Key Stage 3 National Strategy

Information and Communication Technology (ICT)

One-day course for supply teachers

Participant's resources
Acknowledgements

Disclaimer
The Department for Education and Skills wishes to make clear that the Department and its agents accept no responsibility for the actual content of any materials suggested as information sources in this document, whether these are in the form of printed publications or on a website.

In these materials icons, logos, software products and websites are used for contextual and practical reasons. Their use should not be seen as an endorsement.

The websites referred to in these materials existed at the time of going to print. Tutors should check all website references carefully to see if they have changed and substitute other references where appropriate.
Contents

Theme card 1.1 Developing ideas and making things happen 5
Theme card 1.2 Exchanging and sharing information 7
Theme card 1.3 Finding things out 9
Handout 2.1 Outline of sample teaching units 11
Handout 3.1 ICT progression chart 16
Handout 3.2 Assessment prompt sheet 20
Handout 3.3 Lesson 6 leaflets – pupils’ work 21
Handout 3.4 Assessment prompt sheet completed 25
Handout 3.5 Pupil homework for lessons 5 and 6 26
Handout 3.6 Assessment prompt sheet completed (2) 28
Handout 3.7 What happened in the classroom? 29
Handout 3.8 Pupil work from teaching unit 7.3 30
Handout 3.9 Level descriptions from the National Curriculum 31
Handout 3.10 Teacher commentary on teaching unit 7.3 33
Handout 4.1 Year 8 ICT Framework objectives 34
Handout 4.2 Year 9 ICT Framework objectives 35
Session 1 slides 37
Session 2 slides 40
Session 3 slides 41
Session 4 slides 46
Evaluation form 51
<table>
<thead>
<tr>
<th>Analysing and automating processes</th>
<th>Analysing and automating processes</th>
<th>Analysing and automating processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use automated processes to increase efficiency (e.g. templates, master pages).</td>
<td>Automate simple processes by: - creating templates; - creating simple software routines (e.g. style sheets, web queries, control techniques on web pages).</td>
<td>Automate ICT processes (e.g. use software to merge mail, create macros in an application program).</td>
</tr>
<tr>
<td>Represent simple processes as diagrams, showing: - how a task can be broken down into smaller ones; - the sequence of operations, and any conditions or decisions that affect it; - the initial information needed (e.g. room temperature, prices of items).</td>
<td>Consider the benefits and drawbacks of using ICT to automate processes (e.g. using wizards, templates).</td>
<td>Represent a system in a diagram, identifying all its parts, including inputs, outputs and the processes used (e.g. to validate data).</td>
</tr>
<tr>
<td><strong>Models and modelling</strong></td>
<td><strong>Models and modelling</strong></td>
<td><strong>Models and modelling</strong></td>
</tr>
<tr>
<td>Use software to investigate and amend a simple model by: - formatting and labelling data appropriately (e.g. formatting cells to display currency); - entering rules or formulae and checking their appropriateness and accurate working; - explaining the rules governing a model; - predicting the effects of changing variables or rules.</td>
<td>Develop ICT-based models and test predictions by changing variables and rules.</td>
<td>Design and creat ICT-based models, testing and refining rules or procedures.</td>
</tr>
<tr>
<td>Test whether a simple model operates satisfactorily.</td>
<td>Draw and explain conclusions (e.g. 'the best value for money is obtained when ...').</td>
<td>Test hypotheses and predictions using models, comparing their behaviour with information from other sources.</td>
</tr>
<tr>
<td><strong>Control and monitoring</strong></td>
<td><strong>Control and monitoring</strong></td>
<td><strong>Control and monitoring</strong></td>
</tr>
<tr>
<td>Implement a system to carry out a simple control task involving sensed physical data by: - compiling sets of instructions and identifying those that can be grouped to form procedures or loops; - testing and refining the instructions.</td>
<td>Develop and test a system to monitor and control events by: - using sensors efficiently; - developing, testing and refining efficient sequences of instructions and procedures; - assessing the effects of sampling and transmission rates on the accuracy of data from sensors.</td>
<td>Use ICT to build and test an efficient system to monitor and control events, including: - testing all elements of the system using appropriate test data; - evaluating the system's performance; - annotating work to highlight processes and justify decisions.</td>
</tr>
<tr>
<td>Understand how control and monitoring has affected commercial and industrial processes (e.g. telecommunication, health and transport services).</td>
<td>Review and modify ICT models to improve their accuracy and extend their scope (e.g. by introducing different or new variables and producing further outcomes).</td>
<td>Review and modify own or others' monitoring and control systems to improve efficiency (e.g. use more efficient procedures, reduce the number of instructions or procedures, add to an element of feedback).</td>
</tr>
</tbody>
</table>

Developing ideas and making things happen
<table>
<thead>
<tr>
<th>Fitness for purpose</th>
<th>Fitness for purpose</th>
<th>Fitness for purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognise common forms and conventions used in communications and how these address audience needs (e.g., columns of text in newspapers, graphics and enlarged print in posters, hyperlinks on websites).</td>
<td>Recognise how different media and presentation techniques convey similar content in ways that have different impacts.</td>
<td>Produce high quality ICT-based presentations by: – creating clear presentations, sensitive to audience needs; – justifying the choice of form, style and content.</td>
</tr>
<tr>
<td>Apply understanding of common forms and conventions to own ICT work.</td>
<td>Understand that an effective presentation or publication will address audience expectations and needs (e.g., the audience’s levels of literacy, familiarity with a topic).</td>
<td>Use knowledge of publications and media forms to devise criteria to assess the quality and impact of multimedia communications and presentations, and apply the criteria to develop and refine own work.</td>
</tr>
<tr>
<td>Use given criteria to evaluate the effectiveness of own and others’ publications and presentations.</td>
<td>Devise criteria to evaluate the effectiveness of own and others’ publications and presentations, and use the criteria to make refinements.</td>
<td></td>
</tr>
<tr>
<td>Refining and presenting information</td>
<td>Refining and presenting information</td>
<td>Refining and presenting information</td>
</tr>
<tr>
<td>Plan and design the presentation of information in digital media, taking account of the purpose of the presentation and intended audience.</td>
<td>Plan and design presentations and publications, showing how account has been taken of: – audience expectations and needs; – the ICT and media facilities available.</td>
<td>Use a wide range of ICT independently and efficiently to combine, refine, interpret and present information by: – structuring, refining and synthesising information from a range of sources; – selecting and using software effectively, justifying the choices made.</td>
</tr>
<tr>
<td>Use ICT to draft and refine a presentation, including: – capturing still and moving images and sound (e.g., using a scanner, digital camera, microphone); – reorganising, developing and combining information, including text, images and sound, using the simple editing functions of common applications; – importing and exporting data and information in appropriate formats.</td>
<td>Use a range of ICT tools efficiently to combine, refine and present information by: – extracting, combining and modifying relevant information for specific purposes; – structuring a publication or presentation (e.g., using document styles, templates, time lines in sound and video editing, navigational structures in web media).</td>
<td>Apply knowledge of the technical issues involved to communicate information efficiently (e.g., choose suitable file types to speed up transfer, use mail lists to speed up communication, use website tagging and hyperlinks to speed up searching).</td>
</tr>
<tr>
<td>Communicating</td>
<td>Communicating</td>
<td>Communicating</td>
</tr>
<tr>
<td>Use e-mail securely and efficiently for short messages and supporting material.</td>
<td>Understand some of the technical issues involved in efficient electronic communications (e.g., speed and bandwidth, size and type of file, features of different browsers and mail software).</td>
<td>Understand the advantages, dangers and moral issues in using ICT to manipulate and present information to large unknown audiences (e.g., issues of ownership, quality control, exclusion, impact on particular communities).</td>
</tr>
<tr>
<td>Know how to protect personal details and why this is important.</td>
<td>Use ICT effectively to adapt material for publication to wider or remote audiences (e.g., as web articles or sites).</td>
<td></td>
</tr>
</tbody>
</table>
Using data and information sources

Understand that different forms of information – text, graphics, sound, numeric data and symbols – can be combined to create meaning and impact.

Identify the purpose of an information source (e.g. to present facts or opinions, to advertise, publicise or entertain) and whether it is likely to be biased.

Identify what information is relevant to a task.

Understand how someone using an information source could be misled by missing or inaccurate information.

Searching and selecting

Search a variety of sources for information relevant to a task (e.g. using indexes, search techniques, navigational structures and engines).

Narrow down a search to achieve more relevant results.

Assess the value of information from various sources to a particular task.

Organising and investigating

In an investigation:
- design and use an appropriate data handling structure to answer questions and draw conclusions;
- design a questionnaire or data collection sheet to provide relevant data;
- check data efficiently for errors;
- investigate relationships between variables;
- use software to represent data in simple graphs, charts or tables, justifying the choice of representation;
- derive new information from data, e.g. averages, probabilities;
- check whether conclusions are plausible;
- review and amend the structure and its data to answer further questions.

Using data and information sources

Understand how the content and style of an information source affect its suitability for particular purposes, by considering:
- its mix of fact, opinion and material designed to advertise, publicise or entertain;
- the viewpoints it offers;
- the clarity, accessibility and plausibility of the material.

Devise and apply criteria to evaluate how well various information sources will support a task.

Justify the use of particular information sources to support an investigation or presentation.

Searching and selecting

Extend and refine search methods to be more efficient (e.g. using synonyms and AND, OR, NOT).

Explain the advantages of the methods used by different search engines and programs to search for data in various formats.

Organising and investigating

In an investigation:
- use software options and formats to store, retrieve and present electronic material efficiently;
- explore and interpret collected data in order to draw conclusions;
- assess the consistency of conclusions with other evidence.

Understand:
- how data collection and storage are automated in commerce and some public services;
- the impact of electronic databases on commercial practice and society;
- potential misuse of personal data.

Using data and information sources

Select information sources and data systematically for an identified purpose by:
- judging the reliability of the information sources;
- identifying possible bias due to sampling methods;
- collecting valid, accurate data efficiently;
- recognising potential misuse of collected data.

Searching and selecting

As part of a study, analyse high-volume quantitative and qualitative data systematically by:
- exploring the data to form and test hypotheses;
- identifying correlations between variables;
- drawing valid conclusions and making predictions;
- reviewing the process of analysis and the plausibility of the predictions or conclusions.

Organising and investigating

Construct, test and document the development of a database system which shows:
- a design specification;
- appropriate means of data input and validation;
- systematic testing of processes and reports;
- evaluation of the system’s performance and suggested modifications.
Outline of sample teaching units

ICT Sample teaching unit 7.1 (Using ICT for exchanging and sharing information) DfES 0399/2002

Unit 7.1 is an introductory unit for Year 7 pupils who will enter with varying levels of attainment and experience. The purpose of the unit is to develop pupils’ ICT capability, building on their existing knowledge, skills and understanding in the subject. The lessons suggested in the unit also provide opportunities for teachers to find out what pupils can do and to give support to those with less experience or limited expertise in the necessary skills.

ICT Sample teaching unit 7.2 (Using data and information sources) DfES 0013/2003

This unit reviews pupils’ learning from Key Stage 2 and introduces some of the ICT Framework objectives for Year 7 in the theme ‘Finding things out’. The unit focuses on using data and information sources, and searching for, selecting and evaluating information on the Internet.

Aspects of information handling are taught in English, history and mathematics. You might find it helpful to ask colleagues in these departments what they have covered before you teach this unit. You could then refer to the work pupils have done in these other subjects at appropriate points in their ICT lessons.

ICT Sample teaching unit 7.3 (Making a leaflet) DfES 0410/2002

This unit is for Year 7 pupils who will enter with varying degrees of attainment and experience. The unit provides opportunities for teachers to find out what pupils can do, and to give support to those with less experience or limited expertise in the necessary skills. It also enables pupils to build on work done in unit 7.1.

ICT Sample teaching unit 7.4 (Introduction to modelling and presenting numeric data) DfES 0417/2002

Unit 7.4 is the first unit in Year 7 which teaches pupils to use spreadsheets as a modelling tool. It gives pupils the opportunity to review the learning from Key Stage 2 as well as introducing them to the Framework objectives for Year 7.

ICT Sample teaching unit 7.5 (Handling data) DfES 0447/2002

Unit 7.5 is a unit about data handling for Year 7. It allows you to review pupils’ learning from Key Stage 2 and to introduce some of the ICT Framework objectives in the theme ‘Finding things out’.

Since handling data is one of the National Curriculum attainment targets in mathematics, you should consult the mathematics department about what aspects of data handling have been taught in Year 7 mathematics lessons, including the use of ICT. The handling data section of the supplement of examples in the Framework for teaching mathematics: Years 7, 8 and 9, included on the CD-ROM accompanying this unit, illustrates the kind of work that pupils in Years 7, 8 and 9 will do in their mathematics lessons.

ICT Sample teaching unit 7.6 (Control and monitoring) DfES 0074/2003

This unit helps you to review pupils’ learning from Key Stage 2 and to introduce some of the ICT Framework objectives for Year 7 in the theme ‘Developing ideas and making things happen’.

Aspects of control and monitoring are taught in both science and design and technology. You might find it helpful to ask these departments what they have covered with pupils before you teach this unit. You could then refer to the work pupils have done in these other subjects at appropriate points in the lessons.
**ICT Sample teaching unit 8.1 (Public information systems) DfES 0400/2002**

Pupils create an information system for a travel agent to look up details of the climate for customers who wish to know about the weather they could expect at their holiday destination for the dates they want to spend there.

**ICT Sample teaching unit 8.2 (Publishing on the web) lessons DfES 0167/2003**

This unit reviews pupils’ learning from Year 7 and introduces some of the ICT Framework objectives for Year 8 in the theme ‘Exchanging and sharing information’. In this unit, pupils plan and design a website, taking account of the users’ particular interests and needs. The lessons focus on the knowledge, skills and understanding of refining and presenting information and recognising fitness for purpose.

Web technology changes rapidly. This unit is in line with current recommendations of the World Wide Web Consortium (W3C) (see http://www.w3.org/).

Microsoft FrontPage Express has been used in this unit to illustrate the general principles of web page construction. It can no longer be downloaded from the Internet but is widely available in schools and is on the installation CD for Microsoft Office 2000 and Microsoft Office XP. There are many other suitable web page authoring applications. If you do not have access to FrontPage Express, read through these materials and modify them for your chosen application. You may wish to discuss your choice of application with your LEA's ICT consultant.

**ICT Sample teaching unit 8.3 (Information: reliability, validity and bias) DfES 0448/2002**

This is a unit for Year 8 about aspects of handling information. It helps you to review pupils’ learning from Year 7 and to introduce some of the ICT Framework objectives for Year 8 in the theme ‘Finding things out’. The unit focuses on using data and information sources, and searching for and selecting information on the Internet.

**ICT Sample teaching unit 8.4 (Models and presenting numeric data) DfES 0418/2002**

Unit 8.4 builds on unit 7.4, which introduces pupils to using spreadsheets for modelling and presenting numeric data.

**ICT Sample teaching unit 8.5 (An ICT system: integrating applications to find solutions) DfES 0222-2003**

This is a unifying unit focusing on a systems approach. It brings together financial modelling, control and monitoring, and marketing. It allows you to review pupils’ learning from Year 7 and Year 8. It introduces and revisits some of the ICT Framework objectives from all four themes. It is the first unit that adopts a project-based approach. The purpose is to provide a foundation for the Year 9 ICT Framework objectives and, therefore, it is recommended that it is used towards the end of Year 8.

Since control and monitoring is part of the National Curriculum attainment targets in design and technology and science, staff in these departments should be consulted before starting this unit.
Year 9 case studies

These case studies have been developed by schools to show how they have grouped Year 9 objectives and planned how to teach them. They are based originally on Year 9 QCA units. They show how extended projects can be taught, and the structure of lessons might be maintained, but they are not fully developed STUs. They exemplify one way to teach some of the Year 9 objectives but you should note that there are other ways. To demonstrate this, two case studies have been provided for unit 9.2 and one for unit 9.3.

The case studies include support materials that have been developed for use by pupils and teachers. They include starter activities and demonstrations of planning tools. Teachers have used the software that they have available in their schools; you may need to develop similar resources in the software that you have available.

The case studies also include some indicative outcomes but these are not fully developed in all cases. You will need to use these case studies alongside information from the Standards and assessment training session and the National Curriculum in Action website (www.ncaction.org.uk) in order to make judgements about pupils’ achievements.

If you wish to use these case studies you will need to do some significant planning and preparation. You will have to consider such things as differentiation and different teaching styles. Alternatively, you might treat the case studies as stimuli for planning your own extended Year 9 projects.

9.2a

The aim of this case study is for the class to be linked with another, ideally in a different country or location, for the purpose of exchanging information and questionnaires. If this is difficult to set up, the class could be linked with another in the same school. The exchange of questionnaires between partner classes should yield a data set of around 20 to 30 records. This could be increased by linking with more than one class and completing more than one questionnaire in return.

The context of the investigation that pupils carry out in this unit should be agreed beforehand, through consultation with the partner class or school with which data will be exchanged. This would save time in getting the work under way. Pupils could also be involved in this process.

The case study assumes a basic level of familiarity with a database program but there is scope for expanding or extending some of the lessons, particularly lessons 5, 6 and 7, in order to introduce the necessary skills and techniques.

The case study provides several opportunities for formative and summative assessment. Examples are noted in lessons, although the list is not exhaustive. They range from the evaluation of pupils’ oral contributions to more formal written or wordprocessed exercises. These can be included in a portfolio of evidence to trace individual pupils’ progress through the unit. In addition, there are several opportunities where pupils test parts of the system for effectiveness, sometimes through peer review, and then refine them accordingly. These are key points at which ICT capability can be consolidated and progression can take place. The basis of the summative assessment should be a pupil’s own portfolio of evidence. The main component of this will be the individual’s project documentation, which should contain a reflective appreciation of the whole process. The project documentation itself, the formatted questionnaires and the PowerPoint slides all provide evidence of individual ICT capability. Each portfolio should also contain annotated examples of the individual pupil’s work and their contribution to group work outcomes.

Timing

This unit of work is expected to take approximately 10 hours.
9.2b

In this case study, pupils will plan a term-long project to gather a large amount of questionnaire data online, from contacts in partner schools anywhere in the world. The class should be linked with another, ideally in a different country or location. If there are no suitable links, a search of the Internet could yield potential contacts. The exchange of questionnaires between partner classes should yield a data set of around 150 records. The data set could be increased by linking with several classes or schools. Pupils will store the data in a database and then interrogate the data to support their hypotheses. This unit is designed mainly for pupils working at levels 5 and 6.

Before starting this project, teachers may wish to explore links that the school has with partners within the UK or abroad, for example, through foreign exchanges, penfriends or e-mail. Establish links with some partner schools who are prepared to respond to the pupils’ forms. The context and purpose of the investigation should be agreed with the partner school before starting the project, to facilitate the exchange of data. Pupils could also be involved in this process.

The case study assumes a basic level of familiarity with a database program but there is scope to expand some of the lessons, particularly lessons 6 and 7, in order to introduce necessary skills and techniques.

The case study provides several opportunities for formative and summative assessment. They range from the evaluation of pupils’ oral contributions to more formal written evaluation against criteria. These can be included in a portfolio of evidence to trace individual pupils’ progress through the project. In addition, there are several opportunities where pupils test parts of the system for effectiveness, sometimes through peer review, and then refine them accordingly. These are key points at which ICT capability can be consolidated and progression can take place. The basis of the summative assessment should be a pupil’s own portfolio of evidence. The main component of this will be the individual’s project diary, which should contain a reflective evaluation of the whole process. The project documentation itself, the formatted questionnaires and the presentation slides all provide evidence of an individual’s ICT capability. The portfolio should also contain annotated examples of the pupil’s work and their contribution to group outcomes.

**Timing**

This unit of work is expected to take 10 lessons of 60 minutes. Each activity has a guide time so that you can alter the number and duration of lessons to suit your own timetable.

9.3

This case study is designed to develop the knowledge, skills and understanding needed to carry out a project systematically. The project is to design a front-of-house ticketing system for a theatre or school production.

Pupils learn to plan the stages of a project and the use of a flow chart to record their decisions. They use a design specification as the basis for their work and devise criteria to evaluate their success. They develop many skills, in particular, time-management and problem-solving skills. At the end of the case study they produce a written report summarising their project and its successes.

The project is limited to three tasks to allow the teacher to ensure that the whole class learn project methods. Differentiation is achieved through the work carried out by individual pupils for each of the tasks set within the framework of this case study. The three tasks are linked and more-able pupils will produce solutions which dynamically link the seating and financial systems.

This case study is the third in the year and pupils should already be familiar with Gantt charts and project documentation. Many pupils will be able to complete the tasks with increasing independence. Teacher
resources have been provided to show a possible solution for pupils of different abilities. These are
guidance for the teacher, not the pupil.

This school has developed resources around the school pantomime. This can readily be changed
to promote specialisms within the school, for instance, drama, music, dance and sports displays.

**Timing**

This unit of work is expected to take approximately 14 hours.
# ICT progression chart

This information can be found on the National Curriculum in Action website, [www.ncaction.org.uk](http://www.ncaction.org.uk)

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Characteristics</th>
<th>Example</th>
</tr>
</thead>
</table>
| Level 1 is characterised by the use of ICT to **explore options** and **make choices** to **communicate meaning**. Pupils develop **familiarity** with simple ICT tools. | Typically, pupils:  
- 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;  
- recognise that everyday devices respond to signals and make simple choices when using devices. | As part of a project about life and living things pupils look at information on animals. They use books, magazines, photographs and a CD-ROM. They talk about where different animals are found. They use an art package to create a farmyard scene, choosing appropriate animals and placing them onto a background. They make a class display and talk about the similarities and differences between printouts, photographs and drawings. |

<table>
<thead>
<tr>
<th>Level 2</th>
<th>Characteristics</th>
<th>Example</th>
</tr>
</thead>
</table>
| Level 2 is characterised by **purposeful** use of ICT to achieve **specific outcomes**. | Typically, pupils:  
- gather, organise and classify information;  
- explore real and imaginary scenarios;  
- generate and amend work;  
- plan and give instructions to make things happen;  
- present their findings – they record, save and share ideas in different forms, including text, tables, images and sounds. | In geography pupils are considering safe routes to school. As part of the project they undertake a survey of the frequency of traffic on local roads. They use a graphing program to enter, store and present their data. They use this information to identify the busiest and quietest roads. They record their findings onto a map, which they use to plan safe routes to school. |

<table>
<thead>
<tr>
<th>Level 3</th>
<th>Characteristics</th>
<th>Example</th>
</tr>
</thead>
</table>
| Level 3 is characterised by the use of ICT to **develop ideas** and **solve problems**. | Typically, pupils:  
- 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;  
- create sequences of instructions to control devices and achieve specific outcomes;  
- generate, develop and organise their work – they use ICT to present, share and exchange their ideas with others. | Pupils help to plan a day trip. They use the Internet and paper-based materials to find out the entry fees to various tourist attractions. They use route-finding software to determine the distance to various attractions. Pupils enter this data into a spreadsheet model prepared in collaboration with the teacher. The model includes information on entry fees and cost of transport. They use the model to establish the cost per pupil. The teacher provides a number of scenarios, such as an increase in the number of pupils. Pupils explore the model to answer questions. Later, groups make presentations to the rest of the class about their preferred destinations. |
## Level 4

**Characteristics**

Typically, pupils:
- find and interrogate information, understanding the need for care in framing questions;
- amend and combine different forms of information from a variety of sources;
- 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 to sense physical data;
- present information in different forms – they refine the quality of their presentations showing an awareness of the intended audience;
- compare their use of ICT with other methods.

**Example**

Pupils were asked to investigate the Elgin marbles. They use various information sources, including the Internet, to gather information about the marbles. The teacher asks the class to create a presentation incorporating two contrasting points of view about the future of the marbles. Pupils cut and paste information from the web and create a scrapbook of information. They synthesise this information to create bullet points to use in a presentation. They combine pictures and text within the presentation. They present their work to other classes in the year group. Later, pupils conduct a survey to establish which point of view is most common within the school.

## Level 5

**Characteristics**

Typically, pupils:
- 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;
- assess the use of ICT in their work and are able to reflect critically in order to make improvements in subsequent work.

**Example**

Pupils investigate the logistics associated with staging school theatre productions. They gather information about costs from the head of drama. They collect information about hire of costumes, special effects and copyright fees. They create a spreadsheet model. They create a seat-booking system. They use information from this in their financial model to investigate break even points for different productions. As part of the theatre theme they create programmes and posters for different productions.
### Level 6

**Characteristics**

Typically, pupils:
- use information from a range of sources and use complex lines of enquiry to solve problems and test hypotheses;
- make predictions and vary the rules within models – they assess the validity of their ICT-based models by comparing their behaviour with information from other sources;
- develop, try out and refine sequences of instructions to monitor, measure and control events, and show efficiency in framing these instructions;
- present their ideas in a variety of ways and show a clear sense of audience;
- discuss the impact of ICT on society.

**Example**

Pupils evaluate a range of websites considering features of style, navigation and content. They use this information to plan and design their own website for a particular audience. They produce a project plan, breaking down work into a series of smaller tasks. In their work they consider efficiency, fitness for purpose and audience needs. For example, they might use ICT to convert and compress graphic files to allow faster download times. They make informed use of automated features in software to create, for example, a navigational menu on each page. Where appropriate, they integrate applications. For example, they may include a response form on their site, to collect information from users. They test and refine their site using the school intranet.

### Level 7

**Characteristics**

Typically, pupils:
- select and use information to develop systems suited to work in a variety of contexts, translating enquiries expressed in ordinary language into the form required by the system;
- use ICT to measure, record and analyse physical variables and control events;
- scope and design ICT-based models and procedures with variables to meet particular needs;
- combine information from a variety of ICT-based and other sources for presentation to different audiences;
- identify the advantages and limitations of different information-handling applications.

**Example**

Pupils design and implement ICT systems. They may work from a range of scenarios provided by the teacher or identify their own starting point. Typically, a pupil might create a system based on a 'car trading' scenario. They establish the information flow of the main transactions and use this to inform the design of their ICT system. For example, a pupil might construct a number of data tables, identifying fields and data-types. This might include a table for cars and another for customers. Information is processed to match customers to cars. Aspects of the system are integrated, for example, mail-merges are created which incorporate information from queries into standard letters for different groups of customers. Pupils produce user documentation.
**Level 8**

Level 8 is characterised by systems that are designed and implemented for others to use. The needs of users are considered and addressed. The wider issues raised by ICT are discussed.

<table>
<thead>
<tr>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typically, pupils:</td>
</tr>
<tr>
<td>• design and implement systems for others to use;</td>
</tr>
<tr>
<td>• independently select appropriate information sources and ICT tools for specific tasks, taking into account ease of use and suitability – they design successful ways to collect and prepare information for processing;</td>
</tr>
<tr>
<td>• make appropriate use of feedback when developing systems;</td>
</tr>
<tr>
<td>• take part in informed discussions about the social, economic, ethical and moral issues raised by ICT.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pupils design and implement an ICT-based system that meets the needs of a ‘third party’. In developing the system, they compare their work with existing systems. They trial their solutions with third-party users and take account of feedback to refine their work.</td>
</tr>
</tbody>
</table>

**Exceptional performance**

Exceptional performance is characterised by the ability to design, implement, test, document and evaluate systems for others to use.

<table>
<thead>
<tr>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typically, pupils:</td>
</tr>
<tr>
<td>• design and implement systems for others to use – they also evaluate software packages and ICT-based models, analysing the situations for which they were developed and assessing their efficiency, ease of use and appropriateness;</td>
</tr>
<tr>
<td>• suggest refinements to existing systems and design, implement and document systems for others to use, predicting some of the consequences that could arise from the use of such systems;</td>
</tr>
<tr>
<td>• use their knowledge and experience of information systems to form their views on the social, economic, political, legal, ethical and moral issues raised by ICT.</td>
</tr>
</tbody>
</table>
### Assessment prompt sheet

<table>
<thead>
<tr>
<th>1  Finding things out</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• What information has been used?</td>
<td></td>
</tr>
<tr>
<td>• How did the pupil gather information?</td>
<td></td>
</tr>
<tr>
<td>• Was the information relevant to the task?</td>
<td></td>
</tr>
<tr>
<td>• Was a single or a range of sources of information considered?</td>
<td></td>
</tr>
<tr>
<td>• Did the pupil consider accuracy, bias and plausibility of information considered?</td>
<td></td>
</tr>
<tr>
<td>• What range and complexity of information was searched?</td>
<td></td>
</tr>
<tr>
<td>• Were straightforward or complex lines of enquiry followed?</td>
<td></td>
</tr>
</tbody>
</table>

**Reviewing, modifying and evaluating**

• Consider how searches have been modified and refined as work progresses.
• Did the pupil apply criteria to evaluate how well various information sources will support a task?

<table>
<thead>
<tr>
<th>2  Developing ideas and making things happen</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• How has the information been used?</td>
<td></td>
</tr>
<tr>
<td>• How has the pupil developed the information?</td>
<td></td>
</tr>
<tr>
<td>• Has information been used to solve problems or test a hypothesis?</td>
<td></td>
</tr>
<tr>
<td>• Has new information been derived?</td>
<td></td>
</tr>
</tbody>
</table>

**Reviewing, modifying and evaluating**

• Consider the ways the pupil has modified and refined work as it progresses.

<table>
<thead>
<tr>
<th>3  Exchanging and sharing ideas</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Has the presentation of information been planned and designed to take account of the intended audience?</td>
<td></td>
</tr>
</tbody>
</table>
| • Does the presentation of information and sharing of information show (give examples):
  – sensitivity to the needs of an audience;
  – fitness for purpose;
  – awareness of common forms and conventions? |  |

**Reviewing, modifying and evaluating**

• Has the pupil used given criteria to evaluate work?
• Has the pupil created criteria to evaluate work?
• Has the presentation been reorganised and developed, taking account of the intended audience?
Lesson 6 leaflets – pupils’ work

The leaflet pupils produced in lessons 4 and 5 is reproduced overleaf.

The final leaflet produced in lesson 6 is on the following sheet.
Here are two examples of children’s work using computers. They have both been created using Desk Top Publishing programs.

Here are some examples of the digital pictures we have taken around our schools ICT suites showing children working on the computers.

They are a system helps them with their Maths and English work.
Thanks!!!

We would like to thank all the Teachers and Pupils of Castle View School who helped us make this leaflet. We would like to thank those who let us take their picture and those who let us use their Desk Top Publishing work in our Leaflet. Thank You!!!
We are proud that we have some well equipped ICT rooms. You will have a lesson for one hour a week in these rooms and will be able to use (amongst other things) computers, lap tops, digital cameras, web cams and sound recording to create your own exciting presentations and publications. You will also find out how ICT can be used in every subject you are taught.

Pupils Work In ICT
Here are two examples of children's work using computers. They have both been created using Desk Top Publishing program

Our ICT Rooms
Here are some examples of the digital pictures we have taken around our schools ICT suites

showing children working on the computers. They are working on a learning system which helps them with their Maths and English work.
## Assessment prompt sheet completed

<table>
<thead>
<tr>
<th>1</th>
<th>Finding things out</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>What information has been used?</td>
<td>Digital photographs, pupil work scanned? Logo</td>
</tr>
<tr>
<td></td>
<td>How did the pupil gather information?</td>
<td>Don’t know</td>
</tr>
<tr>
<td></td>
<td>Was the information relevant to the task?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Was a single or a range of sources of information considered?</td>
<td>Small range</td>
</tr>
<tr>
<td></td>
<td>Did the pupil consider accuracy, bias and plausibility of information considered?</td>
<td>Difficult to tell</td>
</tr>
<tr>
<td></td>
<td>What range and complexity of information was searched?</td>
<td>No idea</td>
</tr>
<tr>
<td></td>
<td>Were straightforward or complex lines of enquiry followed?</td>
<td>No idea</td>
</tr>
</tbody>
</table>

**Reviewing, modifying and evaluating**

• Consider how searches have been modified and refined as work progresses.

• Did the pupil apply criteria to evaluate how well various information sources will support a task?

<table>
<thead>
<tr>
<th>2</th>
<th>Developing ideas and making things happen</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>How has the information been used?</td>
<td>In a leaflet</td>
</tr>
<tr>
<td></td>
<td>How has the pupil developed the information?</td>
<td>From A4 sheet to three-fold – no idea of rest.</td>
</tr>
<tr>
<td></td>
<td>Has information been used to solve problems or test a hypothesis?</td>
<td>Yes – the final outcome</td>
</tr>
<tr>
<td></td>
<td>Has new information been derived?</td>
<td>No idea</td>
</tr>
</tbody>
</table>

**Reviewing, modifying and evaluating**

• Consider the ways the pupil has modified and refined work as it progresses.

<table>
<thead>
<tr>
<th>3</th>
<th>Exchanging and sharing ideas</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>Has the presentation of information been planned and designed to take account of the intended audience?</td>
<td>Yes – clear layout, suitable font, images</td>
</tr>
<tr>
<td></td>
<td>Does the presentation of information and sharing of information show (give examples):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- sensitivity to the needs of an audience;</td>
<td>Yes – appropriate pictures, layout allows white space</td>
</tr>
<tr>
<td></td>
<td>- fitness for purpose;</td>
<td>Yes – language level, clear font, style</td>
</tr>
<tr>
<td></td>
<td>- awareness of common forms and conventions?</td>
<td>Yes – white lettering on black, logos and style repeated on front and back, address, contact on reverse</td>
</tr>
</tbody>
</table>

**Reviewing, modifying and evaluating**

• Has the pupil used given criteria to evaluate work?

• Has the pupil created criteria to evaluate work?

• Has the presentation been reorganised and developed, taking account of the intended audience?

No idea

No idea

Some – reorganised from A4 leaflet
Pupil homework for lessons 5 and 6

Homework lesson 5 – Production of A4 leaflet

The leaflet had to include pictures of children’s work and also photographs of working in the classrooms.

I chose ICT as my subject so I asked my brother if he had work he had done in ICT or using computers in any of his subjects. I chose two pieces of work which I then scanned. The files were large so I chose a black and white image for one piece to reduce the memory required for printing, without sacrificing quality. For Legoland I wanted to keep the red on the logo as this is the image people remember.

Next I visited a class using ICT and took photographs with the digital camera. I cropped these to focus on people in the images, but kept colour.

I used the existing title and logo from previous lessons and placed my graphics on the A4 page. Using Publisher I was able to resize and move around to get a balance. I added my new ICT logo. I created this using a vector graphic; changed the colour to simplify into only three colour tones; added Word Art in the same colours and then grouped the image so I could resize. I chose vector graphics as I would be able to change the size in my leaflets without losing quality.

I used simple descriptions so that people would read without too much text. I took off the hyphenation as in my first attempt this made it difficult to read the bottom section. I used Arial 18 pt which is a clear script.

Homework for lesson 6 – Review of making a leaflet

During making my leaflet I have looked at designing logos, taking digital photographs and scanning images. I have also been able to look at how other people design logos and leaflets (homework for lesson 3) to help me with a simple A4 page and then a more difficult 3-fold leaflet.

My A4 leaflet is to show to pupils who don’t know about my chosen subject so I have tried to make the font easy to read but make the leaflet colourful and attractive. I reviewed my design with my partner against the given criteria. Our next task was to use one of the three folded leaflets given to the class and produce a leaflet to be given to parents at a parents evening. I chose the three-fold leaflet because it would go into standard sized envelopes for new parents who had not previously visited the school and would not be attending the evening. This leaflet would also fit easily into bags and pockets without affecting its appearance. Opening in this way also helps focus on the pupil work which is across the fold.

To produce a leaflet about the local area I would need to first decide who the leaflet was aimed at. If it was children then my images would need to be things they would be interested in such as parks, swimming pools, adventure playgrounds and possibly some museums such as hands-on science. If the leaflet was for adults then information about shopping, schools, medical facilities as well as evening entertainment would be useful. It may be one of a series of leaflets with one concentrating on each area. For example, one on leisure with entertainment, swimming, leisure clubs and dancing. I would review existing leaflets by checking
these with adults (my mum and dad) and also with children (my brother). I would use these examples to help me create my own leaflets.

To change the school's corporate image I would have the logo redesigned. It is very good on the school blazer or sweater but the colour does not help it stand out on printed work. There are too many colours.
## Assessment prompt sheet completed (2)

### 1 Finding things out
- What information has been used?  
  - Digital photographs, pupil work scanned? Logo  
  - Asked older pupil. Took photographs around school.  
- How did the pupil gather information?  
- Was the information relevant to the task?  
  - Yes  
- Was a single or a range of sources of information considered?  
  - Small range  
- Did the pupil consider accuracy, bias and plausibility of information considered?  
  - Difficult to tell  
- What range and complexity of information was searched?  
  - Not an ICT search but made choices of appropriate images.  
- Were straightforward or complex lines of enquiry followed?  
  - Some choices – cropped to make suitable

### Reviewing, modifying and evaluating
- Consider how searches have been modified and refined as work progresses.  
  - Choice of black and white, not colour because of memory restrictions. Resize, crop
- Did the pupil apply criteria to evaluate how well various information sources will support a task?  
  - Possibly – formed by looking at other leaflets

### 2 Developing ideas and making things happen
- How has the information been used?  
  - In a leaflet  
  - Built up A4 leaflet from range of sources then into folded leaflet.  
- How has the pupil developed the information?  
  - Yes – the final outcome
- Has information been used to solve problems or test a hypothesis?  
  - Yes. Created own text, taken photographs, produced logo
- Has new information been derived?  
  - Taken off hyphenation. Resize. Move to get better effect. Added new logo

### Reviewing, modifying and evaluating
- Consider the ways the pupil has modified and refined work as it progresses.  
  - Yes – clear layout, suitable font, images. Change for parents and distribution  
  - Yes – appropriate pictures, layout allows white space
  - Yes – language level, clear font, style
  - Yes – white lettering on black, logos and style repeated on front and back, address, contact on reverse

### 3 Exchanging and sharing ideas
- Has the presentation of information been planned and designed to take account of the intended audience?  
  - Possibly
- Does the presentation of information and sharing of information show (give examples):  
  - sensitivity to the needs of an audience;  
  - fitness for purpose;  
  - awareness of common forms and conventions?  
  - Yes – reorganised from A4 leaflet to three-fold

### Reviewing, modifying and evaluating
- Has the pupil used given criteria to evaluate work?  
  - Yes
- Has the pupil created criteria to evaluate work?  
  - No idea
- Has the presentation been reorganised and developed, taking account of the intended audience?  
  - Yes – reorganised from A4 leaflet to three-fold
What happened in the classroom?

During the six lessons pupils were asked to produce a leaflet from an existing template, in the same style as the August issue of ‘What’s On?’

They then produced their own layout and simple leaflet for their school, again using existing text, logos and pictures from the shared area. They peer-reviewed their first draft, annotated it and completed a second version. For homework they collected existing logos and reviewed the effectiveness of each one. Then they compiled a logo for the subject of their choice. They used a range of techniques from the lesson, including group work on what makes an effective logo. They annotated their logo after discussion with peers.

For the next stage they reviewed existing leaflets and, after input on scanning images and importing digital photographs, produced an A4 leaflet on their chosen subject. They used three digital photographs taken in school and two scanned images of pupil work to represent their subject. They used the school name and logo and produced text and combined this information with the photographs and scanned images to produce an A4 leaflet. The leaflet is designed for Year 6 pupils to give them an idea of what work in the chosen subject will be like in Year 7. The process of this work was reviewed for homework.

To produce the final leaflet, pupils converted the existing text and graphics into a folded leaflet. They were given the choice of portrait folded in half, landscape folded in half or landscape folded into three parts. The design features and their appropriateness were reviewed by the group in class and for homework.

Throughout the project there was teaching input on what makes good logos and published work, as well as technique development for using new areas of digital photography and scanning. Pupils made informed choices for text and pictures from lessons 4 to 6 and chose the final layout for creating the folded leaflet.
Good design in leaflets

Supporting work

1st design

Subject logo

A4 leaflet

Production of A4 leaflet

The leaflet had to include pictures of children’s work and also photographs of themselves in the classroom.

I chose ICT as my subject as I asked my brother if he had work he had done in ICT or using computers in any of his lessons. I chose two pieces of work which I then scanned, the files were large so I chose a black and white image for one piece to reduce memory required for printing without sacrificing quality. For Legoland I wanted to keep the red on the logo as this is the image people remember.

Next I visited a class using ICT and took photographs with the digital camera. I mapped these to focus on people in the images, but kept colour. I used the existing title and logo from previous lessons and placed my graphics on the A4 page. Using Publisher I was able to resize and move around to get a balance. I added my name to the top. I realised this using a vector graphic; changed the colour to simply mix only three colour tones; added WordArt in the same colour, and then grabbed the image so I could resize it. I chose vector graphics as I would be able to change the size in my leaflet without losing quality.

I used simple descriptions so that people could read without too much fuss. I took off the hyperivation as in my first attempt this made it difficult to read the bottom section. I used Arial 16 which is a clear script.

Research on logos

Looking at leaflets

3-fold leaflet for parents

Good features

• Good white space
• Consistent colour scheme
• Shows subject well
• 3-fold good for parents

Areas to improve

• Text hard to follow between boxes
• Some errors

Final 3-fold leaflet

Display board of pupil work

Pupil work from teaching unit 7.3

Handout 3.8
Level descriptions from the National Curriculum

Attainment target for ICT capability

Level 1
Pupils explore information from various sources, showing they know that information exists in different forms. They use ICT to work with text, images and sound to help them share their ideas. They recognise that many everyday devices respond to signals and instructions. They make choices when using such devices to produce different outcomes. They talk about their use of ICT.

Level 2
Pupils use ICT to organise and classify information and to present their findings. They enter, save and retrieve work. They use ICT to help them generate, amend and record their work and share their ideas in different forms, including text, tables, images and sound. They plan and give instructions to make things happen and describe the effects. They use ICT to explore what happens in real and imaginary situations. They talk about their experiences of ICT both inside and outside school.

Level 3
Pupils use ICT to save information and to find and use appropriate stored information, following straightforward lines of enquiry. They use ICT to generate, develop, organise and present their work. They share and exchange their ideas with others. They use sequences of instructions to control devices and achieve specific outcomes. They make appropriate choices when using ICT-based models or simulations to help them find things out and solve problems. They describe their use of ICT and its use outside school.

Level 4
Pupils understand the need for care in framing questions when collecting, finding and interrogating information. They interpret their findings, question plausibility and recognise that poor-quality information leads to unreliable results. They add to, amend and combine different forms of information from a variety of sources. They use ICT to present information in different forms and show they are aware of the intended audience and the need for quality in their presentations. They exchange information and ideas with others in a variety of ways, including using e-mail. They use ICT systems to control events in a predetermined manner and to sense physical data. They use ICT-based models and simulations to explore patterns and relationships, and make predictions about the consequences of their decisions. They compare their use of ICT with other methods and with its use outside school.

Level 5
Pupils select the information they need for different purposes, check its accuracy and organise it in a form suitable for processing. They use ICT to structure, refine and present information in different forms and styles for specific purposes and audiences. They exchange information and ideas with others in a variety of ways, including using e-mail. They create sequences of instructions to control events, and understand the need to be precise when framing and sequencing instructions.
understand how ICT devices with sensors can be used to monitor and measure external events. They explore the effects of changing the variables in an ICT-based model. They discuss their knowledge and experience of using ICT and their observations of its use outside school. They assess the use of ICT in their work and are able to reflect critically in order to make improvements in subsequent work.

**Level 6**

Pupils develop and refine their work to enhance its quality, using information from a range of sources. Where necessary, they use complex lines of enquiry to test hypotheses. They present their ideas in a variety of ways and show a clear sense of audience. They develop, try out and refine sequences of instructions to monitor, measure and control events, and show efficiency in framing these instructions. They use ICT-based models to make predictions and vary the rules within the models. They assess the validity of these models by comparing their behaviour with information from other sources. They discuss the impact of ICT on society.

**Level 7**

Pupils combine information from a variety of ICT-based and other sources for presentation to different audiences. They identify the advantages and limitations of different information-handling applications. They select and use information systems suited to their work in a variety of contexts, translating enquiries expressed in ordinary language into the form required by the system. They use ICT to measure, record and analyse physical variables and control events. They design ICT-based models and procedures with variables to meet particular needs. They consider the benefits and limitations of ICT tools and information sources and of the results they produce, and they use these results to inform future judgements about the quality of their work. They take part in informed discussions about the use of ICT and its impact on society.

**Level 8**

Pupils independently select appropriate information sources and ICT tools for specific tasks, taking into account ease of use and suitability. They design successful ways to collect and prepare information for processing. They design and implement systems for others to use. When developing systems that respond to events, they make appropriate use of feedback. They take part in informed discussions about the social, economic, ethical and moral issues raised by ICT.

**Exceptional performance**

Pupils evaluate software packages and ICT-based models, analysing the situations for which they were developed and assessing their efficiency, ease of use and appropriateness. They suggest refinements to existing systems and design, implement and document systems for others to use, predicting some of the consequences that could arise from the use of such systems. When discussing their own and others’ use of ICT, they use their knowledge and experience of information systems to inform their views on the social, economic, political, legal, ethical and moral issues raised by ICT.
Teacher commentary on teaching unit 7.3

In this unit of work the pupil has created and selected the information they need for the specific purpose. They have used local sources to validate where the information has come from. They have used a range of techniques such as cut and paste, crop, group, resize, reformat to produce and gather appropriate images.

The pupil has produced the information in two given styles, giving reasons for choosing the three-fold leaflet as ‘helping with post and delivery’ rather than visual merits linked to the audience. In developing the final product the pupil has taken care to ensure the text is suitable for the age, in an easily readable font, and during the process has taken out hyphenation to help with reading at this level. The images chosen support the choice of subject.

Some aspects are less effective. There are very minor text errors, including a missing word and full stop. Although work has been covered on corporate image the logo loses some of its impact in a black and white format and therefore lacks fitness for purpose. The flow of work on the A4 sheet, when it is unfolded, may be difficult for some to follow. This relates particularly to the order of the text between the pictures.

The work does demonstrate ‘combining and refining from various sources’. The information demonstrates an awareness of the audience. However, to progress further the pupil would need to be provided with opportunities to make their own choices of overall structure, to refine the information for specific audiences.
### Year 8 ICT Framework objectives

#### Finding things out

**Using data and information sources**
- Understand how the content and style of an information source affect its suitability for particular purposes, by considering:
  - its mix of fact, opinion and material designed to advertise, publicise or entertain;
  - the viewpoints it offers;
  - the clarity, accessibility and plausibility of the material.
- Devise and apply criteria to evaluate how well various information sources will support a task.
- Justify the use of particular information sources to support an investigation or presentation.

**Searching and selecting**
- Extend and refine search methods to be more efficient (e.g. using synonyms and AND, OR, NOT).
- Explain the advantages of the methods used by different search engines and programs to search for data in various formats.

**Organising and investigating**
- In an investigation:
  - use software options and formats to store, retrieve and present electronic material efficiently;
  - explore and interpret collected data in order to draw conclusions;
  - assess the consistency of conclusions with other evidence.
- Understand:
  - how data collection and storage are automated in commerce and some public services;
  - the impact of electronic databases on commercial practice and society;
  - potential misuse of personal data.

#### Developing ideas and making things happen

**Analysing and automating processes**
- Automate simple processes by:
  - creating templates;
  - creating simple software routines (e.g. style sheets, web queries, control techniques on web pages).
- Consider the benefits and drawbacks of using ICT to automate processes (e.g. using wizards, templates).
- Represent simple design specifications as diagrams.

**Models and modelling**
- Develop ICT-based models and test predictions by changing variables and rules.
- Draw and explain conclusions (e.g. ‘the best value for money is obtained when...’).
- Review and modify ICT models to improve their accuracy and extend their scope (e.g. by introducing different or new variables and producing further outcomes).

**Control and monitoring**
- Develop and test a system to monitor and control events by:
  - using sensors efficiently;
  - developing, testing and refining efficient sequences of instructions and procedures;
  - assessing the effects of sampling and transmission rates on the accuracy of data from sensors.
- Understand how control and monitoring has affected commercial and industrial processes (e.g. telecommunication, health and transport services).

#### Exchanging and sharing information

**Fitness for purpose**
- Recognise how different media and presentation techniques convey similar content in ways that have different impacts.
- Understand that an effective presentation or publication will address audience expectations and needs (e.g. the audience’s levels of literacy, familiarity with a topic).
- Devise criteria to evaluate the effectiveness of own and others’ publications and presentations, and use the criteria to make refinements.

**Refining and presenting information**
- Plan and design presentations and publications, showing how account has been taken of:
  - audience expectations and needs;
  - the ICT and media facilities available.
- Use a range of ICT tools efficiently to combine, refine and present information by:
  - extracting, combining and modifying relevant information for specific purposes;
  - structuring a publication or presentation (e.g. using document styles, templates, time lines in sound and video editing, navigational structures in web media).

**Communicating**
- Understand some of the technical issues involved in efficient electronic communications (e.g. speed and bandwidth, size and type of file, features of different browsers and mail software).
- Use ICT effectively to adapt material for publication to wider or remote audiences (e.g. as web articles or sites).

---

**NOTE:** Objectives in italics are related to reviewing, modifying and evaluating work as it progresses.
### Year 9 ICT Framework objectives

<table>
<thead>
<tr>
<th>Finding things out</th>
<th>Developing ideas and making things happen</th>
<th>Exchanging and sharing information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Using data and information sources</strong></td>
<td><strong>Analysing and automating processes</strong></td>
<td><strong>Fitness for purpose</strong></td>
</tr>
<tr>
<td>• Select information sources and data systematically for an identified purpose by:</td>
<td>• Automate ICT processes (e.g. use software to merge mail, create macros in an application program).</td>
<td>• Produce high quality ICT-based presentations by:</td>
</tr>
<tr>
<td>– judging the reliability of the information sources;</td>
<td>• Represent a system in a diagram, identifying all its parts, including inputs, outputs and the processes used (e.g. to validate data).</td>
<td>– creating clear presentations, sensitive to audience needs;</td>
</tr>
<tr>
<td>– identifying possible bias due to sampling methods;</td>
<td>• Design and create ICT-based models, testing and refining rules or procedures.</td>
<td>– justifying the choice of form, style and content.</td>
</tr>
<tr>
<td>– collecting valid, accurate data efficiently;</td>
<td>• Test hypotheses and predictions using models, comparing their behaviour with information from other sources.</td>
<td>• Use knowledge of publications and media forms to devise criteria to assess the quality and impact of multimedia communications and presentations, and apply the criteria to develop and refine own work.</td>
</tr>
<tr>
<td>– recognising potential misuse of collected data.</td>
<td></td>
<td><strong>Refining and presenting information</strong></td>
</tr>
<tr>
<td><strong>Searching and selecting</strong></td>
<td><strong>Models and modelling</strong></td>
<td><strong>Communicating</strong></td>
</tr>
<tr>
<td>• As part of a study, analyse high-volume quantitative and qualitative data systematically by:</td>
<td>• Design and create ICT-based models, testing and refining rules or procedures.</td>
<td>• Apply knowledge of the technical issues involved to communicate information efficiently (e.g. choose suitable file types to speed up transfer, use mail lists to speed up communication, use website tagging and hyperlinks to speed up searching).</td>
</tr>
<tr>
<td>– exploring the data to form and test hypotheses;</td>
<td>• Test hypotheses and predictions using models, comparing their behaviour with information from other sources.</td>
<td>• Understand the advantages, dangers and moral issues in using ICT to manipulate and present information to large unknown audiences (e.g. issues of ownership, quality control, exclusion, impact on particular communities).</td>
</tr>
<tr>
<td>– identifying correlations between variables;</td>
<td>• Use ICT to build and test an efficient system to monitor and control events, including:</td>
<td><strong>Organising and investigating</strong></td>
</tr>
<tr>
<td>– drawing valid conclusions and making predictions;</td>
<td>– testing all elements of the system using appropriate test data;</td>
<td>• Construct, test and document the development of a database system which shows:</td>
</tr>
<tr>
<td>– reviewing the process of analysis and the plausibility of the predictions or conclusions.</td>
<td>– evaluating the system’s performance;</td>
<td>– a design specification;</td>
</tr>
<tr>
<td><strong>Organising and investigating</strong></td>
<td><strong>Control and monitoring</strong></td>
<td>– appropriate means of data input and validation;</td>
</tr>
<tr>
<td>• Construct, test and document the development of a database system which shows:</td>
<td>• Use ICT to build and test an efficient system to monitor and control events, including:</td>
<td>– systematic testing of processes and reports;</td>
</tr>
<tr>
<td>– a design specification;</td>
<td>– testing all elements of the system using appropriate test data;</td>
<td>– evaluation of the system’s performance and suggested modifications.</td>
</tr>
<tr>
<td>– appropriate means of data input and validation;</td>
<td>– evaluating the system’s performance;</td>
<td><strong>Models and modelling</strong></td>
</tr>
<tr>
<td>– systematic testing of processes and reports;</td>
<td>– annotating work to highlight processes and justify decisions.</td>
<td>• Design and create ICT-based models, testing and refining rules or procedures.</td>
</tr>
<tr>
<td>– evaluation of the system’s performance and suggested modifications.</td>
<td>• Review and modify own or others’ monitoring and control systems to improve efficiency (e.g. use more efficient procedures, reduce the number of instructions or procedures, add an element of feedback).</td>
<td><strong>Refining and presenting information</strong></td>
</tr>
<tr>
<td><strong>Analysing and automating processes</strong></td>
<td></td>
<td>• Use a wide range of ICT independently and efficiently to combine, refine, interpret and present information by:</td>
</tr>
<tr>
<td>• Automate ICT processes (e.g. use software to merge mail, create macros in an application program).</td>
<td></td>
<td>– structuring, refining and synthesising information from a range of sources;</td>
</tr>
<tr>
<td></td>
<td>• Represent a system in a diagram, identifying all its parts, including inputs, outputs and the processes used (e.g. to validate data).</td>
<td>– selecting and using software effectively, justifying the choices made.</td>
</tr>
<tr>
<td><strong>Models and modelling</strong></td>
<td></td>
<td><strong>Communicating</strong></td>
</tr>
<tr>
<td>• Design and create ICT-based models, testing and refining rules or procedures.</td>
<td></td>
<td>• Apply knowledge of the technical issues involved to communicate information efficiently (e.g. choose suitable file types to speed up transfer, use mail lists to speed up communication, use website tagging and hyperlinks to speed up searching).</td>
</tr>
<tr>
<td>• Test hypotheses and predictions using models, comparing their behaviour with information from other sources.</td>
<td></td>
<td>• Understand the advantages, dangers and moral issues in using ICT to manipulate and present information to large unknown audiences (e.g. issues of ownership, quality control, exclusion, impact on particular communities).</td>
</tr>
</tbody>
</table>

**NOTE:** Objectives in italics are related to reviewing, modifying and evaluating work as it progresses.
Session 1 slides

Aims of the day

We hope that, as supply teachers of ICT, you will:

- gain an overview of the ICT strand of the KS3 National Strategy
- become familiar with the Framework for teaching ICT: Years 7, 8 and 9
- be confident to teach the sample teaching units (STUs)
- understand how to assess pupils' ICT capability
- understand the requirements for pupils to reach the higher levels

Objectives for session 1

- To describe the elements of the KS3 National Strategy
- To set the context of the ICT strand and link this with Ofsted findings on the teaching of ICT
- To provide an overview of the Framework for teaching ICT capability: Years 7, 8 and 9
- To understand progression through KS3

Elements of the National Strategy

- Core subjects: English, mathematics, science and ICT
- Foundation subjects
- Behaviour and attendance
- Teaching and learning in secondary schools
Key Stage 3 and school improvement

- Some departmental strategies → Whole-school strategy
- Departmental development → School improvement
- National launch → Local consolidation and embedding
- Directed training and support → Selected training and support

Aims of Year 1

- Launch the Framework and the ICT strand
- Improve teachers’ knowledge, skills and understanding in ICT
- Support non-specialist teachers by exemplifying the teaching of ICT capability
- Improve teacher assessment of ICT

Sample teaching units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Using ICT</td>
</tr>
<tr>
<td>7.2</td>
<td>Using data and information sources</td>
</tr>
<tr>
<td>7.3</td>
<td>Making a leaflet</td>
</tr>
<tr>
<td>7.4</td>
<td>Introduction to modelling and presenting numeric data</td>
</tr>
<tr>
<td>7.5</td>
<td>Handling data</td>
</tr>
<tr>
<td>7.6</td>
<td>Control and monitoring</td>
</tr>
<tr>
<td>8.1</td>
<td>Public information systems</td>
</tr>
<tr>
<td>8.2</td>
<td>Publishing on the web</td>
</tr>
<tr>
<td>8.3</td>
<td>Information: reliability, validity and bias</td>
</tr>
<tr>
<td>8.4</td>
<td>Models and presenting numeric data</td>
</tr>
<tr>
<td>8.5</td>
<td>An ICT system</td>
</tr>
<tr>
<td>9.1</td>
<td>Case study 1: Control systems</td>
</tr>
<tr>
<td>9.2</td>
<td>Case study 2: Global communication systems</td>
</tr>
<tr>
<td>9.3</td>
<td>Case study 3: Systems: managing a project</td>
</tr>
</tbody>
</table>
Training units

- Launch*
- Text and graphics
- Modelling
- Handling data
- Control and monitoring
- Standards and assessment*
- Sound and video
- Progression into and through Y9*
- Web technologies
- Year 7: transfer and progression in ICT*

Impact

**Department**
- Timetable shift to discrete ICT in Y7, Y8 and Y9
- Identification of a core team of staff
- Focused action plans and contracts being part of school improvement cycle
- Revised schemes of work include the yearly teaching objectives
- Departmental meetings discussing teaching and learning, moderation, etc.

**Classroom**
- Structured lessons with starters and plenaries
- Objective-led teaching
- Interactive teaching
- Assessment for learning
- Teaching addressing the Y9 targets

Priorities for the future

- Progression through KS3 and into KS4
- Planning for differentiated outcomes
- More robust teacher assessment
- The ‘spectre’ of tests
- Targets for 2004
- Improving knowledge, skills and understanding of non-specialist teachers
Session 2 slides

Objectives for session 2

- To be able to plan activities to achieve objectives
- To become familiar with the effective teaching and learning strategies promoted throughout the Strategy
- To become familiar with some of the STUs

Sample teaching units (STUs)

<table>
<thead>
<tr>
<th>Unit</th>
<th>STU Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Using ICT</td>
</tr>
<tr>
<td>7.2</td>
<td>Using data and information sources</td>
</tr>
<tr>
<td>7.3</td>
<td>Making a leaflet</td>
</tr>
<tr>
<td>7.4</td>
<td>Introduction to modelling and presenting numeric data</td>
</tr>
<tr>
<td>7.5</td>
<td>Handling data</td>
</tr>
<tr>
<td>7.6</td>
<td>Control and monitoring</td>
</tr>
<tr>
<td>8.1</td>
<td>Public Information systems</td>
</tr>
<tr>
<td>8.2</td>
<td>Publishing on the web</td>
</tr>
<tr>
<td>8.3</td>
<td>Information: reliability, validity and bias</td>
</tr>
<tr>
<td>8.4</td>
<td>Models and presenting numeric data</td>
</tr>
<tr>
<td>8.5</td>
<td>An ICT system</td>
</tr>
<tr>
<td>9.1 case study</td>
<td>Control systems</td>
</tr>
<tr>
<td>9.2 case study</td>
<td>Global communication systems</td>
</tr>
<tr>
<td>9.3 case study</td>
<td>Systems: managing a project</td>
</tr>
</tbody>
</table>
Session 3 slides

Objectives for session 3

- To explore ways of sharing objectives and outcomes with pupils
- To develop a greater consistency of teachers’ expectations
- To establish a common understanding of what is required to demonstrate achievement at levels 4, 5 and 6

Effective objectives focus on how pupils will:

- use their knowledge of … to …
- be able to use … to find out …
- be able to use their … to find out …
- be aware of …

Expected outcomes for pupils should make clear to pupils:

- what they need to say, do or produce to demonstrate achievement of the lesson objectives
- what evidence the teacher is looking for when assessing a pupil’s progress during the lesson and when marking work
- what is expected of pupils so that they can assess their own and each other’s progress (self- and peer-assessment)
WALT and WILF

We are learning to … – the learning objective
What I am looking for … – the expected outcome from the pupils
This is because … – the purpose of the activity

Unlocking formative assessment: practical strategies for enhancing pupils' learning in the primary classroom, Shirley Clarke

Level descriptions

- These provide the basis for making judgements about pupils’ performance at the end of KS1, KS2 and KS3
- They describe the type and range of performance that pupils working at each level characteristically demonstrate

ICT standards in Key Stage 3

The majority of pupils in KS3 are expected to work at L3 to L7 and attain L5 or L6 at the end of the key stage.

2000 62% of pupils gained L5 or above
2001 65% of pupils gained L5 or above
2002 66% of pupils gained L5 or above
2003 67% of pupils gained L5 or above
ICT targets for Key Stage 3

2004  75% of pupils to attain L5 or above
2007  85% of pupils to attain L5 or above

Key features of progression

- L1 – Explore options and make choices, developing familiarity
- L2 – Purposeful use toward specific outcomes
- L3 – Develop ideas and solve problems
- L4 – Combine and refine information from various sources and for an audience: interpret and consider plausibility
- L5 – Combine the use of ICT tools showing consideration of overall structure. Critically evaluate fitness for purpose
- L6 – Integration and efficiency
- L7 – Scope, design and implement ICT systems
- L8 – Independence and designing for others

Making an assessment

Key questions to consider when making a judgement:
- How did the pupil find the information?
- How did the pupil organise, use or develop the information?
- How did the pupil share and present the information?
- During the process, how did the pupil refine or amend work?
Teaching objectives for lesson 6 of Sample teaching unit 7.3

Fitness for purpose
- Recognise common forms and conventions
- Address audience needs
- Plan and design the presentation
- Use ICT to draft and refine a presentation

Other assessment evidence
- Homework clearly directed to ask about the process of creating the leaflet
- Homework directed to ask about evaluation against criteria
- Pupils involved in peer-assessment against a checklist which they annotate
- Process diaries, learning logs
- Teacher observation
- Annotation of their leaflet to show why they made choices

Making an initial judgement at the end of the unit
Refer to:
- handout 3.1, ICT progression chart, and/or handout 3.9, Level descriptions from the National Curriculum
- handout 3.6, Assessment prompt sheet completed (2)
- handout 3.7, What happened in the classroom?
- handout 3.8, Pupil work from teaching unit 7.3
Teacher judgement

The teacher judged this pupil to be working at L4

Level 4

The work does demonstrate combining and refining information from various sources.

The information demonstrates an awareness of the audience.

To work within aspects of L5, the pupil would need to be provided with opportunities to:

• make their own choices of overall structure
• refine the information for specific audiences
Session 4 slides

Objectives for session 4

- To examine the progression to the Y9 ICT Framework objectives
- To explore the issues and challenges for teaching ICT in Y9

Framework objectives for Year 9

Activity: What is different about Y9?

- Compare the ICT Framework objectives for Y8 and Y9
- Highlight key words in the Y9 objectives which indicate progression from Y8

Key issues arising for Year 9

- Increasing independence
  - autonomous users
  - making own choices
- Working within a system
  - each stage of a system life cycle
  - increasing emphasis on evaluating each stage and documentation
Programme of study

During KS3, pupils:

- become increasingly independent users of ICT tools and information sources (intro)
- design information systems and evaluate and suggest improvements to existing systems (5c)

Key Stage 3 National Strategy ICT © Crown copyright 2004 4.4

Programme of study

During KS4, pupils:

- become more responsible for choosing and using ICT tools and information sources. They … are able to work independently much of the time …. They choose and design ICT systems to suit particular needs and may design and implement systems for other people to use (intro)
- design information systems and evaluate and suggest improvements to existing systems, with use by others in mind (5d)

Key Stage 3 National Strategy ICT © Crown copyright 2004 4.5

National Curriculum in Action

- As they make progress it will be necessary to provide pupils with opportunities to engage in open-ended tasks that allow them independently to apply their ICT capability (making a judgement)
National Curriculum in Action – level characteristics

- L5 is characterised by combining the use of ICT tools within the overall structure of an ICT solution. Pupils critically evaluate the fitness for purpose of work as it progresses.
- L6 is characterised by increased integration and efficiency in the use of ICT tools. A greater range and complexity of information is considered.
- L7 is characterised by the ability to scope the information flow required to develop an ICT system. Pupils define, implement and refine ICT systems. They make use of audience and user feedback to enhance ICT solutions.
- L8 is characterised by systems that are designed and implemented for others to use. The needs of users are considered and addressed. The wider issues raised by ICT are discussed.

Challenges for teaching ICT in Year 9

Activity

- What are the challenges for teaching Y9 in the classroom? Focus on:
  - managing the learning
  - enabling pupils to work at different levels
- How are the challenges being met or how might they be met in your school?

Possible responses

In the classroom how can I:
- give time for extended projects
- manage different abilities
- provide assessment opportunities
- make statutory end-of-KS3 assessments
- maintain pace and focus during longer pieces of work
- know how much direction to give pupils
- ensure that pupils can structure extended pieces of work
- take account of teachers’ experience, knowledge, skills and understanding at higher levels?
Possible responses (cont.)

In the classroom how can I:

- teach and model new knowledge, skills and understanding
- teach and model how to manage projects
- integrate a systems approach
- give pupils opportunities to access the higher levels at KS3
- look ahead to KS4 and ensure a smooth transition from KS3
- bridge the gap from Y7/8 STUs to KS4 coursework?

Building on work done so far

- Structured lessons
- Framework objectives
- Teach to objectives
- Pace
- Range of teaching styles as identified by the Framework
- Teach/model new knowledge, skills and understanding

Overview

Y9 'givens'
- Framework objectives
- Lesson structure
- Project management
- System life cycle
- Assessment

Y9 QCA units
- Unit 13 (6.1)
- Unit 14 (6.2)
- Unit 15 (6.3)

Independence
- Differentiated outcomes
- More complex use of ICT skills

Working towards
- Statutory teacher assessment
- KS4
What do we need to move into Year 9?

Y9 teaching needs to plan for:

- keeping structured lessons
- continuing to teach new knowledge, skills and understanding
- increased project management
- more of a systems approach
- more focused teacher direction
- more pupil involvement in decision making/choices
- increased differentiation
- more evaluation and modification by pupils
- increased integration of objectives
Evaluation form: ICT supply teachers

For completion by teachers

What were the most successful aspects of today’s sessions?

What changes would you suggest if today’s sessions were repeated?

Please grade each session on the basis of how well-structured and organised it was to meet the learning objectives identified.

<table>
<thead>
<tr>
<th>Session</th>
<th>Grade: please ring</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Introduction and context</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>2 The structured lesson and</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>sample teaching units (STUs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Standards, expectations and progress</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>4 Teaching ICT in Year 9</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>Overall grade for the unit</td>
<td>1 2 3 4</td>
<td></td>
</tr>
</tbody>
</table>

Supply teacher agency ________________________________

Post held ________________________________

Please return this form to your tutor before leaving.