

Science Key Stage 2

Exemplar Scheme of Work



**Richard Watkins
GwE**

@DrRWatkins

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Science in Key Stage 2

Exemplar Scheme of Work

1. Introduction

This science scheme of work has been produced in order to fulfil the requirements of the 2008 Key Stage 2 National Curriculum for Wales. The scheme consists of 24 half-termly units.

This resource has been developed to promote a more skill-focused pedagogy. Each unit focuses on a specific aspect of the science range and enables teachers to teach, practise and assess specific science enquiry skills. Units allow pupils to develop science enquiry skills through a series of contextualised practical tasks.

The units have also been designed to incorporate assessment for learning and the 2008 Skills Framework.

A range of associated resource materials is also available with this scheme.

The scheme of work has been updated in 2015 to take account of the focus of the Welsh Government National Literacy and Numeracy Framework (LNF). Opportunities to develop numeracy and literacy skills, including key non-narrative writing, have been identified on the cover sheet of each unit.

2. Description

Each unit commences with a cover sheet containing information on range coverage, key vocabulary, LNF links and links to the 2008 Skills Framework.

All the tasks in the units have been designed to develop pupils' scientific enquiry skills as detailed in the 2008 National Curriculum for science. During the process of compiling this resource an emphasis was placed on selecting and developing skill-rich tasks. See appendix 2 for a summary of progression in equipment, table and graph use.

Literacy: The units have been designed to provide context and relevance for learners. In particular, many units provide pupils with opportunities to utilise written and oral communication skills in order for them to show what they know or have found out. Links to the elements and aspects of the LNF are contained on each cover sheet. Within each unit, opportunities to develop pupils writing are highlighted as follows:

To write to explain

Text type: non-chronological report

Further opportunities to develop a range of text types have been mapped out across the 24 units (appendix 4) and are taken from the Estyn inspection guidance for literacy (Estyn, 2011).

Schools should ensure that pupils use and apply their writing skills in science as part of a progressive teaching plan. Such a plan should provide coherence between when writing skills are taught/introduced and how and when teachers expect these skills to transfer to science to an appropriate standard. It is good practice for schools to consolidate the key non-narrative writing opportunities identified in these science units after they have been introduced to pupils. The development of these writing styles in science should follow the codes and conventions agreed for text types across all subject areas.

Numeracy: These units contain numerous opportunities for pupils to utilise their mathematical skills in order to solve scientific problems. There is a particular focus on the development of pupils' data handling skills in this resource. Links to the strands and elements of the LNF are contained on each cover sheet.

2008 Skills Framework document: The 'Developing thinking' skills in the Skills Framework document mirror the science enquiry skills of plan, develop and reflect. These skills are therefore detailed alongside specific tasks within each unit (see **Science enquiry skills** section below)

There are sections available on the cover sheet for schools to map out skill development for the remaining areas from the Skills Framework document:

- ICT
- Curriculum Cymreig
- Personal and social education.

Units consist of up to 8 weekly tasks. Weekly tasks are set as Big Questions in order to provide contextualisation and relevance for teachers and learners. Each Big Question is based on a notional 2 hours of teaching time per week. Units are arranged as 4 columns:

Science enquiry skills: a number of principal science enquiry skills have been mapped against each Big Question task. One principal enquiry skill is marked in blue and is the suggested focus for teaching and learning. Appendix 2 and 3 provide assistance in developing key enquiry skills.

Suggested activities: this section focuses on the principal (blue) skill as indicated in the skill column. Activities provide relevance and context for the delivery of the principal skill. There is a number of ideas and strategies that allow the skill to be introduced and practised.

Resources and web links: a wide range of formative resources has been included in this section, including hyperlinks to the Hwb science resources.

<http://hwb.wales.gov.uk/Resources/tree?sort=recommendation&language=en&tags=Science&tags=Key%20Stage%202&nodeId=1516819e-22d2-46f1-ac43-d23c0ce07ce8>

References are also made to the 2006 Optional Assessment Materials (OAMs) and the 2008 Scientific Enquiry Materials (SEMs).

Assessment opportunities: this section enables teachers to assess the principal (blue) skill from the skill section. The level descriptor associated with the principal skill is also marked in blue in this section to provide focus and continuity between teaching and assessment. As well as the principal assessment strand, a number of other level descriptions are also provided for information.

3. How to use this resource

The 24 half-termly units of work contained within this resource have been designed for use with the exemplar long-term curriculum plan shown in appendix 1. It is based on a two year cycle for Year 3/4 and Year 5/6 and is a modified version of the models previously made available for Curriculum 2000 and 2008.

It is possible to re-arrange these units to reflect the needs of your school curriculum either by swapping units between cycles or moving units within a cycle. *It is not advisable to move units between Year 3/4 and Year 5/6 as tasks have been designed with age-related skill progression in mind.*

The 24 units ensure complete coverage of the science skills and range. **However, if you wish to develop additional range statements within a particular half-term's work, then you can simply add these where appropriate. Schools are encouraged to gain ownership of the science curriculum by adapting the units here to more closely reflect the needs of their teachers and pupils.**

It is anticipated that some schools will choose to use this resource simply as a bank of ideas for practical enquiry tasks. Other schools may wish to select only those units that they wish to integrate into their existing science scheme.

4. Supplementary resource materials

A range of additional resource materials is available to use if schools wish to amend any of the exemplar units. These resources include:

- units from the QCA science scheme (QCA)
- 2006 Optional Assessment Materials (OAMs)

- 2008 Scientific Enquiry Materials (SEMs).

Schools may choose to use a variety of tasks and ideas from these materials in order to supplement the units contained within this resource.

5. Useful Resources and Documentation

2008 KS2 Scientific Enquiry Materials

ISBN 978-0-9557200-1-7 (English version)

ISBN 978-0-9557200-2-4 (Welsh version)

Estyn (2011) A strategy and guidance for inspecting literacy for pupils aged 3 to 18 years. Estyn, Cardiff.

<http://www.estyn.gov.uk/english/inspection/supplementary-guidance/>

Goldsworthy, A. and Ponchaud, B. (2008) Science Enquiry Games. Millgate House Education.

ISBN 9780-95275067-3

<http://millgatehouse.co.uk/>

Naylor, S. and Keogh, B. (2000) Concept Cartoons. Millgate House Education

ISBN 0 9527506 27

<http://millgatehouse.co.uk/>

Naylor, S., Keogh, B. and Goldsworthy, A. (2004) Active Assessment: Thinking Learning and Assessment in Science. Millgate House Education

ISBN 1 84312 145 X

<http://millgatehouse.co.uk/>

NFER 'Let's Think' packs are a very good starting point to develop pupils' thinking:

<http://shop.gl-assessment.co.uk/home.php?cat=394>

<http://shop.gl-assessment.co.uk/home.php?cat=395>

<http://shop.gl-assessment.co.uk/home.php?cat=390>

Turner, J., Keogh, B., Naylor, S. and Lawrence, L. (2011) It's not fair – or is it? Millgate House Education

<http://millgatehouse.co.uk/>