



## Grouping and classification



Science and Plants for Schools (SAPS), an initiative launched in 1990, works with teachers to:

- develop new resources that support the teaching of plant science and molecular biology in schools and colleges
- promote exciting teaching of plant science and molecular biology
- interest young people in plants and in molecular biology

We hope that our approach will help young people to become more aware of the importance of plants in the global economy, and to encourage more of them to follow careers in plant science and molecular biology.

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# Plants for primary pupils

## 4.

# Grouping and classification

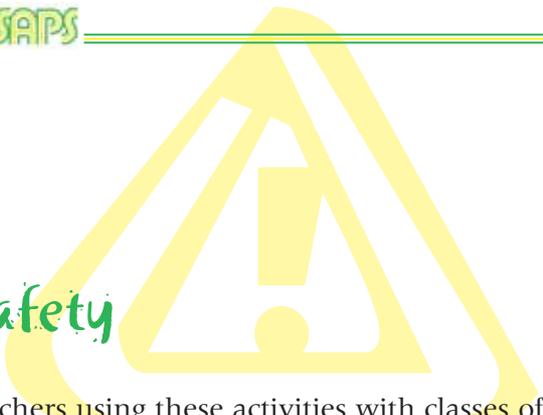
*The activities in this booklet have been developed by  
SAPS (Science and Plants for Schools) in collaboration with  
FSC (Field Studies Council).*



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## Safety

Teachers using these activities with classes of Primary pupils are advised to refer to the SAPS Safety Notice on the SAPS website, and to undertake their own risk assessment where appropriate.

Further information on safety may be found from the sources listed in the SAPS Safety Notice.

*Please remember...*

- When working with plants, pupils and teachers should **ALWAYS** wash their hands after handling plants (including seeds), soils, composts, manures, equipment and other related materials
- Plants (or parts of plants) can be poisonous, cause allergic reactions in some people or may have been treated with chemicals (such as pesticides)
- It is particularly important that pupils understand that they must **NEVER** eat plants found in the wild or in the school grounds, unless given instructions that they may do so
- Wild flowers should not be picked and it is illegal for anyone (without the permission of the landowner or occupier) to uproot any wild plant

This booklet is part of a series written to support work that must be undertaken with plants as part of the Primary Curriculum in England, Wales, Northern Ireland and Scotland. The booklet is also available on the SAPS website ([www.saps.org.uk](http://www.saps.org.uk)) and can be downloaded freely for use by teachers with their classes.

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*The Director, Science and Plants for Schools, Cambridge University Botanic Garden, 1 Brookside, Cambridge CB2 1JE.*

Some of the materials used in this booklet have been obtained from individuals and organisations. In such cases every effort has been made to ensure that the necessary permissions to reproduce copyright material have been obtained. However, should any omissions be noticed we should be grateful if they could be brought to SAPS' attention.

## Acknowledgments

For the Copycats activity, the Writing Group has drawn on an idea that came originally from Claire Dalby (a botanical artist).

The cartoon used in Activity 2, page 6 (Living things – what they need and what they can do) was inspired by the Concept Cartoons™ used by Brenda Keogh and Stuart Naylor (Millgate House Publishing; [www.conceptcartoons.com](http://www.conceptcartoons.com)).

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**Photographs.** All photographs are by John Bebbington FRPS, with the exception of some in the PowerPoint presentation.

**Artwork.** All artwork, including cartoons, is by Anne Bebbington.

Illustrations used in Figure 5 and Figure 7 are reproduced by courtesy of The Cavendish School, London.

**PowerPoint presentation – ‘What’s in a name?’** (on the SAPS website). Photographs are by John Bebbington FRPS, except for those acknowledged separately.

The members of the writing group would like to thank Maggie Bolt for her skilful efforts in converting their work into a format suitable for design and printing.

Members of the Writing Group: Anne Bebbington (FSC and SAPS), Colin Bielby (Manchester Metropolitan University), Ruth Thomas (The Cavendish School), Judy Vincent (formerly of Hartest Primary School) and Erica Clark, editor (SAPS).

## Progression of ideas within this theme (Grouping and classification)

It is important for teachers to be aware of the underlying progression of ideas being developed through the activities in this booklet. Any of the activities can be selected in isolation and some may be similar to ones already included in a typical teaching strategy. But a closer look should help reveal the links between the activities and opportunities for progressive development of skills.

The section titles reflect the main stages of this progression, summarised below:

- decide whether objects are living or non-living (never been alive) and understand how plants differ from animals
- make careful and accurate observations and use appropriate language in describing the features observed
- sort items and make groups, and begin to give reasons for the separations that are being made. This often leads to understanding why it is important to give names to things (including living things)
- apply the skills developed through the grouping activities to make and use keys

Throughout, the emphasis is on using appropriate material from plants. Other outcomes may be that children realise that it is helpful to give names to objects, particularly if they are interesting or important to us. They may also appreciate why we bother to classify things – how it helps us find them and talk about them to other people. We hope also that they realise there are plenty of ways that plants are interesting and useful to us, so it's worth naming and classifying plants.

An accompanying PowerPoint presentation, entitled 'Why do plants have names and where do the names come from?', gives a colourful and interesting glimpse into some of the stories behind the names plants have today.

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## *Supporting material on the SAPS website*

This material includes full-sized versions of many of the images used in the booklet. In some cases, teachers may wish to project these for the whole class to see or to download them for use in a different form with the activity. Templates are provided for the 'Sort it!' cards. Some Pupil Sheets are provided (as pdf and / or Word files) so that you can adapt them for your class. The material also includes an interactive cartoon to use with the MRS GREN activity, a guide to the dissection of a buttercup to support the buttercup key and additional information about the liquorice plant to add interest to the liquorice allsorts activity. The PowerPoint presentation 'What's in a name?' can be used to encourage children to think about why plants have names and where these names came from. With a few lighthearted examples, this PowerPoint explores the origins of some plant names and looks briefly at the history of scientific naming of plants.

These items are linked specifically with this booklet and you can find them on the SAPS website by following the links to 'Plants for Primary Pupils'.

## Introduction

This series of activities aims to cover work that must be undertaken with plants as part of the Primary Curriculum (e.g. in Key Stages 1 and 2 in England, Wales and Northern Ireland, and Scottish Primary P1 to P7 or equivalent). The activities have been developed by SAPS in collaboration with FSC (Field Studies Council).

The activities are being developed under a number of themes, each of which is published in a separate booklet and is also presented as website material (see SAPS website).

- The parts of a plant and their functions
- Reproduction and life cycles – Part 1: Parts of a flower and Part 2: Pollination, fertilisation, fruits and seed dispersal
- Living processes and what plants need to grow
- Grouping and classification
- Plants in their natural environment

Within each set of topics, you will find different types of activities. Some are based in the classroom while others involve growing plants outside (say in tubs in a school yard or in a school garden) or making observations of plants growing in the wider environment. Teachers are encouraged to let children explore links between classroom and outdoor fieldwork activities.

The activities give emphasis to the growing of plants so that children can make first-hand observations, often on their own plant, and become familiar with plants and how they grow. This is supported by a range of activities such as making models of plants, card games that reinforce learning and simple investigations that help children find out more about how plants work. You may not wish to use all the activities in a set, but you will find a good range to choose from, to suit your class and curriculum requirements.

Each topic includes a description of the activity and appropriate information for teachers. There may also be 'pupil worksheets', particularly with the activities intended for older children. An important feature in this series is the inclusion of 'Background information for teachers', written to give advice and guidance to teachers less familiar with botanical jargon or who lack confidence in their teaching on plant topics. In some cases, these notes indicate further sources of information that may be helpful to teachers, including other publications and useful websites.

The illustrations have usually been drawn from living plant material, so they are fresh, botanically accurate and show what a child is realistically likely to see. The activities are also generously supported by photographs – again many taken specially for this series.

At the end of each activity, you will find a 'Curriculum Links' box, to help you see where you could use this activity within the appropriate national curriculum framework.

## Grouping and classification

This is the fourth theme in the series. The booklet encourages children to explore the nature of living things, understand how we can group objects (both living and not living) leading on to how we classify living things and why we give them names. It enables children to make simple keys based on similarities and differences between objects (including parts of plants) and to use keys to identify certain plants.

Certain activities are available at two levels, so that younger children begin to become aware of the differences (say between living things and 'never been alive' objects) or begin to develop appropriate vocabulary (say for describing leaves or seeds). Older children can then return to these activities but build on earlier knowledge and develop them further and so utilise the information in a more

advanced way. Examples here are the activities that let the children sort a more complex group of objects or build up descriptions of leaves or flowers that can be utilised either to make or to use a key to identify a limited range of things (including leaves and flowers).

Considerable emphasis is given to observation of living material with opportunities for children to develop appropriate vocabulary in making descriptions or to do their own drawings to provide accurate records of their observations. Making a key or using a key are quite difficult concepts, but the activities involving sorting, grouping and describing lead children stepwise to the basic principles for these activities. The challenge of being able to work through the stages of identifying the flower of one of the several buttercups that are commonly found, can be highly rewarding (for both children and the teachers).

Some parts of these topics are often not easy to teach, with the danger that they sink into somewhat dreary lists of 'things that living things do' or unsuccessful attempts at guiding children through sorting and key making. The activities presented provide a fresh approach to some familiar activities and the booklet includes games ('Copycats' and 'Sort it!') that help reinforce learning at different stages and there are opportunities for drawing, all of which are fun. Teachers should also be aware of opportunities offered in the different activities for development of skills, particularly in literacy and numeracy. (See note below: *Reference to literacy, numeracy, assessment and investigative skills.*)

Remember, you can use Curriculum Links (on the SAPS website) to find more material to give support within your teaching programme.

## Reference to literacy, numeracy, assessment and investigative skills

The activities in this booklet can be used to support the pupils' development in literacy, numeracy and investigative science, as defined in the relevant sections of the National Curriculum for Science and the Literacy and Numeracy Strategy Frameworks in England, and also in the 5-14 guidelines in Scotland.

For literacy, including development of vocabulary and use of speaking and listening skills, two useful activities are 'Observing leaves and learning how to describe them' and 'Sorting seeds into groups'. Both these encourage verbal descriptions of the material as well as accurate observation through drawing. The card game 'Sort it!' and the activities for making keys also require discussion skills when doing the sorting and use of appropriate vocabulary.

For numeracy, the two activities given above ('Observing leaves and learning how to describe them' and 'Sorting seeds into groups') also offer opportunities for children to make careful measurements and then to use these measurements as part of their accurate descriptions.

There are opportunities for formative and summative assessment – a good example is provided by 'Living things – what they need and what they can do' (MRS GREN) and the completion of the Pupil Sheet linked to this activity. The MRS GREN cartoon activity and the card game 'Sort it!' also provide opportunities for assessment. Generally the activities in this booklet provide opportunities for accurate observation and making descriptions rather than formal investigations.

As in earlier booklets in the series, Curriculum links for the 'National Curriculum (Sc2)', 'QCA guidelines – Scheme of work' and the 'Scottish ISE 5-14 framework/attainment targets' are provided at the end of each activity. In addition, several activities are appropriate for the programmes of study in Sc1 (Scientific enquiry), but this has not been highlighted in the booklet. Opportunities are also provided for links with IT, for example requirement for work with branching databases (see activities involving keys).

It should be noted that, at the time of writing (2008), the Scottish curriculum is undergoing change, so teachers should refer to the SAPS website for cross references to the new scheme when these become available.