free-flow 1	Introductory activity, Focussed 1	Focussed 1	N/A	Focussed 4
Introductory activity, Focussed 1	Focussed 5	Introductory activity, Free-flow 2	N/A	Free-flow 1	Focussed 2	Focussed 1	Focussed 1	Mathematics section	Focussed 1, 2 & 5, Free-flow 2
Introductory activity, Focussed 2	Focussed 3, Free-flow 1, Introductory activity	Focussed 1, Free-flow 2	All, especially Focussed 3	Many of the activities	Introductory activity, Focussed 2	Focussed 1	Focussed 1	Focussed 3, Free-flow 1 & 2	Focussed 2, Free-flow 3
Taking it further	Finding out about celebrations involving light from around the world	N/A	N/A	Focussed 4	N/A	Focussed 4	All Focussed	Home/school links interviewing older family members	N/A
Introductory activity	All	Focussed 2	All	All	All focussed activities	N/A	All	Focussed 2	Focussed 1, 2, 3 & 4, Free-flow 3
Introductory activity, Taking it further	Introductory activity	Taking it further	N/A	All activities using the range of technologies used in cooking including cookers, microwaves, timers and mixers	Most activities, Expressive Arts and Design, Introductory activity, Taking it further	Focussed 1	Focussed 1	All that use secondary sources	Focussed 2, Free-flow 2
Focussed 2	Focussed 3 & 4, Free-flow 1 & 3	Expressive Arts and Design section	All	Free-flow 3	Expressive Arts and Design	Focussed 4	N/A	Focussed 3	Focussed 1 & 2, Free-flow 3
Free-flow 1 & 2	Focussed 4, Free-flow 1	Free-flow 1	Free-flow 1	Free-flow 1, 2 & 3	Free-flow 1	Focussed 4	Taking it further	All especially Focussed 3 and Free-flow 1	Free-flow 1 & 2