

A scheme of  
work for  
key stages  
1 and 2

Revised and  
updated  
2003



# Information and Communication Technology (ICT) Teacher's guide

# Acknowledgements

This update to the exemplar scheme of work for information and communication technology (ICT) at key stages 1 and 2 has been prepared jointly by the Qualifications and Curriculum Authority (QCA) and the Department for Education and Skills (DfES). We would like to thank the many teachers, schools, local education authorities, Becta and other organisations who have helped in the production of this scheme. Special thanks are due to those who gave up valuable time to assist us in the development of these materials by contributing their expert knowledge of primary ICT.

First published in 2003

© Qualifications and Curriculum Authority 2003

ISBN 1 85838 333 1

This update to the scheme of work for ICT contains photocopiable materials. For in-school educational use, these materials may be freely photocopied.

Reproduction, storage, adaptation or translation, in any form or by any means, of this publication is prohibited without prior written permission of the publisher, unless within the terms of licences issued by the Copyright Licensing Agency. Excerpts may be reproduced for the purpose of research, private study, criticism or review, or by educational institutions solely for educational purposes, without permission, provided full acknowledgement is given.

Printed in Great Britain.

The Qualifications and Curriculum Authority is an exempt charity under Schedule 2 of the Charities Act 1993.

Qualifications and Curriculum Authority  
83 Piccadilly  
London  
W1J 8QA  
[www.qca.org.uk/](http://www.qca.org.uk/)

# Contents

<b>Introduction</b>	3
■ What is this scheme of work?	3
■ Using this update	4
■ About this update	5
<b>ICT at key stages 1 and 2</b>	6
■ The programme of study	6
■ Assessment and ICT	6
■ The National Curriculum in Action website	7
■ Making a judgement	7
■ The key characteristics of progression in ICT capability	7
■ Reporting on children's progress in ICT	9
■ The Key Stage 3 ICT Strategy	9
■ Assessment for learning	9
■ Use of ICT across the curriculum	10
■ Safe and discriminating online behaviours	10
<b>Schemes of work for ICT</b>	12
■ Adapting existing schemes of work	12
■ Sequencing the scheme of work units	13
■ Planning for alternative integrated tasks	14
■ The units	15
■ The new integrated tasks	18
<b>Integrated tasks to support the existing scheme of work units</b>	20–69
<b>Appendix A: coverage of the programmes of study for key stages 1 and 2, with links to other subjects made by the new integrated tasks</b>	70
<b>Appendix B: resources to support the ICT scheme of work</b>	71
<b>Appendix C: from key stage 2 to key stage 3</b>	72

# Introduction

## What is this scheme of work?

This optional exemplar scheme of work illustrates how the national curriculum programme of study for information and communication technology (ICT) for key stages 1 and 2 can be translated into a practical plan. It shows how ICT might be taught to groups of children attaining at the levels broadly appropriate for their age.

**The exemplar scheme of work can be used as a basis for work in ICT if a school wishes. However, there is no compulsion to do so and schools may use as little or as much of the material as they find helpful.**

The exemplar scheme of work shows:

- how the content of the programme of study for key stages 1 and 2 can be divided into units to be taught in years 1–6, and ways in which the units might be sequenced across a year and key stage;
- ways in which the units can build on work that has gone before and how they link to other units; and
- expectations of the knowledge, skills and understanding that most children will have acquired by the end of each unit.

This update to the scheme of work is also designed to offer:

- a new range of integrated tasks for existing units, showing how ICT can be applied and developed across the curriculum;
- a stronger focus on developing safe and discriminating online behaviours with children; and
- ideas for making more extensive use of the greater levels of connectivity and content now available to primary schools.

All the exemplar key stage 1 and 2 schemes of work are on the internet at:  
[www.standards.dfes.gov.uk/schemes](http://www.standards.dfes.gov.uk/schemes)

The national curriculum is on the internet at: [www.nc.uk.net](http://www.nc.uk.net)

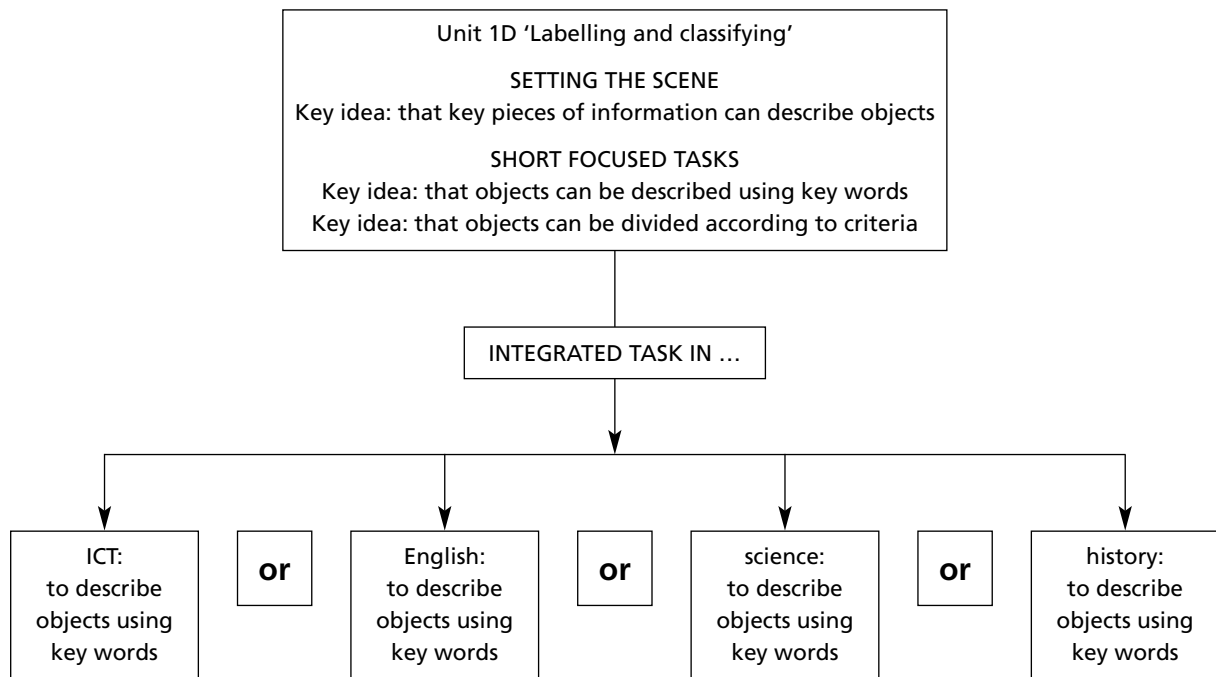
The National Curriculum in Action website uses pupils' work and case study material to show what the national curriculum looks like in practice. It provides examples of how the programmes of study translate into real activities, and the standard of pupils' work at different ages and key stages. The website is at: [www.ncaction.org.uk](http://www.ncaction.org.uk)

## Using this update

The new material in this update is designed to offer schools alternative approaches to applying and developing ICT across a range of subjects. Teachers familiar with the structure of the ICT units may have used the ‘integrated task’ as a summative activity, where children apply the key ideas and techniques they have been taught in a specific context. The new integrated tasks included here offer alternative contexts, which allow the key ideas and techniques taught in ICT to be applied to tasks in other subjects. The integrated tasks are linked, where appropriate, to schemes of work for other subjects.

Although the intention of the new material is to show how ICT might be applied and developed in a subject context, the focus of the unit remains clearly on the ICT learning objectives. It is essential that children learn the key ideas and techniques of the ‘ICT lesson’ before they apply these in another context. All the possible teaching activities offered in these new integrated tasks are based on the assumption that children have been taught the ICT key ideas and techniques before they carry out the task.

For example:



See ‘Planning for alternative integrated tasks’, on page 14, for further information.

The new integrated tasks are not exhaustive, and are not intended to prescribe how ICT is applied and developed in a subject context. They are offered as illustrative examples that teachers may want to adapt to their own circumstances and to suit the needs of their own children. Further guidance for schools on designing a flexible curriculum and timetables to suit the needs of children is available from QCA.<sup>1</sup>

<sup>1</sup> *Designing and timetabling the primary curriculum* (QCA, 2002) provides guidance on how schools can make the most of the flexibility available to them, shaping a curriculum and timetables that meet children’s needs and promote high standards.

There may be times when the schemes refer to generic or commercial products in relation to the equipment or software in the suggested teaching activity. These references are included to help fully describe the activity, and are not intended as endorsements or recommendations from QCA.

In January 2003, the Secretary of State for Education and Skills launched Curriculum Online. The vision for Curriculum Online is to provide teachers with access to a wide range of digital materials to support their teaching. The web portal allows teachers to search for resources by subject and key stage and by resources that support the QCA schemes of work. This is a good place to start when considering resources to support the ICT scheme of work. The web portal is available at: [www.curriculumonline.gov.uk](http://www.curriculumonline.gov.uk)

Other sources of support in locating useful materials include the Teacher Resource Exchange at: [tre.ngfl.gov.uk](http://tre.ngfl.gov.uk) and Teachernet at: [www.teachernet.gov.uk](http://www.teachernet.gov.uk)

Any URLs are included where appropriate to point teachers to existing educational websites. They are provided in good faith but, as with all websites, are liable to change.

## About this update

This update replaces the *Teacher's guide* that accompanied the original *Information technology scheme of work* (QCA/DfEE, 1998) and the subsequent guide that accompanied the *Information and communication technology update* (QCA/DfEE, 2000).

It is based on the revised national curriculum programme of study for ICT published in November 1999. It assumes that schools have access to the revised and additional scheme of work units for ICT sent out with the 2000 *Update*. These include:

- unit 1A 'An introduction to modelling', a revised version of the original unit 1A 'Assembling text' which strengthens work on simulations;
- unit 1C 'The information around us', a revised version of the original information technology scheme of work unit with the same title. It includes extended work on types of, and the use of, information sources; and
- three additional units:
  - unit 2E 'Questions and answers', which introduces extended work on data-handling
  - unit 5F 'Monitoring environmental conditions and changes', which provides the opportunity for work on data-logging and incorporates the use of light, sound and temperature sensors
  - unit 6D 'Using the internet to search large databases and to interpret information', which develops search, retrieval and selection skills for internet-based information.

We are very interested in teachers' views and comments on the usefulness of the exemplar scheme of work and how it might be improved. Please send any comments to:

The ICT Team  
QCA  
83 Piccadilly  
London W1J 8QA

Tel: 020 7509 5674  
Fax: 020 7509 6951  
E-mail: [ict@qca.org.uk](mailto:ict@qca.org.uk)

# ICT at key stages 1 and 2

## The programme of study

There are four aspects of study at key stages 1 and 2, which extend through key stages 3 and 4 to provide coherence. They are:

- finding things out;
- developing ideas and making things happen;
- exchanging and sharing information; and
- reviewing, modifying and evaluating work as it progresses.

Children develop these aspects as they work with a range of information, explore a variety of ICT tools, and investigate and compare different uses of ICT.

During **key stage 1**, children explore ICT and learn to use it confidently and with purpose to achieve specific outcomes. They start to use ICT to develop their ideas and record their creative work. They become more familiar with hardware and software.

During **key stage 2**, children use a wider range of ICT tools and information sources to support their work in other subjects. They develop their research skills and decide what information is appropriate for their work. They begin to question the plausibility and quality of information. They learn how to amend their work and how to present it in such a way that it suits its audience.

## Assessment and ICT

Assessment is an integral part of effective teaching and learning. A good understanding of national expectations in ICT will help to support planning, teaching and report-writing. The National Curriculum in Action website has been created by QCA to assist in exemplifying national standards.

Any assessment of a formal nature is likely to take place towards the end of each unit, where the integrated tasks in this scheme of work provide good opportunities for children to demonstrate their capabilities.

In this scheme of work, the learning outcomes identify what each child is expected to learn within each unit. The expectations described in each unit broadly correspond to levels in the national curriculum for ICT as follows:

- year 2 – level 2;
- year 4 – level 3;
- year 6 – level 4.

Teachers may wish to make a note when a child's progress differs markedly from that expected within the units. This provides a basis for more focused support. It is also a straightforward method for passing on information about children to the next teacher or school without creating an overly bureaucratic system of record-keeping.

## The National Curriculum in Action website

QCA has developed the National Curriculum in Action website to illustrate standards and to assist teachers in making consistent judgements. This website uses pupils' work and case study material to show what the national curriculum in ICT looks like in practice. It provides schools with a national yardstick for standards. It also exemplifies the standard of pupils' work at different ages and key stages, and demonstrates how the ICT programme of study translates into practical classroom activities.

For each piece of work on the site there are:

- **Activity objectives**, which set out the purpose, teaching and learning objectives of the work;
- **Activity descriptions**, which provide details of what the child actually did. They also describe the context, the level of support provided and the extent to which the activity was structured; and
- **Commentary**, which explains why the piece of work exemplifies a child's performance in relation to particular aspects of the level description.

## Making a judgement

End-of-year or end of key stage assessments are made by taking into account strengths and weaknesses in performance across a range of contexts and over a period of time, rather than by focusing on a single piece of work.

A single piece of work is unlikely to cover all the expectations set out in a level description. It will probably provide partial evidence of attainment in one or two aspects of a level description. If you look at it alongside other pieces of work covering a range of contexts, you will be able to make a judgement about which level best fits a child's overall performance.

Much of the evidence about attainment may be ephemeral and gained from observation and discussion with children.

In planning units of work and classroom approaches, you will need to provide opportunities for children to display their achievements in different ways, and to work in a range of situations. As they make progress it will be necessary to provide them with opportunities to engage in open-ended tasks that allow them to apply their ICT capability independently.

Further guidance on making judgements about levels is available on the National Curriculum in Action website at: [www.ncaction.org.uk](http://www.ncaction.org.uk)

## The key characteristics of progression in ICT capability

The level descriptions in ICT show progression in the four aspects of the knowledge, skills and understanding set out in the programme of study. For each level, there is also a set of characteristics that helps define how children might typically demonstrate their ICT capability.

### **Level 1**

Level 1 is characterised by the use of ICT to **explore options** and **make choices** to **communicate meaning**. Children develop **familiarity** with simple ICT tools.

Typically, children:

- explore information from various sources, showing they know that it exists in different forms;
- present and share ideas using text, images and sounds. They talk about using ICT; and
- recognise that everyday devices respond to signals, and make simple choices when using devices.

### **Level 2**

Level 2 is characterised by **purposeful** use of ICT to achieve **specific outcomes**.

Typically, children:

- gather, organise and classify information;
- explore real and imaginary scenarios;
- generate and amend work;
- plan and give instructions to make things happen; and
- present their findings. They record, save and share ideas in different forms, including text, tables, images and sounds.

### **Level 3**

Level 3 is characterised by the use of ICT to **develop ideas** and **solve problems**. **Lines of enquiry** are followed and the results taken into account in **successive steps**.

Typically, children:

- find and use appropriate stored information, following straightforward lines of enquiry;
- explore ICT-based models or simulations to help them find things out and solve problems;
- generate and amend work;
- create sequences of instructions to control devices and achieve specific outcomes; and
- generate, develop and organise their work. They use ICT to present, share and exchange their ideas with others.

### **Level 4**

Level 4 is characterised by the ability to **combine and refine** information from various sources. Children **interpret** and question the **plausibility** of information.

Typically, children:

- find and interrogate information, understanding the need for care in framing questions;
- amend and combine different forms of information from a variety of sources;
- generate and amend work;
- explore patterns and relationships using ICT-based models and simulations. They interpret their findings, question plausibility and recognise that poor-quality information leads to unreliable results;
- control events in a predetermined manner and use ICT to sense physical data;
- present information in different forms. They refine the quality of their presentations, showing an awareness of the intended audience; and
- compare their use of ICT with other methods.

### **Level 5**

Level 5 is characterised by **combining the use of ICT tools** within the **overall structure** of an ICT solution. Children critically evaluate the **fitness for purpose** of work as it progresses.

Typically, children:

- select the information they need for different purposes, check its accuracy and organise it in a form suitable for processing. An increased range of quantitative and qualitative information is considered;
- structure and refine information in different forms and styles for specific purposes and audiences;
- explore the effects of changing the variables in an ICT-based model;
- create sequences of instructions to control events, and understand the need for precision;
- monitor and measure external events with sensors; and
- assess the use of ICT in their work and are able to reflect critically in order to make improvements in subsequent work.

## **Reporting on children's progress in ICT**

Schools are required to send an annual report to parents describing their child's progress in ICT. The report should contain comments on the child's attainment. While there is no statutory requirement to report children's attainment in the form of a national curriculum level, a number of schools find it a helpful way to describe attainment at the end of a key stage. To support continuity in children's learning, primary and secondary schools are also increasingly exchanging information about children's attainment at transfer by using levels and level descriptions.

## **The Key Stage 3 ICT Strategy**

The programme of study for key stage 3 builds on what children have done at key stages 1 and 2. The *Framework for teaching ICT capability: Years 7, 8 and 9* from the Key Stage 3 Strategy builds on the programmes of study and includes a summative description of what children should have learnt in ICT by the end of key stage 2. Some primary teachers may find this useful, and it is included in appendix C.

## **Assessment for learning**

In addition to making reliable summative judgements, effective assessment practice is also concerned with the day-to-day interactions between teachers and children that are designed to support the next steps in learning. Assessment strategies should:

- make explicit to children what counts as good work;
- help children know and recognise standards;
- encourage children to think and reflect on their own learning;
- involve children in evaluating their own and others' work; and
- recognise the emotional and motivational aspects of assessment.

## **Use of ICT across the curriculum**

Since the publication of the revised national curriculum, there have been statutory references to the application of ICT in all other subject programmes of study at key stage 2 (apart from physical education). There are also statutory requirements for the application of ICT in the core subject programmes of study at key stage 1. The National Curriculum in Action website provides examples of pupils' work with ICT across a range of subjects, along with teacher commentary on how the use of ICT enhances learning in those subjects.

In addition, there is a statutory requirement regarding the use of ICT across the curriculum. This requires that pupils be given the opportunity to apply and develop their ICT capability in all subjects (apart from physical education). Teachers should use their judgement to decide when this is appropriate at key stage 1 in the non-core foundation subjects. The new material provided in this update is designed to demonstrate how ICT capability might be applied and developed in a range of subjects across key stages 1 and 2.

As well as making its own distinctive contribution to the school curriculum, ICT contributes to the wider aims of primary education, and schools may wish to review their ICT schemes of work in the context of this broader contribution.

Further advice on using ICT in teaching and learning is available from the Becta website at: [www.ictadvice.org.uk](http://www.ictadvice.org.uk)

## **Safe and discriminating online behaviours**

Schools now benefit from much greater levels of connectivity and access to digital content. The internet and other digital information technologies are powerful tools, opening up new possibilities for finding information, communicating and collaborating. Schools are relatively 'safe areas' for children to use technologies, as they are likely to have filtering and/or monitoring software, an acceptable-use policy that teachers, children and parents sign up to, classroom supervision, a firewall and perhaps a 'walled garden' of websites for children. Access to the internet at home, however, may not be mediated by such safety mechanisms. There is no fail-safe technological solution that will protect children from all the risks they may encounter online. Children therefore need to be taught safe and discriminating behaviours that they can adopt whenever they are using the internet.

The Internet Proficiency Scheme has been developed by Becta, DfES and QCA. It aims to support teachers in this area by providing practical advice on the teaching and learning of internet safety in the classroom. The scheme is designed to help key stage 2 children learn how to use the internet and other technologies safely and responsibly. It consists of a teacher's pack and a supporting website. The aims of the scheme are to:

- develop a set of safe and discriminating behaviours for children to adopt when using the internet and other technologies;
- provide teachers with easily accessible support materials to help develop safe and discriminating behaviours when children are using the internet and other technologies;
- offer children a set of activities that allow them to demonstrate what they know and understand about using communication technologies;

- ensure that the safe and discriminating behaviours will be directly related to the knowledge, skills and understanding set out in the national curriculum and schemes of work for ICT and citizenship, and the guidance for PSHE at key stage 2; and
- support teachers' professional development through the information and guidance contained within the pack.

Cybercafé, the website designed for the scheme, allows children to demonstrate what they have learnt about safe and discriminating behaviours in an interactive and supportive environment. The Cybercafé materials can be used as a whole-class teaching resource or as an ICT activity outside lesson time (including in the home). There is also a teachers' area of the Cybercafé website, which provides additional advice and resources for teachers. The site is at:  
[www.gridclub.com/cybercafe](http://www.gridclub.com/cybercafe)

The scheme's print pack can be ordered free of charge by e-mailing your name, school name and full postal address to: [internetprof@becta.org.uk](mailto:internetprof@becta.org.uk)

Becta/DfES also provides further advice for schools on internet safety at:  
[safety.ngfl.gov.uk/schools](http://safety.ngfl.gov.uk/schools)

# Schemes of work for ICT

## Adapting existing schemes of work

Schools may wish to review and develop existing schemes of work for ICT in the light of the new material provided in this update. In reviewing their own scheme of work so it is suited to the children and circumstances in their school, teachers may find it helpful to consider how far the existing scheme:

- provides a long- and medium-term plan that is clearly linked to the national curriculum programme of study and level descriptions;
- provides a basis from which to plan lessons on a daily or weekly basis to meet the needs of all children in the class;
- shows how children's ICT capability is developed in an organised, systematic and rigorous way;
- builds on learning that has already taken place and ensures progression;
- warns of misconceptions that children may have in relation to ICT, and that need to be avoided or specifically addressed;
- links to other areas of the curriculum where ICT capability can be applied and developed;
- links teaching activities to the learning they are intended to promote;
- identifies what children are expected to learn within a unit and indicates how this might be assessed;
- provides opportunities for the development of literacy and numeracy, and links to other subjects; and
- gives indications of the time needed to teach it.

It might also be useful to consider:

- whether opportunities offered by the circumstances of the school suggest that particular units or aspects should be emphasised or expanded;
- whether the material should be adapted to meet the needs of the children in the school, particularly if the children are not attaining at levels broadly appropriate for their age;
- whether the material should be adapted to meet the needs of any gifted and talented children in the school; and
- whether the attainments of the children in the school are such that adaptation alone will not provide a relevant structure for teaching ICT. This may be the case for some children with significant learning difficulties. In this case, schools may wish to use the exemplar scheme as a resource for developing a scheme that offers children opportunities to experience a range of work across the programme of study. This should be within a structure that identifies timescales and learning outcomes that are appropriately rigorous and challenging.

In all schools, teachers are best placed to judge whether the learning objectives meet the learning needs of individual children, and whether they need to adapt these to provide appropriate opportunities for all children to succeed. Some of the teaching activities will need to be adapted to ensure that children with special educational needs of all kinds may participate fully and demonstrate their achievements.

## Sequencing the scheme of work units

The scheme of work units should be sequenced to ensure coverage of the programme of study and progression in children's ICT capability. The units for years 1 and 2 cover the key stage 1 programme of study. The units for years 3 and 4 begin to cover the key stage 2 programme of study, and the units for years 5 and 6 complete this coverage. This ensures that key ideas are revisited, extended and consolidated.

Each unit introduces new aspects of ICT, building on earlier units. Children need to be provided with opportunities to practise the skills they have learnt, and to apply their knowledge in a range of contexts. Some of the material taught within the units will be revisited frequently.

The units need not be taught in a linear fashion. Teachers working with mixed-age classes, for instance, may want to sequence the units in pairs so that children from different years can cover work on similar material.

For example, a teacher in a small school teaching a mixed-age class may have a two-year planning cycle, and might group together ICT units 3C and 4D so that the whole class is engaged in data-handling. Differentiation in expectation, by task, by questioning, by support and by learning outcomes allows the class to work together at different levels. To avoid repetition in the second year of the cycle, the subject context changes. The year 3 children may be introduced to data-handling in a geography locality survey. The same children in their year 4 may revisit and extend their skills in data-handling through applying them to a science project.

Teachers working with reception age children may want to introduce them to some of the earlier units. They may also want to sequence the units so that children are taught a particular key idea or technique that they can then apply to support learning in another area of the curriculum. Year 6 teachers may sequence the later units in respect of the sample teaching materials offered by the *Framework for teaching ICT capability: Years 7, 8 and 9*, or through discussion with link secondary schools.

In terms of sequencing the possible teaching activities within each unit, teachers may want to consider the amount of time needed for the children to learn key ideas and techniques prior to the integrated task. Planning should ensure that there is sufficient time at the end of the unit to cover the integrated task, and for children to reflect on, evaluate and modify their work. The suggested short focused tasks are not intended to form a rigid sequence of weekly lessons, and teachers may want to adapt or combine these in preparation for the integrated task.

## Planning for alternative integrated tasks

Where there are small clusters of computers in the classroom, it can sometimes be difficult to find time for all the children in the class to carry out the integrated task. A way of addressing this might be to plan for groups of children to carry out ‘alternative’ integrated tasks.

For example, in the weekly ICT lessons, the teacher demonstrates and discusses the specific key ideas and techniques from unit 1D ‘Labelling and classifying’ with the whole class. She teaches the skills required and prioritises hands-on support for those who need it. She then plans subject contexts where groups of children will apply and develop what they have learnt in a purposeful task, using the cluster of computers. One group uses a word bank in a history lesson to label and classify a collection of new and old toys (linked to history unit 1); another group uses word banks to label and classify materials during a science lesson (linked to science unit 1C); and others classify classroom objects then write simple labels for them in an English lesson (linked to the *Framework for teaching English: Year 1*).

This type of approach may also work well in larger primary schools where children are taught in an ICT suite. Effective learning takes place when children apply the knowledge, skills and understanding from their ICT lesson in a purposeful context. If children are taught the key ideas and techniques and then the integrated task in the ICT suite, they are able to discuss and demonstrate the purposes for which they will use ICT. Preparation, planning and review all take place in the classroom, and children are clear from the outset about the relationship between the skills they have been taught and how to apply them with purpose and to effect.

The new integrated tasks for existing units offered in this update provide opportunities, as in the example cited above, for applying and developing the ICT learning objectives through a range of subject contexts. Where teachers choose to incorporate this type of teaching activity, this may form part of their planning for other subjects. Teachers may want to map out where ICT is applied and developed across a range of other curriculum areas, so that children have regular opportunities to develop their ICT capability across the key stages.

The new integrated tasks are not exhaustive and are not intended to prescribe how ICT learning objectives are applied and developed in a subject context. They are offered as illustrative examples that teachers may want to adapt to their own circumstances and to suit the needs of their own children.

# The units

Each unit is set out in the same way.

## Title of the unit

Each unit has a title and a reference code, eg 'Unit 1D Labelling and classifying'. The number gives the year group for which the unit is intended. The letter provides a quick reference guide – the sequence of letters does not imply an order in which the units should be taught during the year.

## About the unit

This gives the ideas underpinning the unit, and indicates which aspects of the programme of study are emphasised within the unit. It also indicates how what has been learnt may be applied when children use ICT to support their learning in other subjects.

## Where the unit fits in

This gives:

- the knowledge and skills children need before they start the unit and the units they need to have covered already;
- links with other units within the scheme and other curriculum areas.

## Technical vocabulary

This lists the technical vocabulary that children are unlikely to have encountered in previous units, or may need reminding about.

## Resources

This lists apparatus and equipment essential to the unit. A full list of resources is provided in appendix B on page 71.

## Expectations

These give broad descriptions of what children might be expected to know and do at the end of the unit. They are designed to help teachers decide where children's progress differs markedly from the progress of the rest of the class.

**YEAR 1**

### Unit 1D Labelling and classifying

**ABOUT THE UNIT**

In this unit children learn that key pieces of information can be used to describe objects. They also learn to use simple criteria to divide groups of objects into sub-sets, and to identify objects by key words. They will use a word processor with a word bank to present information.

This unit could be taught in reception.

Children will apply what they have learnt in this unit when sorting objects in mathematics and science.

**WHERE THE UNIT FITS IN**

This unit assumes that children:

- understand the concepts of big and small
- understand the written words for different colours
- can use a word processor with a word bank.

This unit provides a foundation for units on databases.

**TECHNICAL VOCABULARY**

- information
- key words

**RESOURCES**

- a variety of large and small coloured balls and blocks
- size and shape labels
- pictures of the objects on cards
- word processor with a word bank and graphic insert capability
- word bank with shapes, sizes and colours

**EXPECTATIONS**

**at the end of this unit**

*most children will:* use key words to label and classify objects

*some children will not have made so much progress and will:* use personal descriptions to describe objects

*some children will have progressed further and will:* use key words from fixed categories to label and classify objects

### Learning objectives

These give the small steps necessary to build up the knowledge and understanding within the unit.

### Possible teaching activities

There are activities of different types, including:


- **scene-setting activities**, which introduce the unit to the whole class and typically take a few minutes;
- **short focused tasks**, aimed at introducing and providing instruction in a specific ICT technique, *eg cut and paste*, which can be covered by individuals, pairs or groups in a short amount of time;
- **integrated tasks**, which draw on the material covered in the short focused tasks, and are aimed at developing ICT capability in appropriate contexts. These tasks may require several sessions to complete. In some cases alternative activities are suggested.

### Learning outcomes

These provide indications of children's progress. Opportunities for checking progress should arise naturally in the course of teaching the unit. Teachers are not expected to keep detailed records of each child's progress in relation to the learning outcomes (see Assessment and ICT on page 6).

### Points to note

These point out common misunderstandings and misconceptions children may have, other specific points to note when teaching the unit and suggestions to support children with particular needs.

Unit 1D Labelling and classifying 

LEARNING OBJECTIVES	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES	POINTS TO NOTE
<b>SETTING THE SCENE</b>			
<b>CHILDREN SHOULD LEARN</b> <ul style="list-style-type: none"> <li>• <b>key idea:</b> that key pieces of information can describe objects</li> </ul>	<ul style="list-style-type: none"> <li>◆ Ask children to pretend that they have lost an object and get them to describe it to the class so that other children can help them find it. Discuss how some ways of describing it might be better than others. Say that we can find a lot of 'information' about an object.</li> </ul>	<b>CHILDREN</b> <ul style="list-style-type: none"> <li>• use the word 'information'</li> </ul>	<ul style="list-style-type: none"> <li>Some children will find it difficult to distinguish between personal descriptions, <i>eg 'it's my favourite'</i>, and objective descriptions, <i>eg 'it's made of wood'</i>.</li> </ul>
<b>SHORT FOCUSED TASKS</b>			
<ul style="list-style-type: none"> <li>• <b>key idea:</b> that objects can be described using key words</li> </ul>	<ul style="list-style-type: none"> <li>◆ Ask a child to select an object from a collection of objects, including large and small coloured balls and blocks, and ask them to state its colour and size. Ask the child to choose a card showing the colour and another showing the size. Then ask them to list the words, <i>eg ball, big, red</i>, and then say the sentence. 'It is a big red ball'. Tell the class that they can say lots of other things about each object. Ask them to describe shape, smell, feel, and taste.</li> </ul>	<ul style="list-style-type: none"> <li>• identify key words to describe objects</li> </ul>	
<ul style="list-style-type: none"> <li>• <b>key idea:</b> that objects can be divided according to criteria</li> </ul>	<ul style="list-style-type: none"> <li>◆ Take a collection of objects, including large and small coloured balls and blocks. Ask the children to take it in turns to divide them into two sets. Ask the class to guess the criterion chosen.</li> </ul>	<ul style="list-style-type: none"> <li>• identify criteria which divide a set of objects</li> </ul>	
<ul style="list-style-type: none"> <li>• <b>key idea:</b> that objects can be identified from key words</li> </ul>	<ul style="list-style-type: none"> <li>◆ Take a collection of objects, including large and small coloured balls and blocks. Ask the children to take it in turns to give two words describing one of the objects, such as 'big' and 'red'. Then ask the class to identify the object. Ask the class why it is sometimes easier to do this. Discuss the properties that are unique to each object and the properties the objects share.</li> </ul>	<ul style="list-style-type: none"> <li>• understand the difference between criteria which are general and criteria which are specific</li> </ul>	
<b>INTEGRATED TASK</b>			
<ul style="list-style-type: none"> <li>• to describe objects using key words</li> </ul>	<ul style="list-style-type: none"> <li>◆ Prepare a word bank containing the names, shapes, sizes and colours of objects. Explain to the class that each of them will choose an object on screen and then give some information about it. Ask children, one at a time, to choose an object and then to click on the appropriate name, size and colour in the word bank. Print the information onto labels and ask each child to label their object. The objects could then be displayed.</li> </ul>	<ul style="list-style-type: none"> <li>• recognise that objects have properties</li> <li>• can provide information about objects</li> </ul>	<ul style="list-style-type: none"> <li>Some children will find this task easy while others will need many attempts before they can successfully provide information about an object.</li> </ul>

## The new integrated tasks

### Learning objectives

The learning objective for the integrated task is the same as or similar to the original unit. It is only the context for the task that has changed. It is essential that children learn the key ideas and techniques of the 'ICT lesson' before they apply these in the subject context.

### Possible teaching activities

The new integrated tasks offer alternative approaches to applying and developing ICT across a range of subjects. Teachers may want to build one or more of the possible teaching activities into their planning. Groups of children may carry out the tasks in one of the suggested subject contexts.

Where teachers choose to incorporate this approach to integrated tasks, they may want to map out where ICT is applied and developed across a range of other curriculum areas, so that children have regular opportunities to develop their ICT capability.

### Learning outcomes

These provide indications of children's progress in ICT. The outcome is adapted to describe the context in which children carry out the activity.

Integrated task – Unit 1D Labelling and classifying		ICT learning objective: to describe objects using key words	
LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
Linked to the <i>Framework for teaching English: Year 1</i>			
<ul style="list-style-type: none"> <li>to describe objects using key words</li> </ul>	<ul style="list-style-type: none"> <li>Prepare a topic bank of classroom objects. Discuss with the children what the objects are used for. Ask them to group the objects, <i>eg group all the mathematics apparatus or the art materials</i>, and to consider different ways in which the objects could be grouped. <i>Can some objects be grouped in more than one category?</i> Encourage children to consider why we need to use labels. <i>Do some areas of the classroom need instructions, eg only three children in the home corner?</i></li> <li>Ask the children to write simple labels or instructions for the objects, using a word bank if necessary, and then to place them appropriately around the classroom. <i>Which labels can they read?</i></li> </ul>	<ul style="list-style-type: none"> <li>recognise that objects have properties</li> <li>provide information about objects by writing simple instructions and labels for classroom use</li> </ul>	<ul style="list-style-type: none"> <li>Some children will be able to group the objects according to their use, <i>eg mathematics, art</i>, and then provide a key word to define the groups.</li> <li>The key ideas and techniques from this unit can be developed in unit 2E 'Questions and answers' and then in unit 3C 'Introduction to databases'.</li> </ul>
Linked to science unit 1C 'Sorting and using materials'			
<ul style="list-style-type: none"> <li>to describe objects using key words</li> </ul>	<ul style="list-style-type: none"> <li>Ask the children to collect a selection of classroom objects. Discuss what material they are made from. Ask children to suggest more items that can be made from each of the materials, <i>eg glass → window → glasses</i>.</li> <li>Encourage the children to use a range of adjectives to describe the materials and objects, <i>eg rough, smooth</i>, and to identify common characteristics. They may need a word bank of adjectives and materials, <i>eg smooth, shiny, rough, hard, soft, transparent, wood, rubber</i>, to help them.</li> <li>Using an interactive whiteboard or data projector, ask the children to sort the words for the objects into a table or lists according to their materials.</li> </ul>	<ul style="list-style-type: none"> <li>recognise that objects have properties</li> <li>provide information about objects by grouping them according to their materials</li> </ul>	<ul style="list-style-type: none"> <li>The key ideas and techniques from this unit can be developed in unit 2E 'Questions and answers' and then in unit 3C 'Introduction to databases'.</li> </ul>
Linked to history unit 2 'How are our toys different from those in the past?'			
<ul style="list-style-type: none"> <li>to describe objects using key words</li> </ul>	<ul style="list-style-type: none"> <li>Prepare a word bank with adjectives to describe a collection of old and new toys, and tell the class they are going to make a toy museum.</li> <li>Discuss how the toys differ and encourage the children to use a range of adjectives to describe them, <i>eg new, old, small, shiny, rusty, broken, clean, toys with batteries, toys we roll, toys we push, toys with remote control</i>.</li> <li>Tell the children to imagine that they are organising the exhibits and need to group the toys for the visitors to the museum. They sort the collection of toys or images of toys according to, for example, their age, their condition or how they move. Discuss why they might need to label the exhibits, <i>eg to identify an object or to give further details about it</i>.</li> <li>Ask the children to write simple labels, using the word bank of adjectives, to describe the toys and their groups.</li> </ul>	<ul style="list-style-type: none"> <li>recognise that objects have properties</li> <li>provide information about objects by grouping a collection of toys</li> </ul>	<ul style="list-style-type: none"> <li>Many local, regional and national art galleries and museums are digitising their catalogues and providing educational online resources for classroom use.</li> <li>The key ideas and techniques from this unit can be developed in unit 2E 'Questions and answers' and then in unit 3C 'Introduction to databases'.</li> </ul>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to science unit 1D ‘Light and dark’</p>			
<ul style="list-style-type: none"> <li>■ to create a representation of a real or fantasy situation</li> </ul>	<ul style="list-style-type: none"> <li>■ Discuss with the children the different ways in which the computer is used to represent real or fantasy situations. Tell the children that they are going to create their own representations of light sources linked, for example, to Bonfire Night or Divali.</li> <li>■ As part of their science work, children might have walked around the school to make a collection of light sources. Remind them about light sources that are used at different times of the year, eg bonfires, fireworks. Talk about different light sources, eg safety lights, warning lights, lighting in the home and in the street. Discuss how things look different in the dark and which colours show up best in the dark.</li> <li>■ The children use a painting package or object-based graphing package to create a dark background for a firework or bonfire scenario. Children could use the flood-fill option to create the night sky and to produce simple pictures of night and day with, for example, a moon, stars and sun.</li> <li>■ Ask the children to explain how their representations differ from real life, eg through the absence of sound, and to explain their choices of colours and shapes. The children could evaluate their work as a whole-class activity using a data projector.</li> <li>■ Some children will be able to use a text tool or a word processor to produce a caption for their representation.</li> </ul>	<ul style="list-style-type: none"> <li>■ describe their scenario</li> <li>■ explain why they made their decisions or choices</li> <li>■ explain how their representations differ from real life</li> </ul>	<ul style="list-style-type: none"> <li>■ The key skills and techniques used here are developed further in ICT unit 2B ‘Creating pictures’. Children might move on from using flood-fill to drawing then filling objects.</li> <li>■ There are CD-ROMs and web-based interactive screens where children turn a light on/off, or where there are night/day screens.</li> </ul>
<p>Linked to design and technology unit 1B ‘Playgrounds’</p>			
<ul style="list-style-type: none"> <li>■ to create a representation of a real or fantasy situation</li> </ul>	<ul style="list-style-type: none"> <li>■ Discuss with the children the different ways in which the computer is used to represent real or fantasy situations. Tell the children that they are going to create their own representations of a playground.</li> <li>■ As part of their design and technology work, children might have visited a local playground and investigated the equipment. Remind them about why we need playgrounds. <i>What makes good play equipment and why do we need special equipment to play with?</i></li> <li>■ Using a bank of images, encourage the children to name the equipment and the materials used in its various components. Ask them to combine the images to recreate the playground they have visited or to create an imaginary one. Encourage them to make decisions and choices about the images of the equipment as they move them around.</li> <li>■ Ask the children to explain how their representations differ from real life, eg they are 2D and inanimate, and to explain their choices of equipment. The children could evaluate their work as a whole-class activity using a data projector.</li> <li>■ Some children will be able to use a text tool or a word processor to produce a caption for their representation.</li> </ul>	<ul style="list-style-type: none"> <li>■ describe their scenario</li> <li>■ explain why they made their decisions or choices</li> <li>■ explain how their representations differ from real life</li> </ul>	<ul style="list-style-type: none"> <li>■ Year 5 children following ICT unit 5A could create a bank of images of playground equipment for the younger children to arrange.</li> </ul>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to the <i>Framework for teaching mathematics: Year 1</i></p>			
<ul style="list-style-type: none"> <li>to communicate ideas by selecting and adding text</li> </ul>	<ul style="list-style-type: none"> <li>Prepare a screen containing images of 2D or 3D shapes, and a word bank with words the children would need to describe those shapes.</li> <li>Show representations of the shapes, perhaps using an interactive whiteboard or data projector. Discuss the properties of the shapes and ask the children to describe them. Draw attention to the key vocabulary featured in the word bank, eg <i>rectangle, square, faces, corners</i>.</li> <li>Ask the children to produce a description of the shapes using the word bank, together with some words they have typed in using the keyboard, eg <i>This is a rectangle. It has four sides</i>. The 2D or 3D shapes could also be imported into the word banks, so that the children could select the images as well as the text to communicate their ideas.</li> <li>The children could print their work, with support if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>produce clear and error-free text on screen to describe 2D or 3D shapes according to their properties</li> </ul>	<ul style="list-style-type: none"> <li>Some software, eg <i>Clicker grids</i>, allows the creation of word banks containing images.</li> <li>The facility to import images of shapes into the program would allow the teacher to ensure that there is a range – eg a wide range of triangles including <i>isosceles, scalene, obtuse and right-angled as well as equilateral</i> – on which children base their concept of shape and their properties.</li> <li>The teaching ideas could be extended further to support the learning objectives in unit 1D ‘Labelling and classifying’, where children use key words to label and classify objects.</li> </ul>
<p>Linked to <b>geography</b> unit 5 ‘Where in the world is Barnaby Bear?’</p>			
<ul style="list-style-type: none"> <li>to communicate ideas by selecting and adding text</li> </ul>	<ul style="list-style-type: none"> <li>Prepare a word bank containing the various places Barnaby Bear visited, together with various modes of transport. Images of a bear and modes of transport could also be imported into the word bank, so that the children could select the images as well as the text to communicate their ideas.</li> <li>Show the words and images, perhaps using an interactive whiteboard or data projector. Ask the children to choose various places and modes of transport to make sentences about Barnaby Bear. Draw attention to the key vocabulary featured in the word bank.</li> <li>Ask the children to produce a description of where the bear went and how he travelled, using the word bank together with some words they have typed in using the keyboard, eg <i>Barnaby Bear went to ... He went by ...</i> If the images are imported into the word banks, children could select the appropriate images as well as the text to communicate their ideas.</li> <li>The children could print their work, with support if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>produce clear and error-free text on screen to describe where Barnaby Bear went and how he travelled</li> </ul>	<ul style="list-style-type: none"> <li>At the outset, arrange for various members of the school community to take Barnaby Bear (or the equivalent mascot) with them when they travel away from school. The bear could send postcards back to the school, and could be photographed while travelling to and at these places.</li> <li>As geography unit 5 is a continuous unit, this task might best be completed towards the end of year 1.</li> </ul>
<p>Linked to <b>science</b> unit 1A ‘Ourselves’</p>			
<ul style="list-style-type: none"> <li>to communicate ideas by selecting and adding text</li> </ul>	<ul style="list-style-type: none"> <li>Prepare a screen containing images of body parts, and a word bank with the words children need to describe them, eg <i>leg, nose, ear</i>. The images could be either scans of children’s own drawings or digital pictures that they have taken of each other with a camera.</li> <li>Show the words and images, perhaps using an interactive whiteboard or data projector. Ask the children to make sentences about body parts, drawing attention to the key vocabulary featured in the word bank.</li> <li>Ask the children to produce a description using the word bank, together with some words they have typed in using the keyboard, eg <i>This is Owen. He has two legs</i>. If the images are imported into the word banks, children could select the appropriate images as well as the text to communicate their ideas.</li> <li>Alternatively, the Intel play microscope could be used to take images of tadpoles at various stages of development. These photos could be imported and a suitable word bank prepared. The children could label developing parts, eg <i>legs</i>. This activity could also be undertaken with other minibeasts. The children could produce a sentence using words and images from the word bank.</li> <li>The children could print their work, with support if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>produce clear and error-free text on screen to name external parts of the body</li> </ul>	<ul style="list-style-type: none"> <li>Many CD-ROMs and websites offer suitable images and ready-made grids for this type of activity.</li> <li>Intel play microscopes were delivered to schools as part of Science Year. Software accompanying the microscopes allows digital images to be taken. Make sure the tadpoles or minibeasts are under the microscope lamp for only a short time.</li> </ul>

**Integrated task – Unit 1C The information around us**

ICT learning objective: to show that information can be presented in a variety of forms and collected from a range of sources

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
Linked to music unit 2 'Sounds interesting – exploring sounds'			
<ul style="list-style-type: none"> <li>to show that information can be presented in a variety of forms and collected from a range of sources</li> </ul>	<ul style="list-style-type: none"> <li>Using a collection of musical instruments and recordings of the sounds they make, play each recording and ask the children to match the sound to the instrument. Encourage them to play the instrument to see if they were right.</li> <li>Using images of instruments, ask the children to match the recorded sound to the image, perhaps using a word and image bank. Discuss the fact that some musical instruments, <i>eg piano, violin</i>, have a range of sounds, while others, <i>eg drum, triangle</i>, merely vary their intensity from loud to soft. Encourage the children to think about what information we gain from handling the instrument rather than just looking at an image of it, <i>eg the sound it makes can only be conveyed by playing the instrument (or by listening to a recording of it)</i>.</li> <li>Ask the children to make a simple presentation about sounds and instruments, using a variety of information sources.</li> </ul>	<ul style="list-style-type: none"> <li>recognise that information can be presented in a variety of forms and collected from a range of sources</li> </ul>	<ul style="list-style-type: none"> <li>Children could record themselves using a built-in microphone on a computer or a tape recorder, to see if they can recognise each other's voices.</li> <li>There are some software packages that allow children to enter musical notes and then listen to how different instruments play them. There are many websites that allow children to listen to sounds to identify the object that made them.</li> <li>This teaching point could also be made through the possible teaching activities suggested in science unit 1F 'Sound and hearing', where children use CD-ROM and video clips to find out about the sounds made by musical instruments.</li> </ul>
Linked to science unit 1A 'Ourselves'			
<ul style="list-style-type: none"> <li>to show that information can be presented in a variety of forms and collected from a range of sources</li> </ul>	<ul style="list-style-type: none"> <li>Gather a collection of real objects that stimulate the senses, <i>eg a lemon, a scented rose, a jar of Marmite, 'talk' on the radio, a bell, sandpaper</i>. Prepare an image and word bank to represent these.</li> <li>Show children the images of the objects and the words, perhaps using a whiteboard or data projector, and ask them to consider what the images can tell us that the object alone cannot, <i>eg where it grows, how you use it, who eats it, where you might hear it</i>. Encourage children to consider that taste and smell cannot be conveyed by an image.</li> <li>Ask the children to classify the objects according to which senses they stimulate. Working in pairs, they make up sentences derived from handling the objects or looking at the images, <i>eg This lemon is yellow, it tastes sour and feels smooth</i>. Encourage the children to be creative in their descriptions, and share some of the best examples with the class.</li> </ul>	<ul style="list-style-type: none"> <li>recognise that information can be presented in a variety of forms and collected from a range of sources</li> </ul>	<ul style="list-style-type: none"> <li>There is a variety of CD-ROMs for science that could be used with this type of activity.</li> </ul>

**Integrated task – Unit 1D Labelling and classifying**

ICT learning objective: to describe objects using key words

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to the <i>Framework for teaching English: Year 1</i></p>			
<ul style="list-style-type: none"> <li>■ to describe objects using key words</li> </ul>	<ul style="list-style-type: none"> <li>■ Prepare a topic bank of classroom objects. Discuss with the children what the objects are used for. Ask them to group the objects, <i>eg group all the mathematics apparatus or the art materials</i>, and to consider different ways in which the objects could be grouped. <i>Can some objects be grouped in more than one category?</i> Encourage children to consider why we need to use labels. <i>Do some areas of the classroom need instructions, eg only three children in the home corner?</i></li> <li>■ Ask the children to write simple labels or instructions for the objects, using a word bank if necessary, and then to place them appropriately around the classroom. <i>Which labels can they read?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ recognise that objects have properties</li> <li>■ provide information about objects by writing simple instructions and labels for classroom use</li> </ul>	<ul style="list-style-type: none"> <li>■ Some children will be able to group the objects according to their use, <i>eg mathematics, art</i>, and then provide a key word to define the groups.</li> <li>■ The key ideas and techniques from this unit can be developed in unit 2E 'Questions and answers' and then in unit 3C 'Introduction to databases'.</li> </ul>
<p>Linked to <b>science</b> unit 1C 'Sorting and using materials'</p>			
<ul style="list-style-type: none"> <li>■ to describe objects using key words</li> </ul>	<ul style="list-style-type: none"> <li>■ Ask the children to collect a selection of classroom objects. Discuss what material they are made from. Ask children to suggest more items that can be made from each of the materials, <i>eg glass→window→glasses</i>.</li> <li>■ Encourage the children to use a range of adjectives to describe the materials and objects, <i>eg rough, smooth</i>, and to identify common characteristics. They may need a word bank of adjectives and materials, <i>eg smooth, shiny, rough, hard, soft, transparent, wood, rubber</i>, to help them.</li> <li>■ Using an interactive whiteboard or data projector, ask the children to sort the words for the objects into a table or lists according to their materials.</li> </ul>	<ul style="list-style-type: none"> <li>■ recognise that objects have properties</li> <li>■ provide information about objects by grouping them according to their materials</li> </ul>	<ul style="list-style-type: none"> <li>■ The key ideas and techniques from this unit can be developed in unit 2E 'Questions and answers' and then in unit 3C 'Introduction to databases'.</li> </ul>
<p>Linked to <b>history</b> unit 2 'How are our toys different from those in the past?'</p>			
<ul style="list-style-type: none"> <li>■ to describe objects using key words</li> </ul>	<ul style="list-style-type: none"> <li>■ Prepare a word bank with adjectives to describe a collection of old and new toys, and tell the class they are going to make a toy museum.</li> <li>■ Discuss how the toys differ and encourage the children to use a range of adjectives to describe them, <i>eg new, old, small, shiny, rusty, broken, clean, toys with batteries, toys we roll, toys we push, toys with remote control</i>.</li> <li>■ Tell the children to imagine that they are organising the exhibits and need to group the toys for the visitors to the museum. They sort the collection of toys or images of toys according to, for example, their age, their condition or how they move. Discuss why they might need to label the exhibits, <i>eg to identify an object or to give further details about it</i>.</li> <li>■ Ask the children to write simple labels, using the word bank of adjectives, to describe the toys and their groups.</li> </ul>	<ul style="list-style-type: none"> <li>■ recognise that objects have properties</li> <li>■ provide information about objects by grouping a collection of toys</li> </ul>	<ul style="list-style-type: none"> <li>■ Many local, regional and national art galleries and museums are digitising their catalogues and providing educational online resources for classroom use.</li> <li>■ The key ideas and techniques from this unit can be developed in unit 2E 'Questions and answers' and then in unit 3C 'Introduction to databases'.</li> </ul>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to <b>science</b> unit 2B and the <i>Framework for teaching English: Year 1</i></p>			
<ul style="list-style-type: none"> <li>■ to use ICT appropriately to communicate ideas through text</li> </ul>	<ul style="list-style-type: none"> <li>■ Explain to the class that they will be building on their experience of recording the bean-growing activity in science and writing instructions in English. Remind them of the difference between writing fact and fiction.</li> <li>■ Ask the children to write the instructions for planting a bean. Discuss what vocabulary is needed and prepare either a word bank, <i>eg bean, jar, blotting paper, cotton wool, water</i>, or a printed list for those children who need it. It may be helpful to produce the instructions in the wrong order and ask the children to sequence them using an interactive whiteboard or data projector. Encourage them to re-read their work on screen to make sure it makes sense. Remind children to use the 'enter/return' and 'backspace' keys if they make mistakes.</li> <li>■ When children have finished, ask them to read their instructions out loud to a partner. <i>Are they in the right order? Have they left anything out?</i> As a whole-class activity, children could read the instructions together and comment on similarities and differences between their versions.</li> </ul>	<ul style="list-style-type: none"> <li>■ develop their text on screen</li> <li>■ use appropriate techniques to ensure that their writing is clear, well presented and error-free</li> </ul>	<ul style="list-style-type: none"> <li>■ There are opportunities for applying and developing the key ideas and techniques from this unit in any activities (across curriculum areas) where children use their sequencing, narrative and composition skills.</li> <li>■ Some children will be able to use 'cut and paste' and 'copy' to create the word banks for this activity.</li> </ul>
<p>Linked to <b>history</b> unit 4 'Why do we remember Florence Nightingale?'</p>			
<ul style="list-style-type: none"> <li>■ to use ICT appropriately to communicate ideas through text</li> </ul>	<ul style="list-style-type: none"> <li>■ Tell the children that they are going to write their own version of the story of Florence Nightingale, based on what they have gathered from different sources of information. Prepare a word bank of key words, phrases and sentences about her life.</li> <li>■ Give the children a very simple version of the story of Florence Nightingale. This could use few adjectives and be broken into separate chapters. Ask the children to sequence the chapters so that they are in chronological order, and to give each chapter a title. It may be helpful to carry out the sequencing activity using an interactive whiteboard or data projector.</li> <li>■ The children then create their own version based on your simple version of the story. Encourage them to make their chapters more interesting by: using the word bank; adding detail; using adjectives; and adding their own ideas. Encourage children to re-read their work on screen to make sure it makes sense. Remind them to use the 'enter/return' and 'backspace' keys if they make mistakes.</li> <li>■ When they have finished, ask them to compare their versions of the story with a partner. <i>Is the story in the right order? How do the versions differ?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ develop their text on screen</li> <li>■ use appropriate techniques to ensure that their writing is clear, well presented and error-free</li> </ul>	<ul style="list-style-type: none"> <li>■ Some children will be able to use 'cut and paste' and 'copy' to create the word banks for this activity.</li> </ul>

**Integrated task – Unit 2B Creating pictures**

ICT learning objective: to select and use different techniques to communicate ideas through pictures

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<b>Linked to religious education unit 2C ‘Celebrations (generic)’</b>			
<ul style="list-style-type: none"> <li>■ to select and use different techniques to communicate ideas through pictures</li> </ul>	<ul style="list-style-type: none"> <li>■ The following celebrations offer a context for applying and developing ICT capability through identifying some of the ways in which believers celebrate festivals.</li> <li>■ Divali: this could serve as an introduction to the work to be undertaken in year 3. Ask the children to study a variety of rangoli patterns. Explain that although geometric designs are very popular, the motif of the lotus flower is also frequently used. Ask the children to draw the outline shape of the lotus leaf and to fill it in with various designs and colours. They can then experiment with using different colour effects and fill colours.</li> <li>■ Chinese New Year: ask the children to draw the head of a Chinese dragon. Explain that the colour red is considered to bring good luck.</li> <li>■ Hanukkah: tell the story of Hanukkah candles. Ask the children to draw the candles. Explain that it will be easier if they draw a rough semicircle using the brush tool for the frame first and then add the candles. They could use the spray tool for the flames of the candles. A black background would look very effective.</li> <li>■ Holi: tell the children the story of Lord Krishna and Holi. Ask them to use the spray tool to spray the screen with red, representing the coloured waters thrown during Holi. They could then draw the head of Krishna on top of this. A black background would look very effective.</li> <li>■ Encourage children to use a range of techniques learnt in previous sessions.</li> </ul>	<ul style="list-style-type: none"> <li>■ select the appropriate tools to create pictures that communicate ideas about religious festivals</li> </ul>	<ul style="list-style-type: none"> <li>■ The key skills and techniques used here build on those covered in unit 1A ‘An introduction to modelling’. Children move on from using flood-fill to drawing then filling objects.</li> <li>■ Some of these activities would be easier for the children if a graphics-drawing tablet were available.</li> <li>■ Different groups of children might focus on one or two of the suggestions, not necessarily all of them.</li> <li>■ This task could be linked to a variety of festivals. It provides an opportunity to reinforce what the children have learnt about the beliefs of a particular religion through a festival. Remind the children that not all aspects of festivals are specifically religious. Many, <i>eg food</i>, are linked to specific cultures.</li> <li>■ The techniques used in creating geometric rangoli patterns could also be applied and developed in the context of religious education unit 3B ‘How and why do Hindus celebrate Divali?’</li> </ul>
<b>Linked to art and design unit 2B ‘Mother Nature, designer’</b>			
<ul style="list-style-type: none"> <li>■ to select and use different techniques to communicate ideas through pictures</li> </ul>	<ul style="list-style-type: none"> <li>■ Collect examples of designers who used nature as a source of ideas, <i>eg William Morris</i>, and designs based on natural forms, animals and birds, <i>eg Arabic carpet designs, Polynesian fabrics</i>.</li> <li>■ Use a display of natural objects created in the art and design lessons. Ask the children to examine these, using a viewfinder to select a small area. They take this as a starting point for their own design on the computer, using a variety of drawing and painting tools. The children might draw and fill in the shapes they have identified in their observational drawings.</li> <li>■ The children print their work, discuss their designs and give reasons for choosing the particular tools. They describe the effects produced.</li> </ul>	<ul style="list-style-type: none"> <li>■ select the appropriate tools to give the required effect</li> </ul>	<ul style="list-style-type: none"> <li>■ The short focused tasks for this unit could also be adapted to link to the art unit.</li> <li>■ The designs produced could be printed onto transfer paper and ironed onto fabric to be used as a basis for the collage work suggested in unit 2B ‘Mother Nature, designer’. A very hot iron is required, so this would need to be done by an adult.</li> <li>■ The key skills and techniques used here build on those covered in unit 1A ‘An introduction to modelling’. Children move on from using flood-fill to drawing then filling objects.</li> </ul>

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to the <i>Framework for teaching English: Year 2</i></p>			
<ul style="list-style-type: none"> <li>■ to use appropriate search techniques to find information</li> <li>■ to use straightforward lines of enquiry</li> </ul>	<ul style="list-style-type: none"> <li>■ Tell the class that they are going to use a CD-ROM-based dictionary to find definitions. They will be applying their reading skills to the task. Prepare a list that includes nouns, adjectives and verbs.</li> <li>■ Using an interactive whiteboard or data projector, show the class how to search alphabetically, using the 'back' or 'home' buttons to return to the index. Explain that some words will have hot spots/hyperlinks to linked words, <i>eg yellow→colours</i>. Demonstrate that information can be connected in different ways at the same time. Encourage children to recognise that words can be found both by searching alphabetically and by making connections.</li> <li>■ Ask the children to group their definitions according to different criteria, <i>eg in alphabetical order, by groups of adjectives</i>. Some children will be able to sort according to initial letter, some the first two letters and some the first three.</li> <li>■ When the children have finished, ask them to read their definitions out loud to a partner. <i>Are the definitions the same?</i> As a whole-class activity, children could compare their search techniques to evaluate the most effective techniques for locating information. <i>When might we use a print rather than a CD-ROM-based dictionary?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ use appropriate techniques and straightforward enquiries to locate information on a CD-ROM-based dictionary</li> </ul>	<ul style="list-style-type: none"> <li>■ Some children will be able to move outwards from the key words to find others associated with them.</li> <li>■ 'Talking' CD-ROMs help children to follow the text and understand unfamiliar words. Check that children know how to control the speech function.</li> </ul>
<p>Linked to <b>history</b> unit 4 'Why do we remember Florence Nightingale?'</p>			
<ul style="list-style-type: none"> <li>■ to use appropriate search techniques to find information</li> <li>■ to use straightforward lines of enquiry</li> </ul>	<ul style="list-style-type: none"> <li>■ Tell the children they are going to use a CD-ROM or web-based encyclopaedia to find out information about a famous person, <i>eg Florence Nightingale</i>. Discuss the other sources they have used to find out about the person, <i>eg pictures, newspapers, videos</i>, and consider what information is provided by all these different sources. Remind the children that a CD-ROM or DVD can hold more information than lots of books.</li> <li>■ Using an interactive whiteboard or data projector, show the class how to search the encyclopaedia using key words, <i>eg Florence Nightingale, Crimean War</i>. Discuss what terms they might look for on the main menu, <i>eg history, Florence Nightingale, famous people, famous women</i>. Show them how to use the 'back' or 'home' buttons to return to the index. Explain that some words will have hot spots/hyperlinks to linked words, <i>eg hospital→disease</i>. Demonstrate that information can be connected in different ways at the same time. Encourage children to recognise that words can be found both by searching alphabetically and by making connections.</li> <li>■ Tell the children that they have a time limit for completing the task. Give them a small number of statements and ask them to find out whether these are true or false by searching the material. When they have finished, ask them to discuss their answers with a partner. As a whole-class activity, children could say whether they think the statements are true or false by showing where they found the evidence. They could also compare their search techniques to evaluate the most effective techniques for locating information.</li> </ul>	<ul style="list-style-type: none"> <li>■ use appropriate techniques and straightforward enquiries to locate information on a CD-ROM or web-based encyclopaedia</li> </ul>	<ul style="list-style-type: none"> <li>■ It is critical to ensure that the children are selective and that they use appropriate resources. Teachers need to pre-select a web page or series of linked web pages to ensure the children find appropriate and relevant material, and avoid aimless 'surfing'. The pages could be cached to the hard drive of the machines or added to 'favourites' or 'bookmarks', and children could work off-line. If children are using a CD-ROM, pre-select some sections.</li> <li>■ Check that the key word search you suggest will produce the results you want.</li> </ul>

**Integrated task – Unit 2D Routes: controlling a floor turtle**

ICT learning objective: to develop and record sequences of instructions to control a floor turtle, and to predict test results

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to the <i>Framework for teaching mathematics: Year 2</i></p> <ul style="list-style-type: none"> <li>to develop and record sequences of instructions to control a floor turtle, and to predict test results</li> </ul>	<ul style="list-style-type: none"> <li>Base this activity on any text the children have read which has a number of related locations, eg <i>Katie Morag and the Two Grandmothers</i>. Help the children to draw a large floor map (in this case, to map out Struay). Mark on the map the places mentioned in the story, and their physical and human features.</li> <li>Explain to the children that they will use the techniques learnt in this unit to program the robot or turtle to visit parts of the island. The robot could become a character, eg <i>Katie Morag</i>, who has post to deliver.</li> <li>The children work in groups to test and amend, where necessary, a sequence of instructions which will guide the turtle to different parts of the island to deliver the post. They should use a common recording method, eg 'F'; a red arrow, for 'forwards', and include the turtle units. Remind the children that a right angle is a measure of a quarter turn and that they need to use half and quarter turns. Refer to quarter turns as right-angled turns in both clockwise and anti-clockwise directions.</li> <li>Encourage the children to talk about their sequences as a group, to predict results, and to modify the sequence of instructions as it develops. When they have completed the task, they could describe their methods to the whole class and compare their route with others, explaining why they chose a particular route and how they made their final decisions.</li> </ul>	<ul style="list-style-type: none"> <li>develop and record sequences of instructions for moving along a route in straight lines and round right-angled corners.</li> </ul>	<ul style="list-style-type: none"> <li>Search engines will find tourist information sites for 'real' locations. Children could compare photos of their island with a real location as an introduction to the task.</li> <li>Ensure that the floor robot or turtle used is configured to turn in quarter turns.</li> <li>There is software available, eg <i>Roamer World</i>, that can be used as an alternative to a floor robot or turtle if required.</li> <li>The suggested teaching activities build on what children have been taught in unit 1F 'Understanding instructions and making things happen'.</li> <li>The QCA video <i>Working with gifted and talented children in English and mathematics</i> shows children discussing <i>Katie Morag</i>, and also shows a group of children working with a floor turtle.</li> </ul>

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to the <i>Framework for teaching mathematics: Year 2</i></p>			
<ul style="list-style-type: none"> <li>■ to prepare data for a database</li> <li>■ to use the search tool on a simple database to find out the answers to specific questions</li> <li>■ to present findings</li> </ul>	<ul style="list-style-type: none"> <li>■ Gather together a collection of mathematical shapes in different sizes and colours. Show them to the children, asking them to choose a shape and to think of two or three attributes to go with it, <i>eg it has six faces, can roll, is red.</i></li> <li>■ Ask one of the children to put all the shapes in a bag, take one out and then hide it. The other children have to ask questions in order to elicit enough information to deduce what the shape is. Demonstrate a range of questions that require yes/no answers or answers that are numbers or colours, for example.</li> <li>■ Having prepared a data file in advance, help the children enter a small amount of data about the shapes into a limited range of fields.</li> <li>■ Prepare a list of questions that require the children to use the search tool on the database to answer specific questions, <i>eg What colour is the triangle? How many sides does it have?</i> Include a question for which no data is available. The children could work in pairs to retrieve the appropriate record. Encourage them to recognise that the same questions can be asked about all the shapes in the data file.</li> <li>■ Ask the children to demonstrate to the whole class, using an interactive whiteboard or data projector, how they used the search tool to find the answer to the question.</li> </ul>	<ul style="list-style-type: none"> <li>■ collect information for a database</li> <li>■ use the search tool to find the answers to simple questions</li> <li>■ understand that questions cannot be answered if the relevant data has not been entered into the database</li> </ul>	<ul style="list-style-type: none"> <li>■ Before starting, revise the mathematical vocabulary needed. Make sure the children know the names of each shape and other related words, <i>eg face, edges.</i></li> <li>■ This type of task could be adapted so that year 2 children could start to sort numbers as well as shapes, using questions such as “Is it more than 100?” or “Do you say it when you count in 10s from 0?”.</li> <li>■ Use database software with a simple structure. Some programs have pre-set topics with sets of graphics that match topics in the schemes of work.</li> </ul>
<p>Linked to science unit 2C ‘Variation’</p>			
<ul style="list-style-type: none"> <li>■ to prepare data for a database</li> <li>■ to use a simple branching database to find out the answers to specific questions</li> <li>■ to present findings</li> </ul>	<ul style="list-style-type: none"> <li>■ Tell the children they are going to apply some of the skills and key ideas they have learnt from studying variation in science lessons.</li> <li>■ Explain that they are going to play detective. You are thinking of one child in the class but can only answer ‘yes’ or ‘no’ when asked about them. Discuss the type of questions the children should ask. Point out that each question should eliminate as many suspects as possible, <i>eg ‘Is it a boy?’ will eliminate around half the possible children.</i> Remind the children that humans are similar to each other in some ways, but different in others. Some differences/criteria are permanent, <i>eg eye colour,</i> and some can be changed, <i>eg length of hair.</i></li> <li>■ Prepare a branching database with photos of four girls and four boys. Children work in pairs, with one child choosing a photo and the other asking questions to find the appropriate record.</li> </ul>	<ul style="list-style-type: none"> <li>■ collect information for a database</li> <li>■ use a simple branching database to find the answers to simple questions</li> <li>■ understand that questions cannot be answered if the relevant data has not been entered into the database</li> </ul>	<ul style="list-style-type: none"> <li>■ For the detective game, it can be useful to ask all the children to stand up at the start and sit down as they are eliminated.</li> <li>■ More able children may be able to make their own branching databases using a template, scanned photos or drawn images.</li> <li>■ Children could take the photographs of each other before the lesson. The software used needs to be able to include graphics.</li> <li>■ There are websites where children can play a branching database sorting game, or create their own branching database.</li> <li>■ This activity could serve as an introduction to the key ideas covered in unit 3C ‘An introduction to databases’ and then unit 4C ‘Branching databases’.</li> </ul>

**Integrated task – Unit 3A Combining text and graphics**

ICT learning objective: to combine graphics and text to communicate information

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to the <i>Framework for teaching English: Year 3</i></p>			
<ul style="list-style-type: none"> <li>■ to combine graphics and text to communicate information</li> </ul>	<ul style="list-style-type: none"> <li>■ Explain to the children that they are going to use ICT in two different ways. First, they will work together in pairs or small groups to write a short play script for a traditional story or fable using ICT. They will follow this up by working together to produce either a programme or flyer for their play; this should include pictures and different font effects.</li> <li>■ Ask the children to work collaboratively, sharing ideas. Encourage them to re-read what they have written, and amend it to correct errors. Discuss how some sentences could be improved. Show how a sentence can be changed without deleting it. Remind them that they should make their amends using correct key combinations, and to save their work. Encourage them to use different coloured text to highlight different characters, stage instructions, etc. Remind them to use question marks and exclamation marks appropriately.</li> <li>■ Next, the children create their programme or flyer advertising the play. They should keep it very simple, <i>eg use only a picture and title</i>. Encourage them to select and insert appropriate pictures from a prepared bank of images. Children should choose appropriate font sizes, colours and styles.</li> <li>■ Finally, discuss with the class the purposes of using ICT in the two different tasks. Discuss the advantages of using ICT to draft and redraft the script as opposed to writing out ideas by hand.</li> <li>■ Show the class some examples of the programmes or flyers using a whiteboard or data projector, and ask children to explain their choices of font size, colour and layout. <i>What have they learnt? What might they do differently next time?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ use ICT to refine and edit text</li> <li>■ combine graphics and text to produce a programme or flyer for their play</li> <li>■ show sensitivity to the needs of the audience</li> </ul>	<ul style="list-style-type: none"> <li>■ Some children will benefit from using writing frames or other scaffolded support in developing their scripts. Encourage children to keep their scripts short in order to focus on refining and editing the text.</li> <li>■ Time could be set aside for children to compose their scripts as group work in the Literacy Hour.</li> <li>■ This activity could be further extended by turning the script into a shadow puppet play. Fables and traditional stories work particularly well when creating this type of play. A production could be linked to design and technology unit 3A 'Moving monsters'. Children could make shadow puppets and moving scenery using pneumatics, based on their scripts. The activity could also be linked to science unit 3F 'Light and shadows', in terms of lighting. Children would learn that opaque objects/materials do not let light through, and that transparent objects/materials let a lot of light through.</li> </ul>
<p>Linked to science unit 3A 'Teeth and eating'</p>			
<ul style="list-style-type: none"> <li>■ to combine graphics and text to communicate information</li> </ul>	<ul style="list-style-type: none"> <li>■ Explain to the children that they are going to produce a poster to illustrate foods for growth and foods that help us stay active. Discuss with the children what constitutes a balanced and healthy diet. Talk about the possible audience for such a poster, <i>eg Where could the poster be located? What age group might the poster be aimed at? How would this affect the content and layout? What sort of information should the poster contain?</i></li> <li>■ Ask the children to work in pairs to produce their poster. Encourage them to select and insert appropriate pictures from a prepared bank of images. Remind them to use key word searches when locating their images in the large database. Children should choose appropriate font sizes, colours and styles to convey their message. Remind them to save their work with an appropriate file name and location.</li> <li>■ Show the class some examples of the posters using a whiteboard or data projector, and ask children to explain their choices of font size, colour and layout. <i>What have they learnt? What might they do differently next time?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ combine graphics and text to produce a poster identifying different food types and their effects on the body</li> <li>■ show sensitivity to the needs of the audience</li> </ul>	<ul style="list-style-type: none"> <li>■ Banks of clip-art images of different foods can be found in most office desktop packages and educational software, <i>eg Textease</i>. Some word processing programs allow images to be saved in a resource bank.</li> <li>■ Using key word searches to find appropriate images builds on the key ideas and techniques that children have developed in unit 2C 'Finding information'.</li> </ul>

**Integrated task – Unit 3A Combining text and graphics (continued)**

ICT learning objective: to combine graphics and text to communicate information

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to <b>design and technology</b> unit 3A 'Packaging'</p> <ul style="list-style-type: none"> <li>■ to combine graphics and text to communicate information about a product</li> </ul>	<ul style="list-style-type: none"> <li>■ Discuss with the children the task of designing and making a package for a specific purpose, <i>eg a packet for a healthy snack bar or cereal, a box for a magic spell</i>. Ask them to collect and discuss graphics on packaging, <i>eg colours chosen, size of font, impact of style</i>.</li> <li>■ Explain to the children that they are going to use a computer to design the pictures and text for their package. Ask them to work in pairs to produce their package, and to discuss their design needs before they begin.</li> <li>■ The children might construct the package from a blank net loaded onto the screen. They then design the package, using suitable images and text effects. Remind them about the need for accuracy in construction if the product is to be effective. They should print out their package onto thin card to make up the finished product. If the nets do not incorporate 'tabs', children will need to incorporate these themselves so that the package can be assembled using glue.</li> <li>■ Alternatively, the children could make their own package from a net. In this case, they would design each face of the package, print it out and stick it onto the package.</li> <li>■ Encourage the children to evaluate each other's work against the original design criteria. <i>How successful have they been?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ combine graphics and text to produce designs for a package made for a specific purpose</li> </ul>	<ul style="list-style-type: none"> <li>■ Various blank nets are readily available on the internet for free downloading. These need to be in a convenient file format, as children will be using them in a graphics package.</li> </ul>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to science unit 3C 'Characteristics of materials'</p>			
<ul style="list-style-type: none"> <li>to use a database to sort and classify information, and to present their findings</li> </ul>	<ul style="list-style-type: none"> <li>As part of the science topic 'materials', tell the class that they are going to create a database containing information about kitchen objects. Ask them to think of some questions they would like to ask, <i>eg Which is the most common material? Which objects are hard? Which objects are hard and strong?</i></li> <li>Provide a wide range of objects, <i>eg colander, wooden spoon, metal spoon, sieve, saucepan, mixing bowl, spatula</i>, for the children to touch and investigate. Encourage them to talk about the properties of materials, <i>eg hardness, strength, flexibility</i>. Remind them that the same material may be used to make different objects.</li> <li>Set up a database with a number of fields, <i>eg object name, material, hard, strong, flexible, smooth, shiny</i>. These could be simple yes/no answers. Ask the children to add information to the data file about each object.</li> <li>Once all the objects have been included, create a class list of questions and discuss how they can be translated into search criteria. Search and print out bar charts from the database.</li> <li>As a whole-class activity, decide what, if any, conclusions can be drawn.</li> </ul>	<ul style="list-style-type: none"> <li>collect appropriate information, enter it into a database and use the database to answer simple questions</li> </ul>	<ul style="list-style-type: none"> <li>Children who find the work difficult could be given simple questions, <i>eg Which is the most common material?</i></li> <li>More able children could be asked questions that require them to produce bar charts illustrating, for example, whether the metal objects in the collection are all smooth and shiny, or to provide evidence to support a wider hypothesis that metal objects are always strong, etc.</li> <li>Children could use a digital camera to photograph objects to add to the records if the database program allows graphics.</li> <li>This activity builds on the key ideas and techniques covered in unit 1B 'Using a word bank', unit 1D 'Labelling and classifying' and unit 2E 'Questions and answers'.</li> </ul>
<p>Linked to geography unit 7 'Weather around the world'</p>			
<ul style="list-style-type: none"> <li>to use a database to sort and classify information, and to present their findings</li> </ul>	<ul style="list-style-type: none"> <li>As part of their work in geography, children consider the relationship between weather conditions and tourism, and research their chosen holiday destination. Tell them that they are going to make a 'passport', recording information about places they 'visit' during the unit.</li> <li>Prepare a database, using the headings from the passports for the fields, <i>eg place, country, continent, climatic zone, population</i>. Discuss with the children other factors influenced by the weather, <i>eg main holiday activities, essential items to take on holiday, items to protect you from the weather</i>. Agree a set of key words, so that the additional fields may be set up to present a limited choice, <i>eg sunbathing, walking, riding, skiing, water sports, sun block, warm clothes, strong shoes</i>.</li> <li>In pairs, ask the children to enter information from their passports into the database. They research additional fields such as 'essentials', perhaps using holiday brochures. Ask them to investigate simple questions, <i>eg How many places in Europe have we visited? If I go to Antigua, what do I need to take? Where can I go for a water sports holiday?</i></li> <li>Consider which was the most popular climate for the chosen holiday destination. Pose this question and recap how a bar chart shows most/least common choices. <i>What would the children have to do in order to be able to draw this graph?</i> Remind them that the computer has had to go through the whole file, counting how many records match each category.</li> <li>Ask the children to obtain graphs, and print and record what the graphs show. Discuss and summarise the information with the whole class.</li> </ul>	<ul style="list-style-type: none"> <li>collect appropriate information, enter it into a database and use the database to answer simple questions</li> </ul>	<ul style="list-style-type: none"> <li>Children who find the work difficult could be given simple questions, <i>eg Which country has the largest population?</i></li> <li>More able children could be asked to provide evidence to support wider hypotheses based on the data.</li> </ul>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to the <i>Framework for teaching English: Year 3</i></p>			
<ul style="list-style-type: none"> <li>to gather, exchange and develop information using e-mail</li> </ul>	<ul style="list-style-type: none"> <li>You will need to establish a partner for this work, perhaps a class in another school or within the school. Remind the children about your Internet Acceptable Use Policy and the importance of safe and discriminating online behaviours, <i>eg never give out your home address, never respond to nasty or suggestive messages and always report these to your teacher</i>. Tell the class they are going to write book reviews for other children.</li> <li>During literacy lessons, the children will be writing book reviews based on evaluations of plot, characters and language. Ensure that they know who their audience is, <i>eg a year 3 class in a local school, a grade 2 class in the USA</i>.</li> <li>Use ICT to bring this work to a published form, discussing the relevance of layout, font, etc to the audience. Save the work with appropriate file names.</li> <li>Use your e-mail service to send a covering message, with the saved book reviews as attachments. Ensure that the partner school knows when to expect the work, and when a reply with comments is expected.</li> <li>Read and respond to the comments made by the other children.</li> </ul>	<ul style="list-style-type: none"> <li>create and respond to e-mails and attachments in order to gather information and communicate with others</li> <li>show sensitivity to the needs of the audience</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the software you use is compatible with that of your partner class so that the attachments can be read.</li> <li>Effective e-mail links are often built on existing partnerships between schools. Guidance on locating partner schools abroad can be found at the British Council website and the European Schoolnet website. Opportunities for further exchanges of information with the partner class need to be built in across the key stage.</li> <li>Further guidance on using e-mail and other online activities is provided in the Becta/QCA Internet Proficiency Scheme for Key Stage 2 pupils.</li> <li>General advice on internet safety for schools can be found at <a href="http://safety.ngfl.gov.uk/schools/">safety.ngfl.gov.uk/schools/</a></li> </ul>
<p>Linked to <b>geography</b> unit 18 'Connecting ourselves to the world', and the non-statutory framework for PSHE and citizenship</p>			
<ul style="list-style-type: none"> <li>to gather, exchange and develop information using e-mail</li> </ul>	<ul style="list-style-type: none"> <li>You will need to establish a partner for this work, perhaps a class in another school in the area or abroad. Remind the children about your Internet Acceptable Use Policy and the importance of safe and discriminating online behaviours, <i>eg never give out your home address, never respond to nasty or suggestive messages and always report these to your teacher</i>. Tell the class they are going to produce a guide to their locality.</li> <li>Children could word process the text, scan in hand-drawn maps and import digital camera images. Remind them to make choices about layout and font in relation to their target audience. Send the guide as an e-mail attachment to the partner school.</li> <li>Create a questionnaire about the locality of the partner school. This could be a whole-class activity. Discuss with the children where this place is in relation to where they live, whether anyone has travelled to the place and, if so, how they travelled. Ask the children to locate the place on a globe or map or in an atlas. Send the questionnaire as an e-mail attachment.</li> <li>Ensure that the partner school knows when to expect the work, and when a reply with answers is expected.</li> <li>Use the information provided in the questionnaire responses to explore similarities and differences between the localities.</li> </ul>	<ul style="list-style-type: none"> <li>create and respond to e-mails and attachments in order to gather information and communicate with others</li> <li>show sensitivity to the needs of the audience</li> </ul>	<ul style="list-style-type: none"> <li>This integrated task would best be covered at the end of a year during which children have been taught different parts of those geography units that are continuous and not taught in a block.</li> <li>Ensure that the software you use is compatible with that of your partner class so that the attachments can be read.</li> <li>Effective e-mail links are often built on existing partnerships between schools. Guidance on locating partner schools abroad can be found at the British Council website and the European Schoolnet website. Opportunities for further exchanges of information with the partner class need to be built in across the key stage.</li> <li>Scanned images and photos should be in jpeg or bitmap format (not tiff). Be aware that they are large and will take time to attach and send (re-size them to overcome this problem if necessary). Ensure that your mailbox has sufficient space to send and receive images.</li> <li>Further guidance on using e-mail and other online activities is provided in the Becta/QCA Internet Proficiency Scheme for Key Stage 2 pupils.</li> <li>General advice on internet safety for schools can be found at <a href="http://safety.ngfl.gov.uk/schools/">safety.ngfl.gov.uk/schools/</a></li> </ul>

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to the <i>Framework for teaching English: Year 4</i> and design and technology: year 4</p>			
<ul style="list-style-type: none"> <li>■ to use ICT to organise, reorganise and analyse ideas and information</li> <li>■ to edit text and use a variety of presentation techniques</li> </ul>	<ul style="list-style-type: none"> <li>■ Ask the children to work in pairs to recall the steps they took when making their product in design and technology. Explain that they will be producing a set of clear instructions so that someone else could carry out the same task. Remind them of the conventions they have come across in their reading. Consider the target audience, <i>eg younger children in another class, parents reading the school magazine</i>, and remind children of the need to ensure that their presentational style reflects this.</li> <li>■ Discuss the key features of instructional texts, <i>eg an informative title, a list of the materials needed, clear instructions, appropriate diagrams</i>. Remind the children of the need to use imperative verbs at the beginning of sentences, <i>eg put, take, cut</i>, and to use time markers, <i>eg next, after, meanwhile</i>.</li> <li>■ Ask the children to expand and refine their instructions, and to use appropriate effects to engage the reader's attention, <i>eg illustrations (such as digital camera images taken while making the products)</i>.</li> <li>■ Ask the children to work together to make numbered notes of the steps in the activity, and to save their work. They should review work in progress and modify it, based on discussion with their partner.</li> <li>■ Show examples of work in progress to the whole class, using a data projector, and ask children to evaluate each other's work. <i>Have any steps been missed out? Are the instructions clear and easy to read? How could they be improved?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ organise and reorganise text on screen</li> <li>■ use appropriate techniques to ensure that their instructions are clear, well presented and free from errors</li> </ul>	<ul style="list-style-type: none"> <li>■ This activity could be undertaken at the end of a design and technology task. Unit 4A 'Money containers' and unit 4D 'Alarms' would be suitable contexts for this activity.</li> </ul>
<p>Linked to the <i>Framework for teaching English: Year 4</i> and citizenship unit 7 'Children's rights – human rights'</p>			
<ul style="list-style-type: none"> <li>■ to use ICT to organise, reorganise and analyse ideas and information</li> <li>■ to edit text and use a variety of presentation techniques</li> </ul>	<ul style="list-style-type: none"> <li>■ Based on work carried out in circle time, children may have considered wants, needs and rights and the differences between them. They may also have gathered information about children's organisations from a variety of sources. Tell them they are going to use ICT to write their own charter of children's rights. Remind them of the need to select a style and vocabulary appropriate to their audience. Discuss the techniques they will need to use in presenting an argument and linking points persuasively.</li> <li>■ Ask the children to work in pairs to develop their charter of children's rights. Encourage them to sequence their points in order to present a logical and persuasive argument. If they refer to source information, they will need to consider how statistics and graphs could be used to support their argument. Remind children about copyright when taking information from the web, and that using other people's ideas, words or images can be a breach of their rights (intellectual property rights).</li> <li>■ Show examples of work in progress to the whole class, using a data projector, and ask children to evaluate each other's work. <i>Which charters are the most effective? Why?</i> Children should modify their work in the light of others' comments.</li> </ul>	<ul style="list-style-type: none"> <li>■ organise and reorganise text on screen to present a point of view</li> <li>■ use appropriate techniques to ensure that their charter is clear, well presented and free from errors</li> </ul>	<ul style="list-style-type: none"> <li>■ In preparation, children may need to research the work of a charitable organisation, <i>eg Unicef</i>. They should use a range of sources, including the organisation's website. In this case, pre-select a range of useful sites and particular sections of sites to ensure children find appropriate and relevant material, and to avoid aimless 'surfing'. Children may need to start with a site search, by key word. Agree a list of key words with the class and check that the key word search you suggest will produce the results you want. This activity builds on key ideas and techniques from unit 2C 'Finding information'.</li> <li>■ A number of charitable organisations provide support to schools on children's rights and human rights. These include Unicef, the Children's Rights Alliance, Amnesty International and Save the Children. Citizenship unit 7 'Children's rights – human rights' provides further ideas and details of relevant organisations.</li> </ul>

**Integrated task – Unit 4B Developing images using repeating patterns**

ICT learning objective: to use the skills and techniques they have learnt to organise and communicate ideas ...

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to <b>religious education</b> unit 3B ‘How and why do Hindus celebrate Divali?’</p>			
<ul style="list-style-type: none"> <li>■ to use the skills and techniques they have learnt to organise and communicate ideas</li> <li>■ to select suitable information and prepare it for processing, using ICT</li> </ul>	<ul style="list-style-type: none"> <li>■ Show the children designs of colourful geometric rangoli patterns. Use both simple and detailed designs, and discuss how they make us feel. Explain the purpose of rangoli patterns and their use within the festival of Divali. Encourage the children to recognise reflective symmetry in the shapes. Point out that the patterns usually have two axes of symmetry. Tell the children they are going to make a rangoli pattern using different media.</li> <li>■ Ask the children to apply the key skills and various techniques they have learnt in the unit to create rangoli patterns with two axes of symmetry. They could also incorporate scanned images of rangoli to make composite images. They should review work in progress and amend the designs, saving draft versions.</li> <li>■ Print out some examples of draft and final patterns and compare them. Ask the children to talk about the changes they made to their work in progress. Compare all the patterns made using different media. <i>Which effects were easier to produce with ICT? Which were harder to produce?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ use a variety of media to make rangoli patterns with two axes of symmetry</li> </ul>	<ul style="list-style-type: none"> <li>■ This activity builds on the suggested possible teaching activity in unit 2B ‘Creating pictures’.</li> <li>■ Multiple copies of the pattern could be used as a display border around the classroom door during Divali. More able children might incorporate the design into a Divali greetings card for a friend.</li> </ul>
<p>Linked to <b>history</b> unit 6A ‘Why have people invaded and settled in Britain in the past? A Roman case study’</p>			
<ul style="list-style-type: none"> <li>■ to use the skills and techniques they have learnt to organise, reorganise and communicate ideas</li> <li>■ to select suitable information and prepare it for processing, using ICT</li> </ul>	<ul style="list-style-type: none"> <li>■ As part of a visit to a Roman site, discuss the customs and ways of life that the Romans introduced to Britain. Explore the houses and interior designs, particularly the use of mosaic decorations. Point out where the patterns on the mosaics are made up of simple shapes, and where they are based on animals, plants or other objects. <i>What do the pictures tell us about Roman life and settlement in Britain?</i></li> <li>■ Explain that throughout history, pattern has been used to increase the value of objects and to display the skill of the craftsman. Tell the children they are going to apply the key ideas and techniques they have learnt to produce a mosaic design. Ask them to think of a purpose for their work, and where it might be displayed as a repeating pattern.</li> <li>■ Ask the children to use a variety of media to produce the mosaic, including scanned images to make a composite image. They should review work in progress and amend the designs, saving draft versions.</li> <li>■ Print out some examples of draft and final patterns and compare them. Ask the children to talk about the changes they made to their work in progress. Compare all the patterns made using different media. <i>How does ICT help us in working with pattern? What is harder to achieve with ICT than with other media?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ use a variety of materials, created on and away from the computer, to make a mosaic</li> </ul>	<ul style="list-style-type: none"> <li>■ When a site visit is not possible, children could work from a variety of picture sources and internet sites.</li> </ul>

## Integrated task – Unit 4C Branching databases

ICT learning objective: to use a branching database to organise, reorganise and analyse information

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<b>Linked to history unit 7 'Why did Henry VIII marry six times?'</b>			
<ul style="list-style-type: none"> <li>to use a branching database to organise, reorganise and analyse information</li> </ul>	<ul style="list-style-type: none"> <li>Show the children how to create a branching database. For example, make a poster showing the branching structure, so that children can see how the computer version is constructed. Explain that they are going to create a branching database to identify each of Henry VIII's wives.</li> <li>Remind children of the need to construct yes/no questions, and discuss the sort of questions that might be asked, <i>eg Was she beheaded? Did she have any children?</i></li> <li>The children work in pairs to create a branching database that identifies Henry's wives. Ask each group to test the others' databases.</li> </ul>	<ul style="list-style-type: none"> <li>create a branching database which identifies Henry VIII's wives</li> </ul>	<ul style="list-style-type: none"> <li>This unit builds on key ideas and techniques developed in unit 1B 'Using word banks', unit 1D 'Labelling and classifying', unit 2E 'Questions and answers' and unit 3C 'Introduction to databases'.</li> <li>Some branching database programs allow pictures to be imported. The children could use images from specific CD-ROMs or internet sites identified by the teacher. Some children would benefit from selecting images from a prepared folder.</li> <li>Remind children about the copyright issues related to using images from the web.</li> </ul>
<b>Linked to geography unit 24 'Passport to the world'</b>			
<ul style="list-style-type: none"> <li>to use a branching database to organise, reorganise and analyse information</li> </ul>	<ul style="list-style-type: none"> <li>On each day for six days, give the children two facts about a city or other location. The location is different every day. Ask them to guess which location the facts are about and to post their answers in a 'guess the location' box in the classroom. At the end of the six days, reveal the identity of the places.</li> <li>Demonstrate how to create a branching database. For example, make a poster showing the branching structure, so that children can see how the computer version is constructed. Explain to the children that they will create a branching database to identify the six places they have just guessed.</li> <li>Remind children of the need to construct yes/no questions, and discuss the sort of questions that might be asked, <i>eg Is it in Europe? Is it near the equator?</i></li> <li>The children work in pairs to create a branching database that identifies the six places. Ask each group to test the others' databases.</li> </ul>	<ul style="list-style-type: none"> <li>create a branching database which identifies six different places</li> </ul>	<ul style="list-style-type: none"> <li>This activity could be carried out over a number of weeks, with the database being created when all six places have been identified.</li> </ul>
<b>Linked to science unit 4B 'Habitats'</b>			
<ul style="list-style-type: none"> <li>to use a branching database to organise, reorganise and analyse information</li> </ul>	<ul style="list-style-type: none"> <li>Show the children some simple keys and ask them to identify organisms from these.</li> <li>Demonstrate how to create a branching database. For example, make a poster showing the branching structure, so that children can see how the computer version is constructed. Tell the children they are going to work in pairs to produce a branching database to identify living organisms. Remind the children of the need to construct yes/no questions, and discuss the sort of questions that might be asked, <i>eg Does it have six legs? Has it got a tail? Is it a vertebrate? Is its habitat the sea?</i></li> <li>Present the children with pictures of about six living organisms. Include some vertebrates and invertebrates, as well as living organisms found in different habitats.</li> <li>Then ask the children to work in pairs to create a branching database that identifies each living organism. Ask each pair to test the others' databases.</li> </ul>	<ul style="list-style-type: none"> <li>create a branching database which identifies different living organisms, both vertebrates and invertebrates, some of which are found in different habitats</li> </ul>	<ul style="list-style-type: none"> <li>This activity may reinforce the work carried out in the rest of the science unit on habitats. It builds on the suggested integrated task for science in ICT unit 2E 'Questions and answers'. This could be revisited to remind the children of how to ask questions to identify items.</li> </ul>

**Integrated task – Unit 4C Branching databases (continued)**

ICT learning objective: to use a branching database to organise, reorganise and analyse information

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to the <i>Framework for teaching mathematics: Year 4</i></p>			
<ul style="list-style-type: none"> <li>■ to use a branching database to organise, reorganise and analyse information</li> </ul>	<ul style="list-style-type: none"> <li>■ Demonstrate how to create a branching database. For example, make a poster showing the branching structure, so that children can see how the computer version is constructed.</li> <li>■ Explain to the children that they are going to work in pairs to produce a branching database to identify six different 2D shapes. Remind them of the need to construct yes/no questions, and discuss the sort of questions that might be asked, <i>eg Is it regular? Are all its angles right angles? Has it got more than three vertices?</i> Discuss why a question such as 'How many sides does it have?' would not work. The discussion could be a whole-class teaching activity, using a data projector to show the shapes as children talk.</li> <li>■ The children work in pairs to create a branching database that identifies each shape. Ask each group to test the others' databases.</li> <li>■ This activity could be repeated with 3D shapes, or with both types of shape in the same database, to increase the level of difficulty.</li> </ul>	<ul style="list-style-type: none"> <li>■ create a branching database which identifies 2D or 3D shapes</li> </ul>	<ul style="list-style-type: none"> <li>■ More able children could sort more than six shapes.</li> <li>■ This activity could be linked to unit 4E 'Modelling effects on screen' by asking the children to draw shapes using a Logo program. This would support children's understanding of the individual properties of shapes.</li> </ul>
<p>Linked to the <i>Framework for teaching mathematics: Year 4</i></p>			
<ul style="list-style-type: none"> <li>■ to use a branching database to organise, reorganise and analyse information</li> </ul>	<ul style="list-style-type: none"> <li>■ Demonstrate how to create a branching database. For example, make a poster showing the branching structure, so that children can see how the computer version is constructed. Remind the children of the need to construct yes/no questions.</li> <li>■ Tell the children they are going to work in pairs to produce a branching database to identify six different numbers. Discuss the sort of questions that might be asked, <i>eg Is it a multiple of 4? Is it divisible by 5? Is it an odd number?</i> Draw attention to the key language they could use, <i>eg product, multiple, divisible by, factor, quotient, remainder.</i></li> <li>■ The children work in pairs to create a branching database that identifies each number. Ask each group to test the others' databases.</li> </ul>	<ul style="list-style-type: none"> <li>■ create a branching database which identifies six different numbers</li> </ul>	<ul style="list-style-type: none"> <li>■ The children could use specific multiples occurring in the 2, 3, 4, 5 and 10 times tables, or choose their own numbers.</li> <li>■ More able children could sort more than six numbers.</li> </ul>

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to the <i>Framework for teaching mathematics: Year 4</i></p> <ul style="list-style-type: none"> <li>to write a repeating procedure to produce a desired outcome</li> </ul>	<ul style="list-style-type: none"> <li>Based on the short focused tasks, ask the children to predict what will be drawn if they enter the following sequence: repeat 360 [forward 1 right 1]. Ask them to test their predictions.</li> <li>Explain that there are 360 degrees or four right angles in a whole turn or circle, and that the symbol '/' means 'divide' in Logo. Ask the children to try out the following sequence: repeat 4 [forward 100 right 360/4]. Ask questions, eg                         <ul style="list-style-type: none"> <li>Does the same thing happen when you use a left turn?</li> <li>How many right angles does this give?</li> <li>How many times would you need to repeat the sequence to draw a shape with half a right angle?</li> <li>What shape is drawn?</li> </ul> </li> <li>Ask the children to predict what will happen if they enter the following sequence: repeat 5 [forward 100 right 360/5]. Ask them to test their hypotheses.</li> <li>Carry out this activity for other polygons, and discuss the properties of the shapes the children have drawn. <i>Are they regular?</i></li> <li>Ask the children to measure the angles of the shapes they have drawn, either on screen or from printouts.</li> <li>Ask the children to use a calculator to work out the solution to some of the equations they have used, eg <math>360 \div 4</math>, <math>360 \div 3</math>. <i>What do they notice?</i></li> <li>Ask the children to write a procedure based on the above for a hexagon, square and triangle, and to try out the following sequence: repeat 20 [square right 10]. <i>Can they change this to complete the pattern, and make similar patterns using the procedures they have written for the hexagon and triangle?</i></li> </ul>	<ul style="list-style-type: none"> <li>learn how to write procedures using standard commands</li> <li>learn to combine procedures to produce a desired effect</li> </ul>	<ul style="list-style-type: none"> <li>Children may be confused when they consider what has happened, given the work they have carried out on measuring the angles of a triangle. Internal and external angles are not covered until year 6, but you may wish to point out that the turtle is turning around the outside of the angles of the triangle.</li> <li>This unit introduces the more general procedure for drawing a polygon, with examples such as: repeat 4 [forward 100 right 360/4]. If the children work from specific examples, such as: repeat 4 [forward 100 right 90], they would have the additional opportunity to identify the relationship between the number of sides on the finished shape and the required angle of turn. This would fulfil Ma1, Using and applying mathematics, as well as Ma3, Shape, space and measures (at level 4 as well as level 3).</li> <li>More able children could work in pairs to produce a drawing of an owl. They should write procedures for the head, which could be a circle or a square. They should also write one for the beak, which should be a triangle. Explain that the eyes are to be based on the patterns they have already drawn using repeats.</li> <li>The QCA video <i>Working with gifted and talented children in English and mathematics</i> shows children in year 3 using Logo for this type of activity.</li> </ul>

## Integrated task – Unit 5A Graphical modelling

ICT learning objective: to use an object-based graphics package to produce and explore a graphical model

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to <b>geography</b> unit 23 ‘Investigating coasts’</p> <ul style="list-style-type: none"> <li>to use an object-based graphics package to produce and explore a graphical model</li> </ul>	<ul style="list-style-type: none"> <li>Provide the children with a sketch map outline of part of a coast. Explain that this is unspoilt coastline, but that some coastal management is required to prevent erosion. Explain that a hotel is going to be built there by a travel company. Discuss the issues involved.</li> <li>Show the children how to create objects to represent buildings, sea walls, groynes, etc. Ask them to produce plans for the coastal development, ensuring that the area is protected and still retains its natural beauty.</li> <li>Show some examples of the models to the whole class. Discuss how the siting of these features may prevent erosion. Ask the children to consider how the siting of other things, eg <i>transport links</i>, <i>footpaths</i>, might prevent or cause erosion.</li> </ul>	<ul style="list-style-type: none"> <li>produce a graphical model showing ways of protecting a stretch of coastline</li> </ul>	<ul style="list-style-type: none"> <li>This activity might best be carried out after children have worked on the part of the unit that looks at ‘Why do we need to manage the coastline?’, so that they have the geographical knowledge and understanding to apply to the task.</li> <li>Teachers should prepare a background graphic of the coastal area. Children will need to use software that allows them to create, copy and move objects freely on the background graphic.</li> </ul>
<p>Linked to <b>design and technology</b>: year 6</p> <ul style="list-style-type: none"> <li>to use an object-based graphics package to produce and explore a graphical model</li> </ul>	<ul style="list-style-type: none"> <li>Show the children copies of theatre or cinema seating plans and ask them to examine the arrangements of the seats, pointing out the need for aisles to divide up the rows, etc.</li> <li>Explain that they are going to design a seating plan for a production in the school hall. Initially, they should design a plan for 48 seats.</li> <li>Show the children how to create an object to represent a seat, and how to copy and paste this repeatedly to create an array.</li> <li>Divide the children into pairs to work on their seating plans. Ask them to find out how many different arrays they could make for a total of 48 seats through finding factor pairs. Discuss which arrangement would be the most suitable for the task. Ask them to print out their plans.</li> <li>This activity could be repeated and the model developed for other numbers of seats. The work could be further developed as a design activity, with children being asked to consider leaving access for fire exits; how near to the stage the front row should be; the effect of using different types of seats on the numbers that could be accommodated; the best location for the stage; etc.</li> </ul>	<ul style="list-style-type: none"> <li>use a graphical model to solve problems in a design task</li> </ul>	<ul style="list-style-type: none"> <li>Copies of seating plans can be obtained from local theatres. Many theatres show their seating plans on the internet. These could be copied and pasted for use.</li> <li>Children could draw a square to represent a seat using an autoshape facility or a drawing tool. Some software tools include a plan view of a seat in the autoshape function.</li> <li>This activity could be linked to spreadsheet modelling – if we charged £X for the seats, how much money would we collect? If we gave concessions, what would the difference be?</li> </ul>

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
Linked to the <i>Framework for teaching mathematics: year 5</i>			
<ul style="list-style-type: none"> <li>■ to use complex searches to locate information</li> <li>■ to use ICT to test a hypothesis</li> </ul>	<ul style="list-style-type: none"> <li>■ As part of numeracy work, ask the class to create 2D shapes on a grid, pinboard or geoboard, and then draw them on cm<sup>2</sup> paper. Give each of the shapes an imaginary name. Investigate and record the properties of each shape.</li> <li>■ With the children's help, design a database. The children may ask questions about the shapes, <i>eg What is the shape called? How many internal right angles does it have? Does it look the same if you rotate it 90 degrees? How many of its internal angles are acute? How many are obtuse? How many lines of symmetry does it have? How many sides has it got? Does it tessellate?</i></li> <li>■ Fields on the database could include: imaginary name, right angles, acute angles, obtuse angles, mirror lines, sides, tessellate.</li> <li>■ Ask the children to enter details of their shapes onto the database, using their drawings on cm<sup>2</sup> paper. Remind the class how general questions may be answered by searching the file, <i>eg How many shapes have right angles? How many shapes with right angles tessellate?</i></li> <li>■ Show the class a paper shape without its imaginary name. How can the file be used to find the name? Demonstrate strategies for identifying shapes by searching for attributes. Aim to narrow down the records so that only one remains. If this cannot be done, discuss what further information is needed, <i>eg the information required to distinguish a square from a rectangle</i>. Remind the class how to restore all records following a search.</li> <li>■ Now ask the children to find the name of each shape by searching the file.</li> <li>■ Finally, develop questions about all the shapes. Can the children suggest ideas about particular families and their properties, <i>eg Is it true or false that all four-sided shapes have at least one right angle? Do all shapes with four sides tessellate?</i> Use the file to answer the questions.</li> </ul>	<ul style="list-style-type: none"> <li>■ narrow down a complex search</li> <li>■ recognise that by asking questions about all the records in a file, we can test hypotheses about the collection</li> </ul>	<ul style="list-style-type: none"> <li>■ For children who need more support, the investigation could be limited to one class of shape, <i>eg triangles</i>. There are four unique types of triangle: equilateral, scalene, right-angled and isosceles. Children could create them and give each a mystery name. Each child makes a database with four records and gives the named triangles to a partner. The partner then has to find the mystery names by searching.</li> <li>■ More able children will find the shapes in fewer searches.</li> <li>■ Remind the children that we cannot absolutely prove hypotheses because findings only apply to the shapes in the file.</li> </ul>
Linked to <b>history</b> unit 12 'How did life change in our locality in Victorian times?'			
<ul style="list-style-type: none"> <li>■ to use complex searches to locate information</li> <li>■ to use ICT to test a hypothesis</li> </ul>	<ul style="list-style-type: none"> <li>■ As part of history work, give children 1841 census returns from their own locality, if available. Discuss what sort of information is on a census form, and ask the children to list the headings or fields under which information is collected, <i>eg age, occupation, place of origin, size of family</i>.</li> <li>■ Ask the children to investigate a prepared database containing this information, using some specific questions, <i>eg How many farmers were there? How many inhabitants were over 70 years old? What was the most common occupation?</i> Help them to identify patterns and draw conclusions about the area in 1841.</li> <li>■ Ask the children to produce graphs for the fields they have investigated. Children's conclusions could be very simple, <i>eg typical names, ages of people working, types of occupation, family sizes</i>.</li> <li>■ Introduce the children to the local census data from 1891 on a prepared database. Ask them to research the same fields that they investigated earlier, and to print graphs and charts to display the information. Make comparisons, and discuss with the children what has changed since 1841. They speculate on the reasons for these changes, based on their own knowledge.</li> <li>■ Discuss with the class how databases allow us to analyse and compare data easily. Make comparisons with modern society, particularly the distribution of age groups.</li> </ul>	<ul style="list-style-type: none"> <li>■ narrow down a complex search</li> <li>■ use graphs to provide supporting evidence for their conclusions</li> </ul>	<ul style="list-style-type: none"> <li>■ Teachers should use existing data files for this activity. Most local councils have archives that can supply copies of census returns. The 2001 census can be downloaded from the National Statistics website.</li> </ul>

**Integrated task – Unit 5D Introduction to spreadsheets** ICT learning objective: to change data in a spreadsheet to answer ‘what if ...?’ questions and check predictions

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to <b>design and technology</b> unit 5D ‘Biscuits’</p> <ul style="list-style-type: none"> <li>to change data in a spreadsheet to answer ‘what if ...?’ questions and check predictions</li> </ul>	<ul style="list-style-type: none"> <li>The children may have designed biscuits and adapted the basic biscuit recipe to create their own recipe. They will have estimated the number of biscuits they could produce.</li> <li>Tell the class that they are going to use a spreadsheet to calculate the different quantities of ingredients required for varying numbers of biscuits. Explain that the spreadsheet is going to calculate the quantities needed for every child in the class to make a specific number of biscuits, eg <i>five</i>. The children have found, for example, that a recipe makes 10 biscuits. There are 30 children in the class. Each child is going to make five biscuits. <i>How many biscuits are going to be made in total?</i></li> <li>Show the children how to enter the data for their recipe ingredients into the spreadsheet. The recipe makes 10 biscuits. Discuss how many biscuits will be made in total.</li> <li>For each ingredient, enter a formula to divide the quantity by 10, to calculate what is needed for one biscuit. Enter another formula to multiply by the number of children, and multiply again by the number of biscuits each child is going to make. Ask the children to estimate the results.</li> <li>Children could then vary the number of biscuits made by each individual. They could also vary the number of children in the class. The spreadsheet could be extended to include a column showing the ingredient costs.</li> </ul>	<ul style="list-style-type: none"> <li>create and use a spreadsheet to calculate the quantities needed to make varying numbers of biscuits</li> </ul>	

## Integrated task – Unit 6A Multimedia presentation

ICT learning objective: to use a multimedia authoring program to refine and present a story in different forms for a specific audience

LEARNING OBJECTIVES CHILDREN SHOULD LEARN	POSSIBLE TEACHING ACTIVITIES	LEARNING OUTCOMES CHILDREN	POINTS TO NOTE
<p>Linked to the <i>Framework for teaching English: Year 6</i></p>	<ul style="list-style-type: none"> <li>■ Read a suitable fiction text with the class, showing the illustrations in large format or using a data projector with scanned pages. Explain the objectives and main writing outcomes to the children.</li> <li>■ Children work in groups to re-read the text. They use large sheets of paper to write their first responses to the story on, eg <i>theme, characters, setting, their feelings, surprises in the story</i>. In a further lesson, carry out a similar activity, concentrating on characterisation and the author's techniques for developing this.</li> <li>■ Drama: Children work in groups to prepare a feelings tunnel of a couple of characters. (This is a dramatic technique whereby children whisper the main character's thoughts as he or she is being played by another child. They form a tunnel for the main character to travel through.) This could be recorded on video for later discussion and work on characterisation, and could possibly be included in the presentation.</li> <li>■ Ask the children to work in small groups to use what they have learnt to create a multimedia presentation, retelling the story from the viewpoint of one of the characters. They can use their own illustrations or scanned illustrations from the book. They should also use sounds – either recordings of their own voices or sounds imported from a CD-ROM or the internet. They should consider the use of animation and the timing of their graphics and writing to increase dramatic impact. Remind the children of the work carried out in year 5 on adverbs to improve the quality of their writing.</li> <li>■ Show examples of work in progress to the class, and encourage children to modify their work in the light of others' comments. Consider how easy the work is to read and understand. <i>Does animation help or detract? How successfully does the presentation capture the audience's attention?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ design multimedia pages with graphics and sounds to retell a story, considering dramatic impact</li> <li>■ show sensitivity to the needs of the audience</li> </ul>	<ul style="list-style-type: none"> <li>■ This activity could be linked to studies of the work of Charles Dickens, eg <i>Bleak House, Oliver Twist</i>, with particular reference to the theme of homelessness. The children could then create a modern retelling.</li> </ul>
<p>Linked to geography unit 14 'Investigating rivers'</p>	<ul style="list-style-type: none"> <li>■ Ask the children to work in pairs to research specific river vocabulary they have been studying in geography, eg <i>meander, gorge, estuary</i>. They could use the internet and a CD-ROM, saving appropriate images to use later in their presentation.</li> <li>■ Divide the children into small groups and explain that they are going to produce a presentation about the journey of a river. The menu page will be a diagram showing the journey of the river from source to sea, with links at various stages to pages with further information.</li> <li>■ Ask the children to work in small groups to produce a flow chart showing the links between pages. Each group should produce one diagram to be used as a menu page (see above), which could be scanned in or drawn on the computer. The children work in pairs within their groups to produce separate pages with information, including pictures, text and possibly sound, eg <i>on meanders, river gorges</i>. The pages should then be combined to form a presentation and links made to the menu page.</li> <li>■ Show examples of work in progress to the class, and encourage children to modify their work in the light of others' comments. Consider how easy the work is to read and understand. <i>How do the images help the audience understand the effects of rivers? What is the best way of presenting this type of information? How successfully does the presentation capture the audience's attention?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ design pages following the journey of a river, which present the audience with clear information about rivers and the effect they have on the landscape</li> </ul>	<ul style="list-style-type: none"> <li>■ This activity might best be carried out at the end of the unit on rivers, so that children have the necessary geographical knowledge and understanding.</li> <li>■ This activity could be extended to include digital photos or sketches produced during fieldwork study of a local river.</li> <li>■ Pupils could import pictures taken from the internet or CD-ROMs to enhance their presentations. These should be pre-selected by the teacher. Encourage the children to use key word searches within the site or CD-ROM. Remind them about copyright issues when using information and images from the web.</li> <li>■ The multimedia presentation could be exported to the school website or saved to CD-ROM, so that children can share their presentations with parents and teachers at their secondary school.</li> </ul>

**Integrated task – Unit 6A Multimedia presentation (continued)**

ICT learning objective: to use a multimedia authoring program to organise, refine and present information

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
Linked to <b>history</b> unit 14 'Who were the ancient Greeks?' and unit 15 'How do we use ancient Greek ideas today?'			
<ul style="list-style-type: none"> <li>■ to use a multimedia authoring program to organise, refine and present information</li> </ul>	<ul style="list-style-type: none"> <li>■ Explain to the children that they are going to produce a presentation in the form of an illustrated narrative, which will inform their audience about the life of a child in ancient Greece. As part of their presentation, they should take on the role of a Greek boy or girl to explain to the audience what life was like in ancient Greece, and the differences between then and now.</li> <li>■ Divide the children into groups and ask them to plan their pages to include aspects of ancient Greek life they have studied. Within each group, ask pairs of children to concentrate on one aspect of life, eg <i>school life, the theatre, religion, the ancient Olympic Games</i>. The children could use the internet or CD-ROMs to carry out additional research, and save appropriate images to use later in their presentation.</li> <li>■ Ask the children to work in pairs to produce pages, which should include recorded narration of the story, images and text. They could also consider using animation. The slides should then be combined to form a group presentation.</li> <li>■ Show examples of work in progress to the class, and encourage children to modify their work in the light of others' comments. Consider how easy the work is to read and understand. <i>How do the images help the audience understand how people lived in ancient Greece? How successfully does the presentation evoke a vivid picture of the life of the Greeks? How well does it help the audience compare a child's life then and now?</i></li> </ul>	<ul style="list-style-type: none"> <li>■ design pages and links which inform an audience about the life of a child in ancient Greece</li> <li>■ show sensitivity to the needs of the audience</li> </ul>	<ul style="list-style-type: none"> <li>■ This activity might best be carried out at the end of the units in history, so that children have the necessary historical knowledge and understanding. This type of activity could also be adapted for other year 6 history units, eg <i>those on the Victorians or Ancient Egyptians</i>.</li> <li>■ In order for children's research to be efficient and effective, teachers should pre-select relevant websites. Encourage the children to use key word searches within the site. Remind them about copyright issues when using information and images from the web.</li> <li>■ The multimedia presentation could be exported to the school website or saved to CD-ROM, so that children can share their presentations with parents and teachers at their secondary school.</li> </ul>

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<p>Linked to <b>design and technology</b> unit 6C 'Fairground'</p> <ul style="list-style-type: none"> <li>to develop a system that controls events in response to conditions</li> </ul>	<ul style="list-style-type: none"> <li>Explain to the children that they are going to produce a sign for a fairground ride. The sign will have flashing lights, a switch to start the ride and a switch to stop it. A buzzer will sound when the ride stops.</li> <li>Ask the children to work in groups to design their sign, deciding where the lights and alarm switches will be situated. Now ask them to transfer this design on to a computer. The sign should be bright and attractive, with a variety of font effects, and should include graphics. Ask the children to print out their work and glue it to card. They should then make holes for the bulbs and switch.</li> <li>Next, ask each group to write a sequence of instructions to make the lights flash; for the ride to start up when the switch is pressed; for it to stop when the second switch is pressed; and for a buzzer to sound. Encourage the children to discuss the effects of their work, and to make modifications as they go along.</li> <li>Alternatively, children could extend the models they have made in design and technology lessons. They could design and make various fairground rides in groups and then connect these to a control box. Each ride should have at least one input and two outputs, <i>eg a bumper car with two sensors fitted onto the rear and front bumpers (when the car touches something, it should stop and change direction); a ferris wheel with an alarm system operated by a switch, and lights which come on when it goes dark – the motor should change speed and direction.</i></li> <li>Encourage the children to discuss any problems encountered during the process. They should describe the changes they made in refining and amending their programming.</li> </ul>	<ul style="list-style-type: none"> <li>use input and output devices, and produce a simple set of instructions linking causes and effects</li> </ul>	<ul style="list-style-type: none"> <li>This task builds on the work carried out in unit 5E 'Controlling devices'.</li> <li>Schools will need to adapt the suggestions to suit the equipment, and depending on the range of sensors and outputs available.</li> </ul>

<b>LEARNING OBJECTIVES</b> CHILDREN SHOULD LEARN	<b>POSSIBLE TEACHING ACTIVITIES</b>	<b>LEARNING OUTCOMES</b> CHILDREN	<b>POINTS TO NOTE</b>
<b>Linked to science unit 5E 'Earth, Sun and Moon'</b>			
<ul style="list-style-type: none"> <li>■ to use complex searches to locate information</li> <li>■ to work with others to interpret information</li> <li>■ to look at information from different viewpoints and validate resources</li> <li>■ to use ICT to organise and present information suitable for an audience</li> </ul>	<ul style="list-style-type: none"> <li>■ As part of the science topic 'Earth, Sun and Moon', children use the internet to research a number of specific questions, <i>eg What is helium? Where and how is it made in vast amounts? What does the Earth look like when seen from the Moon? What would you remember about a walk on the Moon? Do you think the Sun is magnetic, with north and south poles? Why?</i></li> <li>■ Tell the children they are going to look for information to answer the questions on two or three selected sites, and will present their findings to an audience. They are also going to compare the quality of the information provided by the sites. Remind the children about key word searches within the sites. Ask them to work in groups to find and interpret the information. They need to verify what they find by referring to other sources.</li> <li>■ Discuss with the whole class the sites that were used, <i>eg Why were those sites chosen? How long did it take to find the relevant information? How does the information differ on each site, and why? Was the information found relevant and reasonable?</i></li> <li>■ Ask each group to use ICT to present the information to a specific audience, <i>eg younger pupils</i>. They will need to consider the most appropriate way of presenting their ideas, combining image, text, sound, animation, etc to suit the needs of the audience. Remind them that they will need to acknowledge the images and information sources used within their presentation to conform with copyright law.</li> </ul>	<ul style="list-style-type: none"> <li>■ use searches to locate, understand and interpret information</li> <li>■ use a range of sources to check validity, and recognise different viewpoints and the impact of incorrect data</li> <li>■ present their ideas and information in a style that is appropriate to the audience</li> </ul>	<ul style="list-style-type: none"> <li>■ This activity builds on key ideas and skills covered in unit 6A 'Multimedia presentation'.</li> <li>■ There is a wealth of information about the solar system and our Earth, Sun and Moon on the internet. Web-wide searching may prove inefficient in this case, as it may return too many irrelevant links and highly technical information. For the purposes of this activity it may be better to pre-select sites aimed at school-age children, and ones that have a site-search facility.</li> <li>■ The Hubble Space Telescope website has a range of public pictures, and the websites of NASA, the European Space Agency (ESA), the Kennedy Space Centre (Education Resources section) and the BBC (Solar System section) may also be useful sources of information.</li> <li>■ Some museums offer interactive video-conferencing sessions where children can 'ask an expert' and interact with museum assets. Visit the National Grid for Learning website at <a href="http://www.ngfl.gov.uk">www.ngfl.gov.uk</a> for details.</li> </ul>
<b>Linked to history unit 9 'What was it like for children in the Second World War?'</b>			
<ul style="list-style-type: none"> <li>■ to use complex searches to locate information</li> <li>■ to work with others to interpret information</li> <li>■ to look at information from different viewpoints and validate resources</li> <li>■ to use presentation software to organise and present information suitable for an audience</li> </ul>	<ul style="list-style-type: none"> <li>■ As part of a history topic, the class use the internet to research the impact of the Second World War on children. Tell them they are going to look for information on two or three selected sites, and will present this to an audience. Ask them to suggest organisations or establishments that may provide web-based information. Agree a list of key words, <i>eg rationing, evacuation, air raid, Anderson shelter</i>.</li> <li>■ Ask the children to work in groups to search a limited number of sites with site-search facilities. They will need to interpret the information, check for accuracy and discuss what may have been propaganda. They will also need to summarise and take notes to inform their presentation.</li> <li>■ Discuss with the whole class the sites they used, <i>eg Why were those sites chosen? How long did it take to find the relevant information? How does the information differ on each site, and why? Was the information found relevant and reasonable? Was there bias in the viewpoint presented?</i></li> <li>■ Ask each group to use ICT to produce a presentation on the way in which the war affected children for a specific audience, <i>eg younger pupils</i>. They will need to consider the most appropriate way of presenting their ideas, combining image, text, sound, animation, etc to suit the needs of the audience. Learning from other sources, photographs and interviews should also be incorporated. Remind the children that they will need to acknowledge the images and information sources used within the presentation to conform with copyright law.</li> </ul>	<ul style="list-style-type: none"> <li>■ use searches to locate, understand and interpret information</li> <li>■ use a range of sources to check validity, and recognise different viewpoints and the impact of incorrect data</li> <li>■ present their ideas and information in a style that is appropriate to the audience</li> </ul>	<ul style="list-style-type: none"> <li>■ This activity builds on key ideas and skills covered in unit 6A 'Multimedia presentation'.</li> <li>■ The Imperial War Museum has a website with a wide range of data and information about the Second World War.</li> <li>■ Children with better research and reading skills may want to use a search engine, <i>eg Ask Jeeves for Kids</i>, to widen their access to source information, and to find the answer to specific queries.</li> </ul>

# Appendix A: coverage of the programmes of study for key stages 1 and 2, with links to other subjects made by the new integrated tasks

Unit number and name	Programme of study reference	Integrated tasks in other subjects	Teacher's notes
1A An introduction to modelling	KS1 2c, 2d, 4b, 4c	Science unit 1D Design and technology unit 1B	
1B Using a word bank	KS1 1a, 1b, 2a, 2b	Mathematics year 1, Geography unit 5 Science unit 1A	
1C The information around us	KS1 1a, 1b	Music unit 2 Science unit 1A	
1D Labelling and classifying	KS1 1a, 2b	English year 1, Science unit 1C History unit 2	
1E Representing information graphically: pictograms	KS1 2a, 3a, 3b		
1F Understanding instructions and making things happen	KS1 2b, 2c		
2A Writing stories: communicating information using text	KS1 2a, 3a, 4a	English year 1/Science unit 2B History unit 4	
2B Creating pictures	KS1 1a, 2a, 3a	Religious education unit 2C Art and design unit 2B	
2C Finding information	KS1 1a, 1c, 2b	English year 2 History unit 4	
2D Routes: controlling a floor turtle	KS1 2c, 4a, 4b	Mathematics year 2	
2E Questions and answers	KS1 1b, 1c, 2c, 4a, 4c	Mathematics year 2 Science unit 2C	
3A Combining text and graphics	KS2 2a, 3a, 4b	English year 3, Science unit 3A Design and technology unit 3A	
3B Manipulating sound	KS2 1a, 2a, 3a, 4a		
3C Introduction to databases	KS2 1b, 1c, 2b, 4a	Science unit 3C Geography unit 7	
3D Exploring simulations	KS2 2c		
3E E-mail	KS2 1a, 1c, 3a, 3b	English year 3 Geography unit 18/PSHE and citizenship	
4A Writing for different audiences	KS2 1b, 2a, 3b, 4c	English year 4/Design and technology year 4 English year 4/Citizenship unit 7	
4B Developing images using repeating patterns	KS2 1a, 2a, 3a	Religious education unit 3B History unit 6A	
4C Branching databases	KS2 1b, 1c, 4a	History unit 7, Geography unit 24 Science unit 4B, Mathematics year 4	
4D Collecting and presenting information: questionnaires and pie charts	KS2 1b, 1c, 2a, 3b		
4E Modelling effects on screen	KS2 1c, 2a, 2c	Mathematics year 4	
5A Graphical modelling	KS2 2a, 3a, 3b	Geography unit 23 Design and technology year 6	
5B Analysing data and asking questions: using complex searches	KS2 1a, 1b, 1c	Mathematics year 5 History unit 12	
5C Evaluating information, checking accuracy and questioning plausibility	KS2 1a, 1b, 1c, 3a		
5D Introduction to spreadsheets	KS2 1b, 2c, 4a	Design and technology unit 5D	
5E Controlling devices	KS2 1c, 2a, 2b, 4b, 4c		
5F Monitoring environmental conditions and changes	KS2 2b, 2c, 4b, 4c		
6A Multimedia presentation	KS2 1a, 2a, 3b	English year 6, Geography unit 14 History units 14, 15	
6B Spreadsheet modelling	KS2 1b, 2c		
6C Control and monitoring – What happens when ...?	KS2 2a, 2b, 4a, 4b	Design and technology unit 6C	
6D Using the internet to search large databases and to interpret information	KS2 1a, 1b, 1c, 3b	Science unit 5E History unit 9	

# Appendix B: resources to support the ICT scheme of work

Certain minimum hardware and software resources are needed to support the scheme of work. These include:

## **Hardware requirements**

- access to networked computers through a mixed model of suites and clusters or stand-alone machines;
- access to e-mail and the world wide web;
- multimedia machines;
- colour printers;
- a scanner, digital still and video camera with associated software;
- a 'floor turtle' or robot;
- a control interface with associated switches, sensors, buzzers, lights and motors;
- an Intel play microscope; and
- a means of whole-class teaching using a data projector or interactive whiteboard.

## **Software requirements**

- software that allows children to move and match words and pictures;
- word banks, a WYSIWYG word processor;
- paint and object-based drawing software;
- clip-art files on familiar topics;
- an internet browser to search using key words, indexes and menus;
- a range of CD-ROM titles and web-based resources;
- e-mail;
- an electronic 'Fuzzy Felt'-style program or object-based graphics package;
- a simple music composition program or means of recording and editing sounds;
- a simple multimedia authoring program;
- a graphing program capable of drawing pictograms, bar charts, pie charts and line graphs;
- flat file and branching databases;
- a simple spreadsheet;
- a turtle graphics program that includes the use of repeats and procedures;
- a control program that includes sensing; and
- simulations.

## Appendix C: from key stage 2 to key stage 3

This appendix describes what most children should have learnt in ICT by the end of key stage 2, particularly those aspects that relate to the yearly objectives in key stage 3.

### ***Finding things out***

By the end of year 6, most children should be able to:

- identify the information they need to complete a simple task or solve a simple problem;
- use simple search techniques, including indexes and lists of contents, to find information;
- prepare information for use in a task by downloading relevant pieces or collecting them from various sources;
- classify information for use in a database and understand how a suitable structure is created;
- recognise different types of information, such as text, numbers, graphics;
- enter data into a database, search it and present data in simple tables and graphs;
- check that information is accurate and reasonable; and
- discuss what might happen if information is entered into the computer incorrectly or not downloaded completely.

### ***Developing ideas and making things happen***

By the end of year 6, most children should be able to:

- combine text, graphics and sound to develop and present their ideas;
- reorganise information for a particular task or problem;
- create, test and refine a simple sequence of instructions to control events or make things happen;
- use data-logging equipment to monitor changes, for example in light, temperature or sound;
- use simple spreadsheet models to explore the effect of changing variables and answer straightforward questions; and
- identify patterns revealed by simple models or simulations.

### ***Exchanging and sharing information***

By the end of year 6, most children should be able to:


- use e-mail;
- use software to create stories, animations, presentations, displays and posters;
- consider the needs of different audiences, such as parents, peer groups, younger or older children;
- recognise the need for quality and accuracy in their presentations of work and ideas; and
- work in groups to solve problems and complete tasks.

### ***Reviewing, modifying and evaluating work as it progresses***

By the end of year 6, most children should be able to:

- review what they have done and consider how they might improve their work;
- evaluate other people's work and get ideas for their own;
- describe their use of ICT and how they might have completed a task using other methods;
- compare their use of ICT with that of other people;
- recognise the benefits of using ICT for particular tasks; and
- describe some uses of ICT outside school, and the impact it might have on people at work and at home.

Taken from the *Framework for teaching ICT capability: Years 7, 8 and 9, Key Stage 3 National Strategy*.

 <b>Curriculum and Standards</b>	
<b>Audience</b>	Teachers at key stages 1 and 2 and ITT providers.
<b>Circulation list</b>	LEAs, educational libraries, teacher centres and subject specialists.
<b>Type</b>	Guidelines.
<b>Description</b>	This Teacher's guide shows how the National Curriculum programme of study for information and communication technology at key stages 1 and 2 can be translated into practical plans.
<b>Cross ref</b>	<i>The National Curriculum for England.</i>
<b>Action required</b>	The use of this material is optional.
<b>Contact</b>	See below.

© *Qualifications and Curriculum Authority 2003*

**For more information, contact:**

Customer Services, QCA, 83 Piccadilly, London W1J 8QA (tel: 020 7509 5556)  
[www.qca.org.uk/](http://www.qca.org.uk/)

**For more copies of this document, contact:**

QCA Publications, PO Box 99, Sudbury, Suffolk CO10 2SN (tel: 01787 884444; fax: 01787 312950)

**Order ref:** QCA/98/211

**ISBN** 1 85838 333 1

This scheme of work is also available at [www.standards.dfes.gov.uk/schemes](http://www.standards.dfes.gov.uk/schemes)